



University of Washington Bothell

The CROW

Campus Research and Observational Writings

VOLUME NINE

Spring 2024

EDITORIAL BOARD

Morgan Fu-Mueller
Newton (Newt) Austria-Ball
phoenix kai vaughan-ende
Robin Stone
Sabine Drake

FACULTY AND STAFF ADVISERS

Andrea Stone, Ph.D.
Erik Echols



© 2024 University of Washington Bothell *The CROW*

The CROW (Campus Research and Observational Writings) is an annual journal of UW Bothell student research. We accept submissions throughout the year, with a priority deadline of January 1 and a final deadline of March 1 for each upcoming issue. You must be a student at the University of Washington Bothell, or a recent UWB graduate (up to one year post graduation), to submit. Submissions are accepted by email at publish@uw.edu.

The CROW is an equal opportunity student publication that does not discriminate or publish works that discriminate against any sex, gender expression, sexual orientation, race, color, ethnicity, creed, religion, political affiliation, or ability. We thoughtfully consider all potential publications within this guideline.

The CROW

c/o Writing and Communication Center, Box 358565

University of Washington Bothell, 18115 Campus Way NE, Bothell, WA 98011-8246

<https://www.uwbcrow.com/>

The contents of the University of Washington Bothell's *The CROW (Campus Research and Observational Writings)* are copyrighted. Under U.S. Law it is unlawful to reproduce or distribute the contents by any means without written permission.

This publication is courtesy of the University of Washington Bothell, the UWB Club Council, and is funded through Student Activity Fees.

Cover Design Credit: phoenix kai vaughan-ende



CONTENTS

Obesity Affecting Low-Income Communities in America
Halle Egan 1

Cores, Consumption, and Digital Aesthetics
Luis Cruz 9

Museums as Wunderkammer and Community Centers: A Comparative Analysis
Layla Youssef 13

Impact of the Relationship Between Patient and Doctor on Health Disparities for the Hispanic Culture: A Qualitative Study
Karla Alvarez 19

Quantitative Study on Mitigating Children’s BMI: Execution of a School-Based Culinary Garden Initiative
Dalia Abraham..... 27

The Psychology of Substance Misuse Influencing Academic Performance of Homeless Youth in Seattle - A Qualitative Narrative Study
Nicole Vicente..... 35

Traumatic Experiences of Women Who Have Recently Experienced Homelessness
Elise Bao..... 41

Maternal Mortality and Severe Maternal Morbidity Among Black Women: A Qualitative Phenomenological Study
Nadira Hajimohamed..... 49

Qualitative Study to Understand the Journey and Experiences of Adolescents Who Undergo Misusing Opioids
Yahya Wardak..... 57

Obesity in America: Cross-Sectional Study on the Associations Between Fast Food Restaurants’ Density and Obesity Among U.S. Adults in Washington State
Giselle Mak 63

A Qualitative Approach on Climate Justice for Communities: Impact of Discrimination & Redlining in Seattle Washington
Annie Edwards 69



CONTENTS

Perspectives of Occupational Stigma on Sex Workers in Healthcare Settings: A Qualitative Study
Chuck Frickin-Bats 75

Evaluating Educational Efforts to Support Trauma-Affected Students
Kori Cantwell 85

Uyghur Forced Labor: The Role We Play
Liam Hunter 93

The Value of Quantum
Steven Suarez 109

The Linkage Between Climate Change and Apple (*Malus spp.*) Fruit Phenophases in the Continental United States
Faith Lambert and Mara Juarez-Velazquez 115

The Correlation Between Springtime Temperatures and Flowering Patterns of the Black Cherry (*prunus serotina*) in the United States
Gursimar Tonk, Anwasha Naidu, & Xuantao (Rico) Zhang 127

The 1890s-1900s: How the Turn of the Century Influenced the Birth of Movies
Phillip Gruenemay 137

Sexual & Reproductive Health: Approaches to Literacy Interventions for Children & Adolescent Youth
Ayla Badr, Hyojeong Kim, & Ryan Van Vuitton 151

Autism: Is awareness the same in Japan and Korea?
Shakambari Ramachandran 161

Fabricated Cuts: Is Cultured Meat a More Sustainable Meat Alternative?
Emma Uderski 167

Echoes of Resilience: Unveiling the Tapestry of Suffering in Palestine
Hoda El Anany 173





LETTER FROM THE EDITORS

The Ninth Edition of The CROW was composed and published in a time just after the COVID-19 global pandemic, as members of the University of Washington Bothell community constructed and lived out our new normal. As we grapple with ongoing global conflicts and mobilizations across campus, we feel that the mission of the CROW to platform and uplift student voices has rarely been more relevant. As we acknowledge the hardship of the past few years, and the atrocities advancing across the world, we thank you for being part of this work and reaffirm our belief in the value and impact of student writing, student activism, and student investment in global futures.

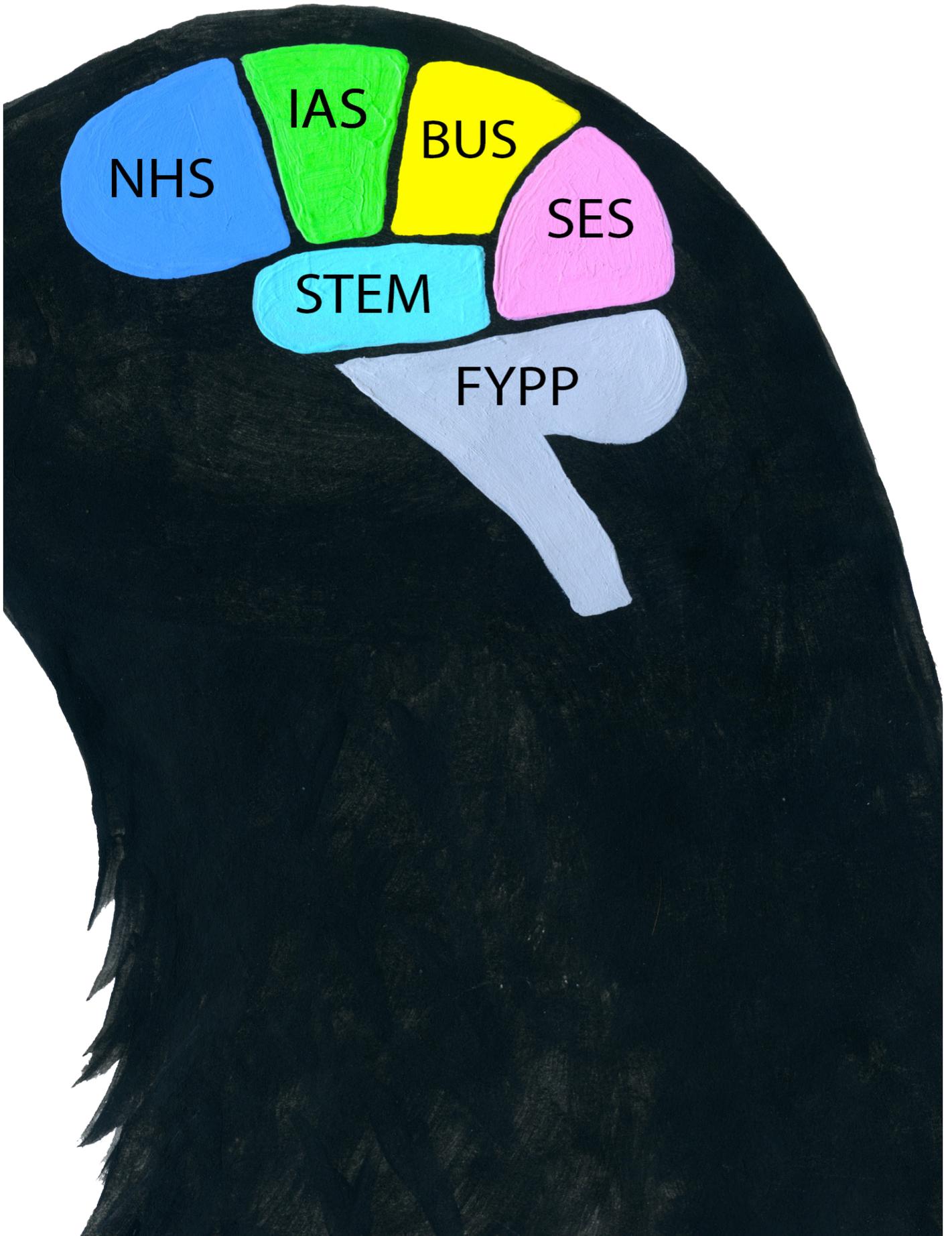
With this edition, The CROW continues to highlight the incredible dedication of students at UW Bothell as they conduct, analyze, and synthesize their own research investigations in topics ranging from science and technology, interdisciplinary arts, health studies, and everything in between. Research is a high-impact learning practice that engages students outside the classroom and allows them to think more critically about the topics they wish to discover. By taking the initiative to submit their work for review by a board of their peers, the authors in this journal have taken steps towards becoming active contributors to academic discourse that values inclusion, expansion, and critical thinking. As ways of writing and research advance, student publications like The CROW lie on the frontier of newness. This year saw us pen our new AI policy, balancing our multiple missions of accessibility, uplifting student work, and remaining true to our values while adapting to new developments.

The University of Washington Bothell is built on the unceded ancestral lands of the Coast Salish peoples, including the Duwamish and Snohomish tribes. We acknowledge this land's deep historical, cultural, and spiritual significance to Indigenous communities. We recognize the ongoing harm caused by colonization and affirm our responsibility as a student-led research publication to engage in decolonization efforts. The CROW seeks to create an inclusive and equitable publication that values Indigenous experience, knowledge, and culture, and fosters justice. We incorporate these values daily as we look over each submission, and as we provide feedback.

We would like to extend special recognition and gratitude to our student authors. Despite fears of rejection, judgement, or critique, our authors showed great appreciation and care for the extensive editing and publication process. We know submitting was difficult, and we appreciate your patience and effort as we tried to ensure your work would shine. We are so excited to share the 2024 Edition of The CROW!

With love,

Your friends on the Editorial Board: Phoenix, Newt, Robin, Sabine, & Morgan.







OBESITY AFFECTING LOW-INCOME COMMUNITIES IN AMERICA

Halle Egan

ABSTRACT: This paper will explore the causes, consequences, and potential solutions for obesity in marginalized low-income communities in the United States. Obesity is a multi-layer health issue with diverse types of causes and barriers, particularly impacting certain minority groups due to the unique challenges they face. This paper goes through the interventions across interpersonal, organizational, community, and policy that are tailored to the health issue of the targeted population. Additionally, there are propositions of possible solutions that could be effectively implemented within low-income communities based on the information gathered in this paper. The main goal of this comprehensive writing is to bring together and analyze information and interventions based on the health topic and population in order to gain a wide range of knowledge to implement into future implications.

Introduction & Background

Introduction: Unveiling the Complex Web of Obesity and Health in Low-Income Communities

Obesity extends beyond individual struggle, presenting an urgent community concern with wide-ranging consequences particularly in low-income areas within the United States, where preschool obesity rates are alarmingly high at 14.6% (Byrd, 2018). Even more concerning, the trend persists into adolescence and adulthood, with a 70% likelihood of lifelong weight issues (Byrd, 2018). Even with these statistics, there is a significant lack of recognition regarding weight concerns within low-income communities. This paper will navigate the complex landscape of obesity within these communities through examining critical issues, ranging from policy-driven initiatives to community-based efforts, organizational strategies, and individual-focused interventions.

Methods

In researching sources to use for this collaborative paper, the group was assigned certain sections of the overall topic to bring together. Participants focused on finding factors relating to the topic and interventions based on the different levels of the social-ecological model: intra/interpersonal, organizational, community, and policy. In order to find these sources, the group used the databases CINAHL and PubMed to search for peer-reviewed papers. The search started with using the base keywords of “obesity” and “low-income” and then became more specific in order to narrow down results as the base keywords brought an abundance of results. Some examples of specific keywords added included: “interventions,” “factors,” “community,” and more. The group also decided to focus on the results of sources based in the United States in order to keep the topic consistent as other countries may have different levels of impact on the topic of obesity and its subtopics.



Egan

Literature Review

Causes and Factors

The health topic of obesity is an issue that has multi-layered, interconnected, causes and factors that increase the risk of experiencing obesity. Assessing the health issue of obesity through the different levels of the social ecological model will provide pivotal insight on the factors within a certain community. The layers included within the model are intra/interpersonal, organizational, community, and policy. To connect these layers of the model, an important factor to consider when looking at the causes of obesity is the community and environment; they are a part of, in this case the focus is on low-income communities. There are many things that can contribute to obesity: genetics, diet, physical activity, and psychosocial factors are just a few of the bigger causes (Byrd, 2018). Low-income communities tend to be faced with issues that include “unavailable or expensive fresh fruits and vegetables, less access to safe settings for exercise, reliance on television for entertainment... proliferation of fast-food vendors, and economic pressures limiting time for family meals at home” (Candib, 2007). The prominent lack of access and availability within these communities encourages the type of lifestyle where obesity thrives. This shows the top layer of how complicated this health issue is, that it needs to be assessed at all different angles to be able to form a well-rounded assessment of an individual’s or community’s health. Specifically looking at low-income communities in the United States, the rate of obesity is 14.6% just among preschool-aged children in low-income communities (Byrd, 2018). This leads to the fact that “children with overweight or obesity have a higher chance of continued struggles with weight into adolescence and have a 70% chance of being overweight or obese when adults” (Byrd, 2018). These statistics show how prevalent this health issue is and how this needs to be addressed. However, according to a comprehensive review on obesity, “there

is less recognition of weight concerns in low-income families resulting in decreased efforts to intervene with healthy lifestyle modifications” (Byrd, 2018). This health issue goes beyond just the individual’s behavior and awareness needs to be spread to the communities that need it most.

Intra/Interpersonal Factors

Obesity-based intra/inter- personal interventions focused on the individual or close family members to build a support system. In a study conducted by Messito and colleagues, there was a focus on an interpersonal intervention that worked on informing mothers based on primary care-based child obesity. This study was done in New York prenatal or pediatric clinics Messito et al. (2020) aimed to prevent obesity-causing factors by providing Hispanic or Latina mothers who were pregnant with a family-centered program. The program was called StEP; a social cognitive theory to promote healthy behaviors (Messito et al., 2020). This study implemented interpersonal intervention in four phases. These phases worked to inform mothers with demonstrations, hands-on practice, counseling, and goal setting. Messito et al. (2020) aimed to decrease obesity risk for the individual by informing the mothers of potential uncertainty or predisposed factors influencing their child’s health. This would prove useful in building a mental framework that the mother can use to decrease obesity chances for their children. Similarly, a study by Guerrero et al. (2023) also focused on family-centered systems in Hispanic or Spanish-speaking families. Guerrero implemented an app-based informative intervention for families from East Los Angeles WIC and Early Education Centers. This study specifically utilized the Familias Unidas Ninos Sanos, FUNS, hybrid program. The FUNS program is an intervention developed from social, cognitive, and family-based research. This program used peer-to-peer learning and observational strategies to build social support behavior changes (Guerrero et



al., 2023). Guerrero et al. (2023) concentrated on collectivism and family values of caregivers such as mothers, fathers, and grandmothers. This program aimed at behavior changes by sending out multimedia messages on supportive caregiver skills or behavior changes such as discouraging the use of food as behavioral control. Focusing on behavior changes can reorient the individual's relationship with food. By targeting close individuals and caregivers, interpersonal interventions can help build intrapersonal changes. Intra/interpersonal interventions that address the home environment and build effective frameworks that create positive preventative measures or help individuals later on when facing obesity diagnosis.

Organizational Factors

Within the realm of organizational factors, workplaces emerge as pivotal settings that significantly influence health-related behaviors. An effective and positive workplace culture, cultivated through strong leadership practices, plays a crucial role in fostering employee well-being. Recognizing the profound impact of organizational settings on individual health outcomes, interventions implemented at the organizational level become imperative.

The study conducted by Deckro et al. (2002) delves into the evaluation of a mind/body intervention aimed at reducing psychological distress and perceived stress in college students, highlighting the relevance of organizational strategies in addressing mental health challenges. This intervention, situated within the organizational level of the social-ecological model, exemplifies how workplace health promotion initiatives can have a profound impact on psychological well-being.

Moreover, a systematic review conducted by Willis et al. (2016) assessing the effectiveness of health promotion interventions in the workplace on physical and mental health

outcomes related to chronic diseases provides valuable insights. Workplace interventions, particularly those targeting physical activity and/or diet, demonstrated strong evidence for favorable effects on weight-related outcomes. The strategies discussed in the reviewed article, including interventions on physical activity, diet, and psychological well-being, are strategically designed to create a healthier organizational environment. The positive outcomes observed in the workplace interventions have broad implications, not only for individual employees but also for organizations as a whole. A healthier workforce contributes to increased productivity and reduced healthcare costs. Policymakers and public health professionals can leverage this evidence to inform and tailor health promotion programs, thereby addressing chronic diseases and enhancing overall population health. The multifaceted impact of organizational-level interventions underscores their significance in the broader social-ecological framework.

Community Factors

Obesity is a disease that plagues the communities. It would be understandable to focus the format of interventions on these communities affected the most, specifically low-income communities. In Baltimore, a store manager and a group of researchers implemented a multicomponent intervention focused on a local supermarket in order to improve the food environment and attempt to reduce the rates of obesity in low-income communities (Lee, 2015). The grocery store is a place that everyone frequents, a community hot spot, so targeting a store for an intervention is going to create a good outreach. In the results of the intervention, the authors discuss the fact that they were able to have a high reach within the community, having an average of at least 100 people participating in the educational community events per month (Lee, 2015). By having an extensive outreach there is going to be a rise of awareness about obesity, people are going to become more educated, ideally use this



Egan

new knowledge to assess their own lifestyles and spread what they learned to others.

To expand on this intervention level, there are two main types of strategies for the community interventions: micro-level, directly targeting families, and macro-level, targeting the physical environment access and activity (Nianogo, 2022). In the supermarket study previously mentioned, that would be a macro-level strategy because they focused their intervention on the physical environment of a grocery store. The author of an evaluation of community intervention strategies stated that “interventions targeting obesity-related behaviors in general were effective for two strategies, home visitation and business practices” (Nianogo, 2022). Those two strategies are examples of micro- and macro-level strategies. Addressing a health issue is a topic that is quite vulnerable for the person, so spreading awareness and creating an environment where the individual feels understood or related to will help with effectiveness. In order to do this, there need to be multiple layers to these interventions, like the micro- and macro-levels mentioned above, to be able to reach a certain emotional environment within these communities where change can occur.

Policy Factors

While there have been several ways to combat obesity, policymakers have tried to find the most efficient way to either prevent or work around obesity. It is known that healthier choices tend to be more expensive and may be difficult to implement for these low-income communities. This leads to how households should consider investigating certain policies and programs that would apply to the situation. Many food-related policies have been implemented in the past, especially regarding schools. However, policy interventions are not as effective compared to other interventions. In a study conducted in Connecticut, two main conditions were observed: nutritional and physical, which are

both key elements in combating obesity. After the study had finished in three months, they noted “no significant interaction between the nutrition intervention” as well as “no significant interaction between the physical activity intervention” (Ickovics, 2019). Before this study, they surveyed the participants and asked how often they consumed healthy and unhealthy products. With the school even implementing healthier foods and physical activities, there has been little to no change. The group with the intervention had their BMI percentile increase just less than 1% (Ickovics, 2019). The main problem with policy interventions like this one is there is no guarantee that either the participants are telling the truth, are actually consuming healthy foods, or putting in good effort into the physical activity. Because of this, the results are not accurate and because of no guarantee that the participants will be consistent in their activity.

To provide additional evidence, in a study using a program intervention to improve children’s lifestyle and choices, there was “no significant effect on weight development, obesity incidence, or changes in diet quality” (Gomez, 2018) after it was conducted. Combating obesity is most effective when the individual is the direct or primary decision maker. While policy interventions are a great way to help the community as a whole, it is difficult to maintain and study any improvement without consistency.

Major Contributors: A Summary

The Health Belief Model (Figure 1) guides our understanding of individual and collective health behaviors, emphasizing the interconnectedness of factors at various levels. Family influence, access to resources, and policy advocacy emerge as key contributors, requiring targeted interventions to address barriers and disparities. The comprehensive social-ecological model serves as a roadmap for developing effective strategies across multiple



dimensions of influence. These strategies can be effectively adopted to build group collaboration and social support networks. These systems can help strengthen a community and create positive behavior changes that can serve as a preventative measure or supportive measure for individuals who are predisposed to higher rates of an obesity diagnosis. As mentioned before, policy-based interventions don't have an efficient action compared to the other interventions. The

perceived benefits are not always accurate, as it is based solely on the individual abiding by the policy. Because there is no guarantee that the individual will follow-suit with the policy, there is very little action regarding the model. While all types of factors are beneficial to our understanding and improvement, different communities benefit differently depending on the intervention implemented.

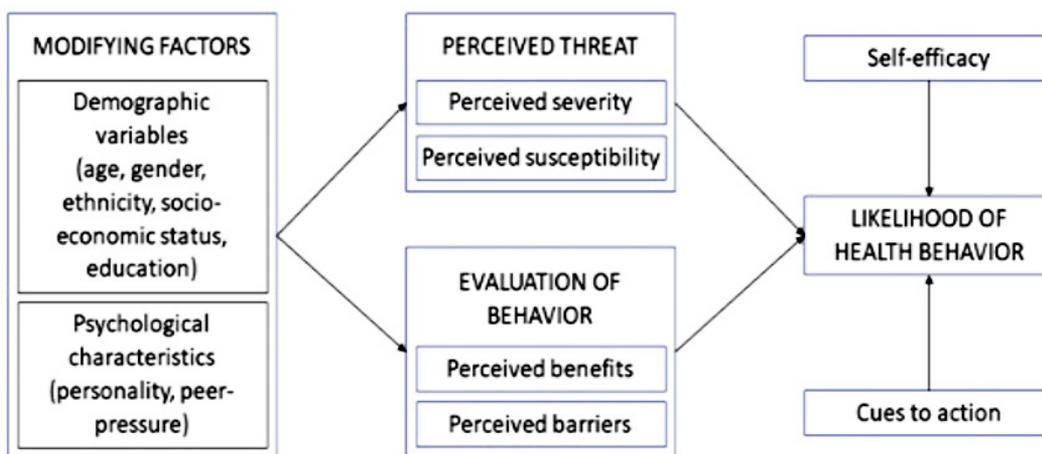


Figure 1: Health Belief Model
Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the health belief model. Health Educ Q. 1988;15(2):175-183.

Potential Solutions

Proposed Program or Intervention

While going through the different interventions, it was evident that the community interventions would best address the health topic of obesity in low-income communities. Obesity is a vulnerable topic, a topic that has the trend of lack of knowledge or misinformation. To combat that, intervening at the community level had a trend of working. Connecting to the trends seen in community interventions, it would seem that having interventions focused on community hotspots would create the best outreach. On top of that, having the support of community leaders within the hotspots would aid in outreach as well. These aspects would be effective because the intervention communication would be on

the level of the community, it would be in places that would not be out of the way and convenient for the individuals.

To analyze interventions based on these concepts, there needs to be engaging community programs implemented that are little to no cost. This could include having community gardens to provide access to fresh produce, cooking classes to increase skills to prepare healthier options, or workshops and fairs targeting different health topics to educate and raise awareness. It is important to address these interventions through several different mechanisms to provide a broader outreach. These programs can be effective by creating an environment that is supportive in order to facilitate and foster healthier lifestyle choices.



Egan

Considerations for Implementation

To have an effective intervention, there needs to be some important considerations during the implementation of the intervention. For an intervention related to educating people about obesity in low-income communities, it is important to format the intervention within the context of the community. To connect to the context of low-income communities, implementations should assess the locations that tend to be a hotspot. Some examples of community hotspots include, but are not limited to, grocery stores, schools, and post offices. It is also important to get input from people within the communities because they are going to provide pivotal insight for forming the intervention. The PRECEDE model involves predisposing, reinforcing, enabling constructs in educational/environmental diagnosis, and evaluation in order to represent the activity that leads up to an intervention. Following the PRECEDE steps of the PRECEDE/PROCEED framework of forming interventions would provide helpful steps in gathering a wide range of information for the considerations of the intervention.

On top of the models, it is also important to consider implementing quantitative, statistical, data and qualitative, non-statistical, data. To connect to an intervention related to educating the community, quantitative data could include having a “yes” or “no” questionnaire to collect information about basic trends of lifestyles. Not only questionnaires can be done, but open-ended interviews could be conducted as well. These open-ended interviews would bring in qualitative data about the inside view of the community. In having both types of data considered, more perspectives and information will be considered when planning and implementing the intervention.

Review of Program Effectiveness

While bringing in information and forming the intervention is pivotal, the evaluation of

effectiveness needs to be assessed as well. All results, whether good or bad, are vital results that are needed to adapt the current intervention and format future interventions. In order to know whether the intervention works, the PROCEED phases of the PRECEDE/PROCEED framework is a helpful aid in evaluating the effectiveness of an intervention. Some steps that could be taken to help evaluate the effectiveness of the intervention would be to track attendance at community events and talk to people within the community. and provide a follow-up with them to get their input. Overall, the intervention would focus on educating the community, so having good outreach is important to creating the first steppingstone to a healthier community.

When implementing an intervention, researchers must also consider the culture and environment of their targeted communities. An intervention should be both result-oriented and collaborative with community workers. The intervention should implement a balance between the designed concept and its relevance to the community. By considering different factors such as culture, and environment, interventions can engage the target community. This will encourage continued use if the intervention proves effective. Data collected should also be evaluated by both researchers and community workers. To assess the effectiveness of the intervention and whether the resources required to continue the intervention are worth the results. Community communication and collaboration will help adapt the intervention to improve effectiveness and implementation.

Potential Impact

The final aspect to consider when implementing an intervention is the potential impact, the impact is the whole reason for the intervention in the first place. If there was an intervention launched that contributed to educating the community, it would matter because education is extremely powerful. Education is the first steppingstone, the foundation, of many things



which is why the intervention is important. Regarding whom it would help, an intervention related to education would help many people within the communities. Once one person gets a piece of information, it tends to be spread to those people around them and then spread again. Information is a powerful thing that can spread like wildfire in a thriving condition. In gaining knowledge, individuals could feel more empowered to implement change, make informed decisions, and navigate through life more aware.

Acknowledgements

The beginning work of this article was part of a group assignment for the class: Community Health Promotion and Communication. It is necessary to acknowledge the help of these group partners: Matthew Ly, Chad Williams, and Shamsa Y. They have given the author, Halle Egan, permission to further the work and writing on this paper.

References

- Byrd, A. S., Toth, A. T., & Stanford, F. C. (2018). Racial Disparities in Obesity Treatment. *Current obesity reports*, 7(2), 130–138. <https://doi.org/10.1007/s13679-018-0301-3>
- Candib L. M. (2007). Obesity and diabetes in vulnerable populations: reflection on proximal and distal causes. *Annals of family medicine*, 5(6), 547–556. <https://doi.org/10.1370/afm.754>
- Deckro, G. R., Ballinger, K. M., Hoyt, M., Wilcher, M., Dusek, J., Myers, P., Greenberg, B., Rosenthal, D. S., & Benson, H. (2002). The evaluation of a mind/body intervention to reduce psychological distress and perceived stress in college students. *Journal of American College Health*, 50(6), 281–287. <https://doi.org/10.1080/07448480209603446>
- Gómez, S. F., Casas Esteve, R., Subirana, I., Serra-Majem, L., Fletas Torrent, M., Homs, C., Bawaked, R. A., Estrada, L., Fíto, M., & Schröder, H. (2018). Effect of a community-based childhood obesity intervention program on changes in anthropometric variables, incidence of obesity, and lifestyle choices in Spanish children aged 8 to 10 years. *European journal of pediatrics*, 177(10), 1531–1539. <https://doi-org.offcampus.lib.washington.edu/10.1007/s00431-018-3207-x>
- Guerrero, A.D., Glik, D.C., Jackson, N.J., Whaley, S.E., Belin, T.R., Slusser, W., Chung, P.J. (2023). A Hybrid Mobil Phone Feasibility Study Focusing on Latino Mothers, Fathers, and Grandmothers to Prevent Obesity in Preschoolers. *Maternal and Child Health Journal* 27, 1621–1631. <https://doi.org/10.1007/s10995-023-03700-w>
- Ickovics, J. R., Duffany, K. O., Shebl, F. M., Peters, S. M., Read, M. A., Gilstad-Hayden, K. R., & Schwartz, M. B. (2019). Implementing School-Based Policies to Prevent Obesity: Cluster Randomized Trial. *American journal of preventive medicine*, 56(1), e1–e11. <https://doi-org.offcampus.lib.washington.edu/10.1016/j.amepre.2018.08.026>
- Lee, R. M., Rothstein, J. D., Gergen, J., Zachary, D. A., Smith, J. C., Palmer, A. M., Gittelsohn, J., & Surkan, P. J. (2015). Process Evaluation of a Comprehensive Supermarket Intervention in a Low-Income Baltimore Community. *Health Promotion Practice*, 16(6), 849–858. <https://doi.org/10.1177/1524839915599359>
- Messito, M.J., Mendelsohn, A.L., Katzow, M.W., Scott, M.A., Vandyousefi, S., Gross, R.S. (2020). Prenatal and Pediatric Primary Care-Based Child Obesity Prevention Program: A Randomized Trial. *Pediatrics*, 146(4), 1–11. <https://doi.org/10.1542/peds.2020-0709>
- Nianogo, R. A., Mueller, M. P., Keeler, B., Kreuger, K., Nhan, L. A., Nobari, T. Z., Crespi, C. M., Osgood, N., Kuo, T., Prelip, M., & Wang, M. C. (2022). Evaluating the impact of community interventions on childhood obesity in populations living in low-income households in Los Angeles: A simulation study. *Pediatric Obesity*, 17(11), 1–10. <https://doi-org.offcampus.lib.washington.edu/10.1111/ijpo.12954>



Egan

Willis CD, Saul J, Bevan H, Scheirer MA, Best A, Greenhalgh T, Mannion R, Cornelissen E, Howland D, Jenkins E, Bitz J. Sustaining organizational culture change in health systems. *J Health Organ. Manag.* 2016;30(1):2-30. doi: 10.1108/JHOM-07-2014-0117. PMID: 26964847. <https://pubmed.ncbi.nlm.nih.gov/26964847/>



CORES, CONSUMPTION, AND DIGITAL AESTHETICS

Luis Cruz

ABSTRACT: Following the COVID-19 pandemic, the social media platform TikTok saw a massive influx of new users, a large chunk of whom were Gen-Z. Following stay-at-home orders, many struggled to find ways to connect with others. Feeling disconnected and alienated from the world, many turned to social media platforms as an escape. Four years have passed since the pandemic, and Gen-Z now reigns supreme as the largest user base of TikTok. Perhaps coincidentally, the past four years have also seen surging reports of feelings of isolation and loneliness in Gen-Z. Remnants of the pandemic can be seen in Gen-Z's struggle to understand their role in the world around them. One basis for this struggle comes from a lack of personal understanding. In a cycle all too familiar, Gen-Z has been turning to social media apps as a temporary fix for a complex issue. By analyzing trends on social media, we might be able to gain insight into how this demographic has been coping with a lack of self-understanding. In a never-ending sea of content, microtrends and aesthetic-cores stand out as a way for those lacking self-identity to find temporary comfort in belonging. But is this persona-escapism at all practical in the long run?

Introduction

Being born from 1997 to 2012, Generation Z makes up over 40% of all users on TikTok (Krisadhi et al., 2023). Gen-Z, having a considerable influence on the app, is responsible for a lot of the trends on the app that become popular. Like all trends, nothing on the app stays relevant forever. Like a never-ending game of whack-a-mole, when one trend dies out, a new one arises to fill its place. A repeated and exacerbated cycle of life and death dictates the relevancy of trends. So much so that the term “microtrend” has sprung up to describe the ever-decreasing shelf-life of trends that rise to prominence on the app in a short amount of time (Lee, 2022). Though “microtrend” as a label can be used to describe a variety of subjects, the label sees widespread usage to describe fashion-related crazes. This should come as no surprise, as perhaps no industry plays into the hands of “trends” quite like fashion does or can.

Trend Dictatorship

Like TikTok, the world of fashion has also seen an acceleration in its trend cycle. Researchers Andrew Reilly and Jana Hawley note a shift in trend-cycle dictation from the hands of brands to consumers as opening the door for fast-fashion brands to prevail over traditional brands—due to their ability to pump out clothes at a faster rate. (Reilly et al., 2018). A shift in the power to dictate trends forces the brand to wait on the whims of the consumer. And to the dismay of the traditional brand, it is never kept waiting too long. The fast-fashion brand, however, is more than eager to satisfy the desires of the consumer.

The rise of social media (and its usage among younger audiences) coincides with this shift in the fashion industry. As the traditional brand got phased out, so did the traditional consumer. The traditional consumer has evolved into one defined by their youth and connection to the internet. What prevails among these young natives of the internet is a virulent hunger for “new”—a hunger that’s appeased (but never quite fulfilled) by consumption, which gives life to microtrends (Reilly et al., 2018). Reilly and



Cruz

Hawley use the term “attention-deficit fashion” to describe the internet-induced accelerated life-and-death cycle of fashion trends. It becomes clear that microtrends are the direct result of a new age of consumerism—one where youth and impulsivity are key elements.

Cores, Conformity, and Coquette:

The impulsive nature of Gen-Z’s consumption in terms of fashion can be attributed to the fear of falling out of what’s “in-trend” and, in turn, feeling left behind by the world (Sasmista et al., 2021). Feeling disconnected, one might go to great lengths to reobtain a sense of relatability towards a social group to manufacture feelings of inclusion (Lyngdoh et al., 2022). In the world of microtrends, participation presents itself as a remedy to this fear of missing out. Participation allows for a sense of relatability to be momentarily reobtained. It is once again lost, however, when the trend falls out of style. So, to prolong these feelings of inclusion, one might engage in a constant cycle of participating in microtrends—not due to genuine enjoyment but out of perceived necessity.

An extension of microtrends can be seen in the form of aesthetic-cores. “Cores” are amalgamations of hobbies, personality traits, and (most importantly) fashion styles that get lumped together into one easily digestible and presentable package. For something to become an aesthetic-core, there needs to be something (an identity) that has been deemed worthy enough of being replicated. The assessment of “worthiness” is one based purely on aesthetics. Substance matters little in deciding what becomes an aesthetic-core, as in the process of mass-replication, substance is inherently lost. These aesthetic-cores can be interpreted as new-age digital forms of youth subcultures. Typically, in youth subcultures, individuals contort their own identity to fit in better with the values and behaviors expressed by the subculture (Batat et al., 2019). Rather than attempting to fit into a subculture, Gen-Z attempts to fit in with the values of whatever aesthetic-core they like most. However, in this process of building self-identity through the deconstruction and modification of one’s own personality, authenticity of identity becomes

lost (Gaitan, 2020). To fully assimilate with an aesthetic-core means to rid yourself of individuality, in preference for a predetermined set of ideals and values.

“Coquette” is an example of an aesthetic-core that has gained popularity on social media (Kenzie, 2024). A modern spin on aesthetics derived from Vladimir Nabokov’s *Lolita*, coquette places high emphasis on perceived youthful femininity (Lanigan, 2023). Pink bows, ballerina flats, and innocence are at the core of the aesthetic. One who identifies with such an aesthetic does not concern themselves with pointless online discourse or real-world conflicts. Rather, they enjoy frolicking in open fields, baking and enjoying pastries, and gossiping with friends. To identify with such an aesthetic is, in a way, an escape from the pressures of the world through an aesthetic entirely based on escapism. After all, who has time to worry when there are cakes to be enjoyed and beautiful picnics to attend? It is worth clarifying that these activities on their own are not indicative of the character of an individual. What an aesthetic-core, such as coquette, represents differs from how an individual may choose to interpret and represent it. Aesthetic-cores are not based on reality; rather, they are based on a romanticized version of reality. So, when aesthetic-cores are blindly embraced (that is, without interpretation), they can become interpreted as a form of digital escapism. In such (extreme) cases, the individual prefers an idealized version of reality over reality itself.

Conclusion

The point of this paper is not to completely disregard the comfort one might find in social media; rather, it is to point out that complete reliance on these platforms as a substitute for identity is not practical in the long run. Microtrends, aesthetic-cores, and similar trends should only serve as a basis for one to build their identity. Complete association with these entities deprives an individual of the genuine aspects of building character (Gaitian, 2020). In the struggle to find self-identity, Gen-Z should grow to be cautious of the cycle of impulsive, consumptive, and wasteful behaviors that is encouraged by these trends (Harahap et al., 2023). When fostering a sense



of identity, authenticity should be prioritized over the desire to fit in. Authenticity, in this context, refers to the question, “How genuine is my enjoyment of participating in these trends?” Fostering a sense of identity should be based on the individual’s personal values and should not be undermined by the “trendiness” of its components.

Works Cited

Anggun Sari Sasmita, and Nila Sartika Achmadi. “The Popularity of TikTok and the Implementation of the AISAS Model on Marketing Communications Through TikTok.” *Manajemen Bisnis* (Online), vol. 12, no. 1, 2022, pp. 62–76, <https://doi.org/10.22219/mb.v12i01.17863>.

Batat, Wided, and John F. Tanner. “Unveiling (In) Vulnerability in an Adolescent’s Consumption Subculture: A Framework to Understand Adolescents’ Experienced (In)Vulnerability and Ethical Implications.” *Journal of Business Ethics*, vol. 169, no. 4, 2021, pp. 713–30, <https://doi.org/10.1007/s10551-019-04309-2>.

Gaitán, Leandro. “The Commodification of Personality: Human Enhancement and Market Society.” *Human Affairs* (Bratislava, Slovakia), vol. 31, no. 1, 2021, pp. 40–45, <https://doi.org/10.1515/humaff-2021-0003>.

Harahap, Rahma Hayati, et al. “Consumptive Behaviour of Gen-Z and Identity in the Digital Era.” *Jurnal Sosiologi Andalas*, vol. 9, no. 2, 2023, pp. 183–92, <https://doi.org/10.25077/jsa.9.2.184-193.2023>.

Krisadhi, Risa, et al. “Relationship between Gen Z’s Personality and Motivations with TikTok Usage During Pandemic.” *Mediator* (Bandung), vol. 16, no. 2, 2023, pp. 377–97, <https://doi.org/10.29313/mediator.v16i2.2665>.

Lanigan, Róisín. “Why Are Teenagers Obsessed with Pretty Coquette Picnics — and Why Are so Many Adults Copying Them?” *FT.Com*, 2023.

Lee, Ashley Y. “Microtrends: The Implications of What You See on Your ‘For You’ Page.” *The Harvard Crimson*, 2022.

Lyngdoh, Teidorlang, et al. “Social Isolation and Social Anxiety as Drivers of Generation Z’s Willingness to Share Personal Information on Social Media.” *Psychology & Marketing*, vol. 40, no. 1, 2023, pp. 5–26, <https://doi.org/10.1002/mar.21744>.

Reilly, Andrew, and Jana Hawley. “Attention Deficit Fashion.” *Fashion, Style & Popular Culture* (Print), vol. 6, no. 1, 2019, pp. 85–98, https://doi.org/10.1386/fspc.6.1.85_1.





MUSEUMS AS WUNDERKAMMER AND COMMUNITY CENTERS: A COMPARATIVE ANALYSIS

Layla Youssef

ABSTRACT: Museums are inherently experiential locales wherein objects are imbued with specific meanings that influence the ways visitors understand the wider world around them. In the context of cultural and historical objects, their presentation in exhibits greatly contributes to public perceptions of specific cultures, communities, people, and identities. Wunderkammer, or cabinets of curiosities, are prime examples of this, wherein the random organization and curation of objects based on their perceived exoticism depicts cultures outside of the West as strange, mysterious, and, at worst, dangerous. Therefore, it is imperative that museums institute inclusive and thoughtful exhibit designs that uplift and support represented cultures rather than diminish them. These ideas are explored through comparative analyses of exhibits at the Seattle Art Museum and Wing Luke Museum of the Asian Pacific American Experience and their incorporation of Wunderkammer-inspired and community-based exhibition models.

Museums can act as a means of intellectual exploration and knowledge gathering, encouraging visitors to recognize and gather new understandings of what differs from their own knowledge backgrounds. On the other hand, museums can also act as a tool for preservation and representation, employing techniques made to inspire action in the visitor as opposed to merely awe. Though equally intriguing in their own respects, museums like the Seattle Art Museum (SAM) and the Wing Luke Museum of the Asian Pacific American Experience utilize the space and ideologies behind the process of museum work to impart varying values and purposes onto the viewer. Therefore, different forms of display can have varying impacts on museum visitors' interpretations of the pieces they are viewing, in turn influencing the ways in which they understand their origins and significance.

Wunderkammer (German for "wonder room"), also commonly referred to as cabinets of curiosities, are a collection of rare and unique objects ranging from historical objects,

artworks, heirlooms, and scientific specimens (Halsey Institute of Contemporary Art, 2021). Gaining popularity in 16th century Europe, the goal of these collections was to tell spectators a story about the world through a specific selection of objects. These stories were heavily influenced by the perspective of the owners of these collections, usually reflecting colonial and Orientalist themes in an attempt to impress visitors through objects' perceived strangeness and exoticism. These collections also had the goal of earning their owners fame and status, especially amongst European nobility. By seeking the rarest objects to tell intriguing stories, many scholars (both experts in their fields and not) took designing Wunderkammers as an opportunity to obtain wealth and climb the social ladder. As a whole, scholars wished to transfer the whole of the world into the interior of a museum, making the inaccessible accessible (Olmi, 2004).

The pieces residing in SAM are housed within the usual facets of a modern art museum: bare white walls, high squared cathedral ceilings,



Youssef

blue-shirted security guards, and an impressive piece of artwork suspended from the ceiling, all culminating into a resolute invitation into the world of art and culture. The stark plainness of the museum's architecture serves to highlight the pieces situated throughout its meandering and seemingly disconnected hallways, homing the visitors' attention and interest straight to the pieces themselves. The means of walking through the museum hallways offers the sense of an ambiguous connection between the exhibits, especially in the 4th floor cultural and historical artifacts sections. Each exhibit links to the other in abstract ways, blending from African wooden carvings, to silver inkpots etched with Islamic scriptures, to ancient Egyptian jewelry, to ancient Greek vases. In walking through SAM, in that sense, the architecture exists as a quiet director of the visitors' attentions, subtly guiding their experience without encouraging a specific interpretation of what is being viewed.

The Wing Luke differs in both visual stature and purpose. Built by and for Asian and Pacific Islander communities, the interior reflects the image of a lived-in space, with exposed brick walls, wood-paneled ceilings, a large wooden staircase, and several hand-crafted pieces of décor dangling from the ceiling and slung across the walls. The main rotating exhibit is featured on the first floor and positioned slightly to the left of the visitor's line of sight upon first entering the museum. Following up the large staircase, there is a long hallway lined with entryways into meandering exhibits. On the right, an exhibit featuring modern art from AAPI artists. On the left, histories of Asian communities, including their migration journeys to the United States and the common, everyday items they brought with them. There is also a line of exhibits displaying cultural belongings of underrepresented Asian communities, consisting of Filipino, Burmese, Cambodian, and Desi objects in individually designed spaces.

SAM's focus in its display is to inform on the basis of awe and inspiration. The imitation

of a 16th century Italian stüa with its oakwood paneling, two lite casement windows, and simulated sunlight immerses and educates visitors on Renaissance-era Italian art and architecture through visual cues. There are no signs and there is no audio explaining what the visitor is walking through; they can peer into every corner of the room, admiring the detailed woodwork and leave with either a mere satisfaction of being transported to a romanticized time past, or inspiration to learn more about what they have just witnessed. This emphasis on visual cues is also evident in SAM's modern art and photography exhibits, where movement throughout a room can reveal the storytelling techniques at play.

The arrangement of exhibits such as Carrie Mae Weems' "Kitchen Table" series rely on the visitors' trained eyes to notice the beginning of their story and follow through to the end. Visitors enter the spacious Weems exhibit to see a collection of black and white photographs



Figure 1: A replica of a 16th century Italian stüa at the Seattle Art Museum. Photo by Layla Youssef.



Museums as Wunderkammer

spread across three walls. As visitors follow along each wall, moving counterclockwise, they follow the visual story of a woman entering a relationship, being left by the man she loved, then traversing her heartbreak through female friendships and caring for her daughter. As visitors maneuver through this anonymous woman's search for solace, they turn to the final fourth wall, which feature individual portraits of her appearing content with herself, enjoying the activities she had been doing with her partner and her other relationships solo. This aligns with

SAM's focus on interpretation being left to the visitor as opposed to more direct messaging of what the visitor should expect from their time in this exhibit.

Contrary to SAM's approach to object representation, the Wing Luke's focus lies in social justice and a call to action. Through a combination of historical objects, cultural belongings, and interpretive settings, the Wing Luke encourages visitors to interpret museum spaces through the appreciation of culture and



Figure 2: A teddy bear and drawings by a Japanese American child living in a prison camp displayed at the Wing Luke Museum. Photo by Layla Youssef.

the recognition of prevalent social issues, all combined to motivate action. This approach to exhibit design is best exemplified in the exhibit *Resistors: A Legacy of Movement* from the Japanese American Incarceration. Designed to bring attention to the oft-overlooked atrocity that was the imprisonment of Japanese Americans during WWII, the exhibit utilizes primary source material such as photographs, letters, interviews, and personal items from survivors of the prison camps to illustrate and inform visitors of the full story of their imprisonment. A teddy

bear belonging to a young child living in the camps, suitcases piled haphazardly atop each other, a narrow hallway filled with photos taken of families before they were forcefully removed from their homes, a room lined with cots and outlines of bodies that rested upon them; these objects all amalgamate into an experience that uses pieces as a recognition and memorial of an underrepresented history local to Seattle and Japanese communities. It visually portrays the racism and nationalism embedded within the federal policies that resulted in this history



Youssef

and the ways in which these ideas continue to proliferate through current U.S. policies regarding immigrants, refugees, and minority communities.

In analyzing SAM and the Wing Luke Museum, it becomes clear the differences in approaches to exhibit design and interpretation for the viewer, as well as the apparent overall mission of these museums as understood through their exhibits. In Andrew McClellan's article "Nationalism and the Origins of the Museum in France", he examines how practices of comparison and critical mass, or the concentration of a nation's artistic progress over time, are an emphasis of cultural and moral superiority that assisted in developing French nationalism and pride over the rest of Europe (31). The museum was designed as a means of developing national pride, leading to the intense reverence for these art pieces as treasures and therefore, their protection (29). In this sense, both SAM and the Wing Luke are founded on the basis of preserving history for communal pride, but for different missions. As SAM seeks to preserve and protect what is being lost to time in a tangibly destructive sense, the Wing Luke preserves and protects what is being lost to time as generations die and communities shift, their history disappearing and shifting with them.

Similarly, James Clifford in *The Predicament of Culture* describes how Richard Handler identifies that "'having a culture,' selecting and cherishing an authentic collective 'property' . . . presupposes acts of collection, gathering up possessions in arbitrary systems of value and meaning. Such systems, always powerful and rule governed, change historically" (217). This brings into question how museums such as SAM and the Wing Luke maintain and add to collections on the basis of systems that continually reinforce hegemonic power structures formulated during European colonialism and intense nationalism across the Western side of the continent. SAM, which is more traditionalist in its object presentation with

glass cases and minimal decor, acknowledges the power structures at play through descriptions on plaques, but does not utilize its exhibits to recognize the existence of these structures or actively work against them. It still holds the values and design of the Wunderkammer, though significantly more discreet and on a larger scale. The Wing Luke, which is community organized, only uses objects offered by local Asian and Pacific Islander communities in exhibits they desire to be made, in turn removing the arbitrary systems of value and meaning that Clifford describes and forming new systems that encourage community growth and support through culturally significant items.

While examining the difference in mission between these two museums, it begs the question of how the organization and potential reorganization of objects influence the ways that visitors interpret the messages, communities, histories, and cultures that are being represented. Objects in museums become representatives of a group of people's culture and history, and need to be treated as such, with full consideration of how their presentation imparts meaning onto viewers. With these understandings, it's imperative for any museum tending to culturally significant objects to display these objects in ways that uplift a community's cultures and histories. Museums need to abandon hegemonic power structures such as Wunderkammer to better serve and educate visitors. The lack of clarity and context within organizational structures like Wunderkammer can result in assumptions about the cultures and histories they're seeing represented through objects on behalf of the viewer, contributing to common stereotypes. Additionally, the focus on prestige as opposed to education in utilizing objects only reinforces colonial power structures, and contributes to the exoticizing of cultures from regions outside the West.

Through the process of comparative analysis, it becomes clear the ways in which design and placement influence how museum visitors



interpret histories and cultures represented in exhibits. SAM harnesses sensibilities of wonder and romantic curiosity within an audience before emphasizing strides in ethical representation in their museum. The Wing Luke takes a different approach, presenting a strict mission and theme in their exhibits that seeks to support underrepresented communities and/or advocate for systemic changes to combat prominent social issues. In essence, SAM and the Wing Luke are two sides of the same coin. The museums are holders of knowledge and public-facing representations of history and culture, representing through fascination and rumination, all in a means to educate visitors through physical connections to the past.

Works Cited

- Cantey, Carsyn. "What are wunderkammers? – Halsey Institute of Contemporary Art." *Halsey Institute of Contemporary Art*, 12 June 2021, <https://halsey.cofc.edu/learn-blog/what-are-wunderkammers/>. Accessed 30 December 2023.
- Clifford, James. *The Predicament of Culture: Twentieth-Century Ethnography, Literature, and Art*. Harvard University Press, 1988.
- McClellan, Andrew. "Nationalism and the Origins of the Museum in France." *Studies in the History of Art*, vol. 47, 1996, pp. 28-39.
- Olmi, Giuseppe. "Science-Honour-Metaphor: Italian Cabinets of the Sixteenth and Seventeenth Centuries." *Grasping the World: The Idea of the Museum*, Ashgate Publishing Company, 2004, pp. 129-143.
- Youssef, Layla. "A replica of a 16th century Italian stüa at the Seattle Art Museum." 5 August 2022.
- Youssef, Layla. "A teddy bear and drawings by a Japanese American child living in the prison camps displayed at the Wing Luke Museum." 28 January 2023.





IMPACT OF THE RELATIONSHIP BETWEEN PATIENT AND DOCTOR ON HEALTH DISPARITIES FOR THE HISPANIC CULTURE: A QUALITATIVE STUDY

Karla Alvarez

ABSTRACT: This paper delves into the healthcare experiences of the Hispanic community in the United States, aiming to understand the impact of health disparities and the level of trust in healthcare professionals. The introduction provides an overview of Hispanic culture and its distinct practices, including reliance on home remedies and dietary supplements. It also highlights the lack of Spanish-speaking healthcare providers and the resultant challenges in communication and trust. The research question explores the relationship between patient-doctor trust and health disparities within the Hispanic community. Employing a phenomenological qualitative approach, the study will gather data through interviews and surveys with Hispanic cancer patients in Washington state. Analysis will focus on themes related to trust, experiences with healthcare, barriers to access, and views on the healthcare system. Ethical considerations ensure participant anonymity and confidentiality. The study's significance lies in addressing the healthcare disparities faced by minorities, particularly Hispanics, and advocating for changes in the healthcare system to improve accessibility, trust, and patient outcomes. Limitations include the study's geographical focus and sample size. Future research directions may explore health disparities in other minority groups and quantitative assessments of the impact of reducing disparities in healthcare. Ultimately, this study contributes to ongoing efforts to create a more equitable and inclusive healthcare system for all individuals, regardless of race or ethnicity.

Introduction and Background

“Do you speak Mexican?” If I had a quarter for how many times I got asked that in my lifetime, I would be a millionaire. I do not speak Mexican, I speak Spanish. No, I am not from Mexico either. My parents are from Honduras which makes me a Honduran American. When asked for my ethnicity, I say that I am Hispanic, and according to the Cambridge Dictionary, the definition of Hispanic is from or connected with Spanish-speaking countries, especially those in Latin America, or having parents or grandparents from these countries (2022). I have noticed that my parents are not just connected with these countries by language, but also by tradition, food,

religion, the way they go about daily activities, home remedies, and their way of living. My parents raised me in a Catholic household, not the traditional way. However, I did not go to a Catholic private school; However, I did go to communion classes and church every Sunday and every holiday, even church events like Lent, Ash Wednesday, etc. What I have noticed is that Hispanic culture is widely different from that of non-Hispanics. Hispanics can be perceived as loud, caring, friendly, hardworking, strict, great cooks, kind, ready for anything, driven by God and prayer, having a variety of and savory food, and more. Some White Americans can be perceived as quiet, not a fan of working, lazy, caring in certain situations, racist, sexist, and



Alvarez

only using salt and pepper. Most do not go to church or believe in God and eat a lot of finger foods like hamburgers, hotdogs, and pizza.

Though most people get the Flu, COVID, Chickenpox, and other generic illnesses, we see that Hispanics have more frequent stomach problems, but for them, those illnesses are not very long-lasting, only about three to five days (Harvard, 2020). Those of non-Hispanic descent have those illnesses from five to seven days, but that is because “(63%) of Hispanics are higher users of dietary supplements, home remedies, and curanderos” (Najm et al, 2003). Some Hispanic remedies often used are inhaling or rubbing infected areas with Vicks VapoRub (menthol), lots of rest, taking vitamins (C, D, Zinc), drinking herbal tea every four hours for any sickness you have, and eating either chicken noodle soup or just chicken broth. Depending on the illness, spice is added to the soup to clear up sinuses and loosen the phlegm from within. It's believed to work for many sick Hispanic adults and children by working on the body inside out. This tea helps keep the body warm on the inside and helps the immune system fight against sickness, and the soup gives people enough energy to power their body.

The lack of Spanish-speaking or Hispanic doctors in the healthcare system leads to many misunderstandings between the older generation Hispanics and those who know English as a second language. Only 5.8% of doctors in the U.S. identify as Hispanic (AAMC, 2018). This reduces how many times people see their doctor annually because it creates a language barrier between the Hispanic community and their primary doctors and the healthcare system. On average, about one in three Hispanics will be diagnosed with cancer in their lifetime (American Cancer Society, 2021). Due to language barriers, there is a low percentage of Hispanics that do cancer screenings (Gonzalez et al, 2020). With low cancer screenings, many Hispanics do not know that they have cancer and can develop more chronic cancer. There

may be low numbers in screening because many Hispanics do not have the money or enough sick days to set aside time to go to the doctor.

I have not gone to the doctor very often because the last time, I was believed to have acid reflux and was given medication that caused the symptoms to worsen after the first week or two of taking the medication. I had to stop taking it immediately and find a vitamin supplement while changing my diet for my original symptoms to subside. After that day, whenever medication was prescribed to me, I did not take it. I always found other dietary supplements or home remedies to cure my symptoms. This experience caused my trust issues with my doctor because she had gotten the diagnosis wrong, and the internet helped me more accurately. As an experience many other Hispanics can relate to, they believe that dietary supplements and home remedies are more effective, and when paired with prayer, are the best way to heal the body. My parents have ingrained in me that if you are dying or feel like the supplements or remedies are not working, then go to the doctor, but so far, home remedies have saved me and my family from many trips to the doctor.

Trust and confidence are important for a doctor to help their patient to understand why they are prescribed medication or need to be on a diet. “Trust in the primary care physician was strongly associated with patient satisfaction and adherence to treatment within the primary care setting” (Kaiser et al, 2011). Without trust, many will not show up to appointments, and many may not even set up appointments that are meant to be annual (Kaiser et al, 2011). They choose not to go, and we see that when it comes to Hispanic patient-doctor relationships, it's widely believed that trust has declined over the past 40 years in most parts of the US, including healthcare (Armstrong et al, 2007). If we compare skeletons to each other, we are still made of the same number of bones, made of muscle, and have the same human duties;



Patient and Doctor on Health Disparities for the Hispanic Culture

however, when it comes to medical problems, not every medication, therapy, or consultation should be the same because each body reacts differently. The pain scale given at doctors' offices is made to work for the non-Hispanic (white) community and is still being used for those who are not part of that community, leading to misdiagnosis, misunderstandings, and negative health experiences. Due to previous negative health care experiences, Hispanics have low trust with healthcare systems (Schwei et al, 2014). When anyone goes to the doctor, they want to be given the right medication if needed or recommended activities. They want a deeper connection with the doctor, and they want doctors who have compassion, are caring, have human interest, and kindness. If those are absent, Hispanics will not feel safe sharing any information (Julliard et al, 2008). Therefore, there needs to be a change in how the healthcare system helps and views pain when it comes to minority groups that are not non-Hispanic.

We do not know why the healthcare system is so uneven, wasting 760 billion to 935 billion dollars to help those of one community more than it helps others (Peterson Foundation, 2023). Not many Hispanics are interviewed or asked questions about their treatment in the healthcare system. There are many articles on minority groups and the disparities between them and the majority groups (non-Hispanic whites). We know that there are fewer Spanish-speaking doctors, and we know that there are many people who have no money to go to the doctor or choose to use home remedies and dietary supplements; we also know they do not trust their doctors. We know that there are not enough translators that work within the healthcare system as well, with the few that are available being spread thin and overburdened by the number of patients who need them. We also know that money plays a big role in whether people go to the doctor because it costs an arm and a leg for some.

No research has shown how Hispanics feel about going through chemotherapy, and we do

not see many Hispanics participating in surveys or interviews. There is no research on how Hispanics feel about going through the system and whether going through the system has impacted them greatly or not. The world cannot start to change if no one speaks up. When it comes to healthcare, through the years, we see that everything is changing, but there are still some institutional problems that have not been touched or tried to save without being knocked down to minimal importance. Making a change in the health system would lead to a more welcoming environment for those minorities, including Hispanics. It would also create a better way for those who do not have access to it to get the help they need to stay up to date with their health and fix patient-doctor relationships. This will create better and more effective healthcare and treat and impact a wider audience without forcing anyone to do what they do not want to do.

Research Question and Hypothesis

In this experiment, we will determine the difference in the impact of health disparities on the Hispanic community and whether they trust their doctor. My main focus of this research project is to make sure that Hispanic voices are heard and that things start to change within the healthcare system to cater to minorities like Hispanics, African Americans, and Native Americans. Due to Hispanics being a minority and not usually in the news or being written about for cancer, not many people know that cancer is one of the leading causes of death among the Hispanic community in the US, accounting for 20% of deaths, the most common being breast, lung colorectal, and prostate cancer (American Cancer Society, 2022). Many of them refuse chemo or don't find out that they have cancer at all because they do not go see a doctor. They may not trust the doctor in their area or their primary care physician since some areas do not have Hispanic doctors or any other people of color as healthcare professionals, which could lead to misdiagnosis because the



Alvarez

professional will not deeply understand what the other is going through. There are different barriers they have to face, which include: if they have insurance, if they have transportation, if they have the money, or if they have time to get off work to go to an appointment. I want to study the impact of the patient-doctor relationship on the health disparities in the Hispanic community. From the perspective of the Hispanic community to understand more deeply what they have been experiencing, how they got to this point in time, and whether they trust their primary healthcare professionals. I will answer this question by using a qualitative study to understand participants' experiences and thoughts about the healthcare system. I predict that I will discover that those who have had negative experiences within the healthcare system have a low probability of showing up to doctor's appointments.

Design

I will be doing a phenomenological qualitative research study since trust between a patient and a doctor plays an important role in the healthcare system. I want to know the experience that Hispanic patients have with their doctors and if they trust them or the system after those positive or negative experiences. I want to find out whether their low trust in the healthcare system has caused them to have negative experiences with their doctor. I also want to know where there are health disparities at play and what barriers are stopping them from setting up an appointment and/or showing up to the appointment.

Sample population

I will be using convenience sampling at a cancer center because they will have been diagnosed with some type of stage 2 to 3 cancer. The population I will be studying is Hispanics in the state of Washington who have Spanish as a first language, are not from the United States originally, and are older than 20 years old. I will

interview 15- 20 people who meet the criteria. They will be emailed about the study, flyers will be posted within the cancer center to spread the word, and those who want to join can.

Operationalization

As we interview, some questions that may be asked are about the measure of pain they endure daily, how many decided to take prescribed medication, how many showed up to appointments, and what kind of remedies they used for treatment. What does trust mean to the Hispanic people, and what does the label doctor mean to them? How have they experienced the doctors before and how have they changed now? We will observe how they answer the questions, how their views have changed, what the culture is like, and how they treat certain situations. We will also ask how they feel after seeing a doctor, how cancer has affected their lives, and what they do about it.

Data collection

To collect data, I am going to interview each patient. I will ask open-ended questions about how they grew up, what they did when they got sick, if any of their family members had negative experiences with the healthcare system, what some barriers are that stop them from going to the doctor, how they feel about doctors in general, what kind of trust they have in the healthcare system, if their insurance pays, if they have insurance, and thoughts on how providers can improve for a better visit. The interviews will be one-on-one with bilingual researchers. It will be recorded and transcribed, translated into English, and then read over by two bilingual editors to create one universal translated interview. There will also be surveys written in both Spanish and English for those who are comfortable in either language or prefer one or the other.



Patient and Doctor on Health Disparities for the Hispanic Culture

Analysis

I will use coding and thematics to understand what my data tries to tell me by dividing all the commonly said words or phrases into distinct categories. The categories will be split between those who do trust their doctor and their experiences, those who do not trust their doctor and their experiences, whether they are positive or negative experiences, and whether they go to the doctor or not. I chose this approach because it will help me understand whether their trust is impacted by experiences with health disparities within the healthcare system. I expect to find that many Hispanics have negative experiences with not being understood, not having a welcoming environment, misdiagnosis, and not having the proper money to afford a doctor's visit. I may also find that some have no transportation, are not living around any clinics, or simply not have the time for a routine check-up or annual physical.

Ethical Considerations

I will have written a consent form stating that if they are to participate in my study, they will have their voices heard anonymously. With IRB approval, they will be able to edit any of what they said before the experiment. They will be able to speak up to solve any problems they see in the paper. To ensure confidentiality/anonymity, I will ensure all medical records brought into the study have been de-identified and used to calculate the greater community. When it comes to whether they trust their doctors, I will make sure that I will give them a survey that they can submit anonymously to the study. All interviewees will not be named in the paper. No one in the study should experience any backlash directly, but there is a low chance that the community as a whole may experience some unconsented personal opinions.

Significance

In the older generations, many minorities are not getting cancer screenings or checkups with their primary physicians because they would prefer to use "home remedies, and dietary supplements" (Najm et al, 2003). Others don't go because there is a language barrier, negative healthcare experiences, or a lower socioeconomic status which has caused mistrust between patients and their doctors. In the Hispanic community, one of the big causes of death is cancer, since they do not go to the doctor as much as they should. They only go to the doctor when they are close to dying or have a major health problem that they cannot solve with supplements, home remedies, or "curanderos" (Najm et al, 2003). Due to the low representation of Hispanics or other minorities in the healthcare field, many Spanish-speaking elderly cannot express themselves in English, and therefore, when they try to explain themselves to the doctor, will not get the full picture of what the possible diagnosis could be. This leads to misdiagnosis, giving the higher possibility of the prescribed medication causing additional suffering for the patient and doing more harm than good.

The pain scale given by non-Hispanic white doctors is not universal. The pain scale wasn't made to help minorities, it was meant to help non-minority communities describe their pain to the doctor. So, when a minority has different views on their pain than those of the doctor, there may be a disconnect in understanding, which could lead to a misdiagnosis. Primary care doctors only spend 12.5-15 minutes getting to know their patients, and diagnose them (RelyMD, 2019), which is not enough time to gain a deeper understanding of what the patient is suffering from or where they are coming from, making doctors' appointments ineffective and leaving them with a bill that they have to figure out how to pay. As the world goes through a pandemic over a virus that continues to make new variants that cannot be controlled,



Alvarez

there needs to be a better relationship between doctor and patient, and the health system needs to create a more effective, affordable, and welcoming environment for everyone. It gives the next generations the foundations to rebuild the relationship between minority groups and the healthcare system by working up a ladder that diminishes each of the health disparities one by one within the system.

Limitations

Some limitations of the study are that I will only be interviewing the Hispanic community that resides within the state of Washington. So, the data will not be reflective of the entire Hispanic community in the United States. I will only have a small sample of participants, and they will have multiple different experiences that could get mixed up within the interview since they will have to remember from memory. Since some of the interviews will be translated from Spanish to English, there may be words that are used that were not said within the interview or survey. To combat this, I will make sure that there will be translators that speak Spanish from the same country, and I will make sure that we have accurate information and only talk about healthcare disparities, trust, and experiences within those areas. If there is a point where the participants go off topic, we will gently bring them back on-topic and write down what is necessary for our research. Since we are only working with a small population of the Hispanic community, I will make sure that I get the participants to go through each response, paying attention to detail. When categorizing, I will make sure that any outliers get put into a group that has been generalized and tries to understand the data from a different perspective.

In the future, studies on the health disparities of another minority group will come up. Many questions on whether the health system is made to help every type of person, whether race, ethnicity, gender, age, or size. Quantitative studies would be done on how many people

are impacted by health disparities, what kind of impact it would make if there were fewer health disparities in the system, how much money would be used to help change the healthcare system for the better, and how long will it take for health disparities to disappear and come back. Many studies that come in the future may lead to the discovery of how health disparities grow and how to counteract them to ensure that the following generation doesn't have to deal with them or deals with them less.

References

- Armstrong, K., Ravenell, K. L., McMurphy, S., & Putt, M. (2007). "Racial/ethnic differences in physician distrust in the United States." *American Journal of Public Health*, 97(7), 1283–1289. <https://doi.org/10.2105/AJPH.2005.080762>
- Cambridge Dictionary. "Hispanic." *Cambridge Words*, 23 Mar. 2022, <http://dictionary.cambridge.org/us/dictionary/english/hispanic>
- Cancer Facts & Figures| Hispanics-Latinos | *American Cancer Society*. (2024). <https://www.cancer.org/research/cancer-facts-statistics/hispanics-latinos-facts-figures.html>
- AAMC. Figure 18. Percentage of all active physicians by race/ethnicity, 2018 (2019).
- AAMC. <https://www.aamc.org/data-reports/workforce/data/figure-18-percentage-all-active-physicians-race/ethnicity-2018>
- Gonzalez, J. J., Wahab, A., Samalik, J., Ramirez, E., Saint-Phard, T., Gonzalez, E., & Adekolujo, O. S. (2020). "Barriers and Facilitators of Colorectal Cancer Screening Among a Hispanic Community in Michigan." *Journal of Racial and Ethnic Health Disparities*, 7(1), 137–143. <https://doi-org.offcampus.lib.washington.edu/10.1007/s40615-019-00643-3>
- Harvard Publishing, H. H. (2020). "How long does the flu last?" *Harvard Health*. <https://www.health.harvard.edu/staying-healthy/how-long-does-the-flu-last#:~:text=Symptoms%20usually%20appear%20from%20on>



Patient and Doctor on Health Disparities for the Hispanic Culture

- Hispanic or Latino People and Cancer | CDC. (2023, January 25). [Www.cdc.gov. https://www.cdc.gov/cancer/health-equity/groups/hispanic-latino.htm](https://www.cdc.gov/cancer/health-equity/groups/hispanic-latino.htm)
- Jen. (2022, August 23). “The Mexican food vs American Food Debate: Which is better?” *Substitute Ninja*. https://substituteninja.com/the-mexican-food-vs-american-food-debate-which-is-better/#google_vignette
- Julliard, K., Vivar, J., Delgado, C., Cruz, E., Kabak, J., & Sabers, H. (2008). “What Latina patients don’t tell their doctors: a qualitative study.” *Annals of Family Medicine*, 6(6), 543–549. <https://doi.org/10.1370/afm.912>
- Kaiser, K., Rauscher, G. H., Jacobs, E. A., Strenski, T. A., Ferrans, C. E., & Warnecke, R. B. (2011). “The import of trust in regular providers to trust in cancer physicians among white, African American, and Hispanic breast cancer patients.” *Journal of General Internal Medicine*, 26(1), 51–57. <https://doi.org/10.1007/s11606-010-1489-4>
- Najm, W., Reinsch, S., Hoehler, F., & Tobis, J. (2003). “Use of complementary and alternative medicine among the ethnic elderly.” *Alternative Therapies in Health and Medicine*, 9(3), 50–57. <https://pubmed.ncbi.nlm.nih.gov/12776475/>
- Peter Petterson Foundation. “Almost 25% of Healthcare Spending Is Considered Wasteful. Here’s Why.” [Www.pgpf.org](http://www.pgpf.org), www.pgpf.org/blog/2023/04/almost-25-percent-of-healthcare-spending-is-considered-wasteful-heres-why#:~:text=According%20to%20a%202019%20study
- RelyMD (2019). “Infographic: Average Wait Times to See a Doctor.” *RelyMD*, <http://relymd.com/blog-infographic-average-wait-times-to-see-a-doctor/>.
- Schwei, R. J., Kadunc, K., Nguyen, A. L., & Jacobs, E. A. (2014). “Impact of sociodemographic factors and previous interactions with the health care system on institutional trust in three racial/ethnic groups.” *Patient Education and Counseling*, 96(3), 333–338. <https://doi.org/10.1016/j.pec.2014.06.003>
- American Cancer Society (2022). “The Costs of Cancer in the Hispanic/Latino Community” American Cancer Society Cancer Action Network. <https://www.fightcancer.org/policy-resources/costs-cancer-hispaniclatino-community-0#:~:text=About%201%20in%203&text=In%202021%2C%20there%20were%20projected>





QUANTITATIVE STUDY ON MITIGATING CHILDREN'S BMI: EXECUTION OF A SCHOOL-BASED CULINARY GARDEN INITIATIVE

Dalia Abraham

ABSTRACT: Pediatric obesity is a prominent public health issue worldwide, with substantial consequences for the physical and mental health of children. This abstract reports the results of a quantitative study that investigates the efficacy of a school-based culinary garden program in reducing children's body mass index (BMI) and encouraging healthier lifestyle habits. These findings highlight the potential of implementing culinary gardens in schools as effective strategies for addressing pediatric obesity and promoting healthier lifestyle habits among children. Incorporating these initiatives into school curricula offers practical learning opportunities and enables children to make well-informed decisions regarding their health. This in turn, helps in preventing long-term health complications associated with obesity.

Introduction & Background

Pediatric obesity has become a major public health issue, resulting from a complex interaction between behavioral, environmental, and genetic factors. Since 1975, worldwide obesity has tripled (Obesity and Overweight, 2021). Pediatric obesity is a significant problem, not only in the United States, but worldwide as well (Childhood Obesity Facts, 2022), putting children and adolescents at risk for poor health. To this day, there is still high obesity prevalence amongst children. During 2017-2020, the prevalence of obesity amongst children and adolescents was 19.7%, and affected 14.7 million lives (Childhood Obesity Facts, 2022). Childhood obesity increases the risk of adulthood obesity, untimely death, and disability. However, obese children also have respiratory issues, a greater risk of fractures, hypertension, early indicators of cardiovascular disease, insulin resistance, and psychological consequences in addition to their elevated future risks (Obesity and Overweight, 2021). Healthy eating can help individuals maintain a healthy body weight and reduce health risks such

as high blood pressure, heart disease, type 2 diabetes, cancer, and dental caries (Obesity and Overweight, 2021). Overall, pediatric obesity is a serious public health issue that has far-reaching effects on both individuals and society at large. It jeopardizes children's short-term health, well-being, and lays the groundwork for long-term health issues.

Risk Factors

Pediatric obesity is a multifaceted health concern that stems from a combination of factors such as behavioral patterns, environmental factors, and genetic predisposition (Childhood Obesity, 2020). A randomized trial by Bogart et al. (2016) found that the school-based nutrition and exercise intervention significantly improved the participants' children's two-year BMI outcomes. In order to combat pediatric obesity, the study highlights the importance of environmental factors like school-based initiatives. The results highlight the value of comprehensive strategies by indicating that focused interventions may eventually lead to improvements in body mass index. Additionally,



Abraham

the study emphasizes how behavioral and lifestyle choices—two important factors to take into account when creating effective preventive measures—are interconnected with other obesity risk factors (Bogart et al., 2016). This study adds important new information to the continuing efforts to identify and reduce the risk factors for childhood obesity.

Disparities

The issue of pediatric obesity continues to be a significant public health concern, marked by notable disparities that highlight the necessity for focused interventions. In accordance with a recent study published in the *Journal of Racial and Ethnic Health Disparities*, the occurrence of obesity among children and adolescents differs among various demographic groups (Kim et al., 2023). The study demonstrates that specific demographic groups, particularly individuals from disadvantaged economic backgrounds, exhibit elevated prevalence rates of childhood obesity (Kim et al., 2023). “The prevalence of obesity among non-Hispanic Black (24.2%) and Hispanic (25.6%) children and adolescents aged 2 to 19 years was higher than the prevalence among both non-Hispanic White (16.1%) and non-Hispanic Asian (8.7%) children and adolescents” (Kim et al., 2023). Socioeconomic factors play a significant role in creating inequalities in the availability of nutritious food choices, secure recreational areas, and high-quality medical care. These factors are crucial in determining a child’s weight status. Moreover, the study emphasizes the existence of racial and ethnic inequalities, as it identifies elevated levels of obesity within specific minority populations. These findings highlight the significance of implementing focused strategies to tackle the underlying factors contributing to pediatric obesity. This includes promoting equal access to nutrition education, enhancing community resources, and improving healthcare services in underserved areas. Through comprehending and resolving these discrepancies, public health initiatives can strive towards cultivating

a more salubrious future for all children and adolescents.

Short Term & Long Term Health Outcomes

The potential health outcomes of early childhood obesity prevention programs have been demonstrated through research conducted by Cloutier et al. (2018). The authors conducted a pilot, randomized trial within a low-income community to evaluate the effects of these interventions, and they observed favorable outcomes. The research article highlights the efficacy of focused interventions in addressing the issue of childhood obesity within susceptible groups (Cloutier et al., 2018). Furthermore, a study conducted by Nicolucci et al. (2017) investigates the relationship between prebiotics, the reduction of body fat, and changes in the intestinal microbiota in overweight or obese children. The study conducted by Nicolucci et al. (2017) and published in the journal *Gastroenterology* sheds light on the possible impact of dietary interventions in modulating the gut microbiome and, consequently, addressing health issues associated with obesity. Collectively, these studies provide significant contributions to our understanding of the potential health implications linked to interventions aimed at preventing obesity in early childhood. These insights encompass a broad spectrum of outcomes, including but not limited to weight management and the complex relationship between dietary patterns, gut microbiota, and body composition. These findings play a crucial role in informing evidence-based approaches designed to promote healthier outcomes for children who are at risk of or impacted by obesity.

Importance of Schools in Pediatric Obesity

Willeboordse et al. (2022) conducted a quasi-experimental study that provides evidence of the effectiveness of comprehensive school-based programs in addressing pediatric obesity. The study, which was published in the



scientific journal PloS One, investigates the enduring impacts of a school-based intervention aimed at addressing the widespread issue of obesity. The results of the study demonstrate encouraging results, highlighting the efficacy of comprehensive strategies implemented in educational environments (Willeboordse et al., 2022). The study's examination of long-term effects offers valuable insights into the sustainability and enduring influence of these interventions, underscoring the significance of integrating health-promoting strategies within the school setting. This research makes a valuable contribution to the existing body of evidence by emphasizing the significance of schools as a primary locus for interventions. It underscores the potential of educational environments in promoting healthier lifestyles and mitigating the prevalence of pediatric obesity. The implementation of effective interventions plays a pivotal role in providing valuable insights for public health initiatives and policies that seek to reduce the prevalence of childhood obesity and foster long-term well-being.

Kitchen Garden Interventions

The research conducted by Gibbs et al. (2013) investigates the influence of a kitchen garden program implemented in schools on broadening children's exposure to different types of food. The objective of the study was to evaluate the impact of participation in the program on children's attitudes and behaviors regarding food. The study entailed the execution of a school-based kitchen garden program, and data was gathered to assess its impacts. The study employed a diverse range of methodologies, such as surveys, observations, and potentially interviews or focus groups, to collect comprehensive data on the participants' experiences and modifications in their food-related behaviors. The study's findings suggest that the school-based kitchen garden program had a beneficial effect on broadening children's culinary encounters. The potential outcomes of this activity encompass alterations in food-related attitudes, heightened

receptiveness to experimenting with unfamiliar foods, and the possibility of acquiring a more complete comprehension of the food production process by actively engaging in gardening. Based on these findings, school gardens offer practical, experiential learning experiences that can improve students' understanding and proficiency in nutrition, food cultivation, and healthy dietary practices. Through participation in activities such as planting, watering, weeding, and harvesting, students cultivate a more profound comprehension of the origins and cultivation of food. Engaging in experiential learning can foster a greater understanding and value for fruits and vegetables, which are vital constituents of a nutritious diet. Although research and theoretical frameworks strongly support the idea that school-based garden initiatives can be effective, it is crucial to acknowledge that the actual impact of these programs can differ based on factors like program design, fidelity of implementation, and contextual factors.

Gaps in Knowledge

Moreover, a deeper investigation into the long-term efficacy of programs aimed at reducing childhood obesity is required. Much research concentrates on immediate results, and creating strategies that have long-term benefits requires an understanding of the sustained impact of interventions over time. Further in-depth analysis is needed to determine the socio-cultural factors that contribute to childhood obesity. Tailoring interventions to diverse populations requires an understanding of the wide variations in cultural influences on dietary preferences, physical activity levels, and parental practices.

Research Question & Hypothesis

Pediatric Obesity has become a worldwide issue, putting many children and adolescents at risk for chronic health issues. "Obesity affects 34% of children in the USA and is considered



Abraham

a top public health concern due to the high level of morbidity and mortality” (Pediatric Obesity, 2016). Multiple health care workers have reported a deficiency in educational resources and information regarding obesity (Pediatric Obesity, 2016). Past research suggests that intervention regarding healthier food choices for adolescents is a way to promote healthy eating and decrease the prevalence of childhood obesity. Our quantitative study aims to investigate the correlations between cultivating a vegetable garden and its impact on an individual’s Body Mass Index (BMI). Our research is funded on this question: what is the effect of implementing a school-based kitchen garden program on the Body Mass Index and prevalence of pediatric obesity among fourth grade students over a school year, and how can it be used to tailor interventions to diverse populations? We suspect that the development of a school-based kitchen garden program will result in a decrease in BMI among fourth grade students over the school year.

Research Approach

Research Design

This study will utilize a quantitative research design to evaluate the influence of a vegetable garden intervention on reducing BMI and assess its efficacy in the greater Seattle area. To assess the results and gauge the impact of a school-based kitchen garden, we determined that employing a static group comparison experiment would be the most suitable approach. According to the U.S. Department of Health and Human Services, studies have demonstrated the impact of consuming low-nutrient foods during early stages of life and its role in causing nutritional deficiencies (Childhood Obesity, 2020). Through the organization of this research, our objective is to expand the range of possibilities accessible to these children and acquaint them with new alternatives. The intervention conducted by Gibbs et al. (2013) is an intervention that measures the development

of children’s appreciation for a wide variety of foods, as demonstrated by an enhanced willingness to experiment with new foods. Another result of the program and evaluation was a boost in children’s ability to articulate information about foods, serving as a means to showcase their knowledge and exchange their experiences and appreciation for food. In order to accomplish an intervention like this, we will allocate 90 minutes for the experimental group to participate in a kitchen and garden class, during which they will utilize the vegetables they planted to prepare new dishes. Conversely, the control group will not be participating in this experiment. Our primary focus will be on the quantitative aspect of the intervention, as we aim to determine the impact of a kitchen garden program on BMI and its potential to enhance long-term dietary choices.

Study Population & Sampling

We employ a method of participant selection known as simple random sampling. We assigned a number to each elementary school in the Seattle District and used an automated process to select ten elementary schools. We acquired the medical records of all fourth-grade students from each of the three schools from their local hospital. Based on the data we collected, we selected twenty students with a BMI above the 95th percentile to form the experimental group. We selected twenty students with a BMI ranging from the 5th to the 85th percentile for our control group. We opted for this methodology due to its impartiality and our desire for a study design that ensures equal probability of selection for all individuals in the population.

Operationalization & Measurement

The general hypothesis of this proposal is to explore the relationship between the independent variable, which consists of the school-based kitchen garden program, and the dependent variable; the change in BMI (if any). The school-based kitchen garden will



encompass two components: the cultivation of vegetables and the culinary preparation of the harvested produce. Students can enhance their skills in responsibility and confidence by cultivating their own vegetables. Upon participating in their cooking class, they will acquire fresh techniques for incorporating their vegetables and creating nutritious and delicious meals. By engaging in this behavior, individuals can expose themselves to alternative options and experience the enjoyable aspects of consuming nutritious food. Finally, we will quantify the number of vegetables they consume by using a daily logger to track how many vegetables each individual is consuming and examine its impact on their BMI. In order to determine BMI, we will utilize a scale particularly designed for children that categorizes them as having a healthy weight, being overweight, or being obese. An individual's weight is considered healthy when their BMI falls between the 5th and 85th percentile. If the BMI is between the 85th and 95th percentile, the person is classified as overweight. However, if the BMI exceeds the 95th percentile, the person is categorized as obese (Obesity and Overweight, 2021).

Data Collection

To collect data, we will be using surveys and collecting physiological measurements such as body mass index, blood pressure, and oxygen levels at the beginning of the year and the end. The survey aims to gather data on the average weekly vegetable consumption, frequency of physical activity, and previous participation in a school-based kitchen garden program. To gather physiological measurements, we will examine health records from Seattle Children's Hospital and notably evaluate the Body Mass Index (BMI), Blood Pressure (BP), and Oxygen (O2).

Data Analysis

For this quantitative study design, we will be using statistics and multivariate analysis to analyze the data. Descriptive statistics were

employed to summarize important variables, including participant demographics, dietary habits, physical activity levels, and BMI. These statistics enabled us to provide a concise overview of the participants' traits and actions. For example, we examined the mean frequency of participation in program activities and evaluated the distribution of BMI scores among the participants. The study utilized multivariate analysis, especially regression analysis, to investigate the associations between dietary habits, physical activity, and BMI. This methodology allowed us to evaluate the distinct impact of the school-based kitchen garden program in combating pediatric obesity, while considering possible confounding variables. The regression models incorporated variables such as the frequency of participation in program activities, dietary patterns (e.g., intake of vegetables), and levels of physical activity per week.

Ethical Considerations

In order to fulfill an ethical study, aside from an IRB approval, several actions were taken to maintain appropriate ethics throughout our research. Prior to the research, informed consent was obtained from parents and legal guardians of the child participants. This consent form consisted of a detailed explanation of the study, and what would take place throughout the duration of it. It clearly stated potential benefits and risks that could possibly occur in the nature of their participation. All data collected was confidential, and researchers made sure that the only individuals who had access to this information were authorized personnel. The goal of the research team was to minimize any possible harm to the child participants, while optimizing the potential benefits of the therapies. The initiatives' unanticipated or negative impacts were dealt with quickly and effectively. Participants were informed that their participation was completely voluntary, and they had the option to opt out at any given time without consequences. The



Abraham

study was conducted in a manner to ensure fairness. There was inclusion from participants of diverse backgrounds, socioeconomic status, and cultural factors to eliminate any biases. Through the process of the research, parental involvement was highly encouraged so we could provide frequent updates on the research progress and be present for any questions or concerns that may take place. The institutional ethics committee examined and approved the research procedures. Any modifications or unforeseen moral dilemmas were promptly and openly reported to the committee. The results will be responsibly shared, with a focus on informing the public and decision-makers about the significance of tackling pediatric obesity.

Discussion

Significance

According to the World Health Organization, the global prevalence of childhood obesity has risen dramatically, with estimates indicating that over 340 million children and adolescents aged 5-19 were overweight or obese in 2016 (Obesity and Overweight, 2021). This statistic signifies not only a widespread health concern but also a predictor of future health burdens. The impact of pediatric obesity is not uniformly distributed, with certain populations facing specific needs and health disparities. Socioeconomic factors, cultural influences, and geographical location contribute to uneven access to nutritious foods and opportunities for physical activity. This results in a higher prevalence of pediatric obesity among marginalized communities, exacerbating existing health inequities (Childhood Obesity, 2020). Even with the seriousness of this problem, there is still a great deal we do not know about the intricate interactions between genetic, environmental, and behavioral factors that lead to childhood obesity. Insufficient comprehensive knowledge impedes the creation of focused interventions and highlights the necessity of heightened research endeavors to fully understand the complexities of this

complex issue. We can only hope to put into practice efficient strategies that cater to the particular needs of various populations by developing a deeper understanding, which will ultimately help to lessen the long-term effects of pediatric obesity on public health.

Limitations

As will all simple random sampling methods, the greatest limitation is conducting a fully representative sample of the population. Some groups of students, such as those with particular dietary preferences or levels of physical activity, may have a disproportionate representation, either being underrepresented or overrepresented. This could lead to a distorted portrayal of the program's influence, as the sample might not accurately depict the variety of the entire school population. Recognizing that this intervention occurred specifically in Seattle and only encompassed a portion of the Seattle School District, it is important to consider that this program may not accurately reflect other states and schools within the district. In addition, in an educational environment, students who are in the same grade or class often exhibit comparable traits or undergo similar situations. The lack of diversity in responses due to homogeneity may hinder the ability to discern differences in the program's effectiveness among various demographic groups. Although the intention is to track these students beyond the school year, it is important to acknowledge that these follow-ups may not occur due to unforeseen circumstances. We must acknowledge that while it is in our best interest to support these students, there is a possibility of a lack of follow-up.

Future Directions

As we reflect on the findings of our study, we must consider future directions to properly assess pediatric obesity. It is essential to investigate the ability of the school-based kitchen garden program to adapt and be



Children's BMI: School-Based Culinary Garden Initiative

effective in various socio-economic and cultural settings. Modifying the program to suit various school environments and student populations can improve its pertinence and efficiency on a wider scope. Another potential avenue for future research is the facilitation of collaboration among educators, nutritionists, and public health professionals. Gaining insight into the cooperative interactions and determining the most effective responsibilities for various participants in advancing a wholesome educational setting can enhance the long-term viability and achievement of comparable endeavors.

References

- Bogart, L. M., Elliott, M. N., Cowgill, B. O., Klein, D. J., Hawes-Dawson, J., Uyeda, K., & Schuster, M. A. (2016). Two-Year BMI Outcomes From a School-Based Intervention for Nutrition and Exercise: A Randomized Trial. *Pediatrics*, 137(5), e20152493. <https://doi.org/10.1542/peds.2015-2493>
- Cloutier, M. M., Wiley, J. F., Kuo, C. L., Cornelius, T., Wang, Z., & Gorin, A. A. (2018). Outcomes of an early childhood obesity prevention program in a low-income community: a pilot, randomized trial. *Pediatric obesity*, 13(11), 677–685. <https://doi.org/10.1111/ijpo.12458>
- Gibbs, L., Staiger, P. K., Johnson, B., Block, K., Macfarlane, S., Gold, L., Kulas, J., Townsend, M., Long, C., & Ukoumunne, O. (2013). Expanding children's food experiences: The impact of a school-based kitchen garden program. *Journal of nutrition education and behavior*, 45(2), 137–146. <https://doi.org/10.1016/j.jneb.2012.09.004>
- Kim, H., Rajbhandari, A., Krile, R., Lang, I.-M., Antonakos, C. L., & Colabianchi, N. (2023, January 19). Body mass index trajectories among the Healthy Communities Study Children: Racial/ethnic and socioeconomic disparities in childhood obesity - *Journal of Racial and Ethnic health disparities*. SpringerLink. [https://link.springer.com/article/10.1007/s40615-023-01511-x#:~:text=The%20prevalence%20of%20obesity%20among,8.7%25\)%%20children%20and%20adolescents.](https://link.springer.com/article/10.1007/s40615-023-01511-x#:~:text=The%20prevalence%20of%20obesity%20among,8.7%25)%%20children%20and%20adolescents.)
- Nicolucci, A. C., Hume, M. P., Martínez, I., Mayengbam, S., Walter, J., & Reimer, R. A. (2017). Prebiotics Reduce Body Fat and Alter Intestinal Microbiota in Children Who Are Overweight or With Obesity. *Gastroenterology*, 153(3), 711–722. <https://doi.org/10.1053/j.gastro.2017.05.055>
- U.S. Department of Health and Human Services. (n.d.). Childhood obesity. *National Heart Lung and Blood Institute*. <https://www.nhlbi.nih.gov/health/overweight-and-obesity/childhood-obesity#:~:text=BMI%20for%20children&text=Underweight%20is%20a%20BMI%20below,the%2095th%20percentile%20or%20above.>
- Willeboordse, M., Bartelink, N. H. M., van Assema, P., Kremers, S. P. J., Savelberg, H. H. C. M., Hahnraaths, M. T. H., Vonk, L., Oosterhoff, M., van Schayck, C. P., Winkens, B., & Jansen, M. W. J. (2022). Battling the obesity epidemic with a school-based intervention: Long-term effects of a quasi-experimental study. *PloS one*, 17(9), e0272291. <https://doi.org/10.1371/journal.pone.0272291>





THE PSYCHOLOGY OF SUBSTANCE MISUSE INFLUENCING ACADEMIC PERFORMANCE OF HOMELESS YOUTH IN SEATTLE - A QUALITATIVE NARRATIVE STUDY

Nicole Vicente

ABSTRACT: Of the over 10,000 homeless individuals in the city of Seattle, more than half are classified as youth (15-24 years old). The University of Washington in Seattle is the sixth highest-ranked university in the nation; however, there is a gap of study in why the homeless youth of this city do not get access to proper academic services. Due to the common causes of youth homelessness, such as family problems and abusive relationships, this vulnerable population is at risk of substance abuse and academic instability. This research analyzes homeless youth through a qualitative narrative study to determine the risk factors of substance abuse and the outcome of academic stability and endeavors. This study is focused on the homeless youth population in the city of Seattle, recruiting participants from the Seattle Union Gospel Mission. Further research is needed to imply the correlation of decreasing academic stability in homeless youth, and to incorporate proper permanent interventions to prosper development academically and professionally.

Keywords: Homeless youth, substance abuse, academic stability, risk factors

Introduction

As we begin to discuss the population of unhoused youth, there are multiple levels to uncover and will dictate the flow of the research study. Prior to describing the purpose of this study, there are important considerations to identify. Who qualifies as unhoused youth? Does this population interact with social groups that could be damaging to their physical and mental well-being? How common is substance abuse among unhoused youth, and how does that correlate to their academic gaps? Because of the common causes of youth homelessness being hardships within interpersonal relationships and financial instability, this vulnerable population is at greater risk of substance abuse and as a result, academic instability.

According to the National Institute of Health, the Erikson Stages of Psychosocial Development illustrate the stages in which individuals grow

and perceive the world around them (Orenstein GA and Lewis L 2022). The population of youth is in between stages five and six, adolescence to adulthood. These two stages focus on identity vs. identity confusion, and intimacy vs. isolation. Both stages imply themes of identity and support, which are crucial in supplying youth's self-esteem and well-being.

The outcome of this study is to track an individual's academic performance. This concept refers to the idea of students participating in active listening and understanding of academic and social ideas. Examples of proficient academic performance are completing assignments, attendance or participation, and behavior. The introduction of psychosocial development due to homelessness and substance abuse determines the factors that will eventually predict the academic outcome of each individual.



Vicente

Homeless Youth

Of the over 10,000 homeless individuals in the city of Seattle, more than half are classified as youth (15-24 years old). In this specific study, we will be focusing on youth above 18, to minimize conflict between IRB approval on homeless minors who are not able to attain parental consent (18 years-24 years). Because homeless youth have fewer life experiences than homeless adults, the prominent issue we observe with this population is helping them transform a temporary living situation into a success story. With effective interventions, these accomplished outcomes will not be sustained if not run continuously through these youth's transition into adulthood, concluding that developing individuals are in need of long-term interventions (Slesnick, N. et. al 2008). As we follow these youth over time, we can presume that the occurrence of homeless relapse decreases even when there are ebbs and flows of relapse in the beginning stages of said intervention (Tompsett, C., et. al 2013). A call to action to implement interventions that generate long term benefits for unhoused youth are crucial for both their personal and academic development.

With hopeful spirit, there are hundreds of non-profit organizations other than the Seattle Union Gospel Mission that primarily focuses on youth and their holistic health. YouthCare is one of these organizations in the city of Seattle and is commonly seen writing their own research on these populations and their contributions to the success of youth. In one of their articles, "Why Are Youth Homeless?"—they discuss the overwhelming response of youth ending up on the streets due to family conflict, or worse, abuse or neglect (YouthCare, 2023). Moreover, there are cofactors to homeless youth such as identifying as LGBTQ+, family poverty, and having limited access to mental and physical health services.

Social Interactions

When we analyze the behavior of unhoused youth, researchers have observed aspects such as social influences: who are they interacting with, and what persuades them to do so? Many homeless youth heavily interact with their peers, participating in both drug and alcohol use in a social scene. (Green, H. et. al 2013). Acknowledging this phenomenon, researchers tend to describe the support system of youth to be minimally guided by parental and government assistance. (Gomez, R. et. al 2010). Through studying these questions, we find that homeless youth are most at risk of participating in injection drug use (IDU), have a record of criminal activity, and are sexually active (Lankenau, S. et. al 2010).

Substance Abuse in Youth

The health outcomes of partaking in the ingestion of drugs and alcohol at such a developmental stage in life can be detrimental. Many public health specialists have taken action in order to improve the academic and psychosocial welfare of unhoused youth through techniques such as Community Reinforced Approach (CRA), Motivational Enhancement (MET), and Case Management (CM) (Slesnick, N., et. al 2015). We unfortunately fail to recognize that throughout these interventions, youth are still experiencing cases of academic instability (Saperstein, A. et. al 2014). To introduce the disparities of interventions regarding unhoused youth, it is crucial to identify the underlying risk factors and outcomes for the population.

The introduction of the COVID-19 pandemic has resulted in an immediate increase of substance misuse within unhoused youth due to minimal resources to tele-health and shelters closing to decrease infection (Lundahl, L. H., and Cannoy, C. 2021). The overwhelming importance of health education and promotion within vulnerable communities such as unhoused youth in phases of pre-pandemic,



pandemic, and post-pandemic, has influenced the following proposal.

Research Question

In the city of Seattle, there have been conversations regarding the increased unhoused population of youth. Through participating in substance misuse and lack of health education, many of these individuals are struggling to seek long term interventions as well as the compliance of their community. When we continue to dive deep into the use of drugs and alcohol among the unhoused youth, we fail to acknowledge the psychosocial outcomes they experience on a day-to-day basis. We also fail to acknowledge their interactions with their social environment, which plays as much as an important role as their actions towards partaking in substance misuse. Because these individuals are engaging in substances that could eventually play a destructive role in their development, there is a longing need for prevention and health promotion. There are various explanations to why youth are more at risk to develop characteristics of substance abuse, a main reason being growing up in a toxic environment, eventually wanting to seek freedom (Smart, 1991). The struggle for independence due to these conditions along with the limited employment and education opportunities may not be accomplished the way they have envisioned. The question this proposal aims to answer is, “How does the act of substance abuse influence the psychosocial development of homeless youth and their academic performance?” Future extensive research predicts that participating in substance abuse will negatively impact the psychosocial development of unhoused youth, leading to decreased academic performance.

Research Approach

This is a qualitative narrative research study in order to properly examine the experiences of unhoused youth participating in substance abuse and their perspective on their own academic

ability. The purpose of implementing a qualitative approach is for us to identify themes and patterns through one-on-one interviews. We will be gathering data in the city of Seattle at the Seattle Union Gospel Mission in Washington State. All participants have provided their consent to publish the findings of this research project.

Participants

To minimize the vagueness of conducting a research study in such a growing city, the Seattle Union Gospel Mission in Washington State will be our main focus. This mission focuses on speakers, volunteers, and mental/physical health workers gathering in unison to be able to run an organization to provide food, emergency necessities, and life lessons. Participants in this mission were selected based on convenience—those who are eligible within the inclusion criteria. Then, researchers will recruit these participants to search for other youth frequently attending the mission’s events and programs, through snowball sampling. Utilizing this recruitment strategy ensures that the participants properly fit the following inclusion and exclusion criteria. Inclusion criteria entails that the youth be 18-24 years old, as consent for homeless minors will increase complexity in the study. Moreover, participants should be recorded as being homeless for at least two years and having completed some or all of high school. Individuals would also need to have participated in substance misuse through the means of drugs or alcohol for at least five times in the year 2023. There are no language requirements as interpreters will be present during the one-on-one interviews to be able to attain as much diversity as possible. Exclusion criteria consists of youth that are minors, have some or all of a college education completed, have received a GED instead of a high school diploma, and have no evidence of past substance misuse. This exclusion criteria was chosen due to the purpose of creating a boundary of youth who chose not to finish high



Vicente

school, as we are interviewing participants who did not want to obtain a certificate of completion for their own reasons. Individuals who have not participated in substance misuse over the past year are not going to be chosen because this study primarily focuses on the impacts of substance abuse on homeless youth. Minors are not going to be considered in this study as there will be increased conflict with IRB approval of homeless minors, so we are targeting ages 18-24 instead of 15-24.

Data Collection

Using the convenience and snowball method strategy, we will obtain 15 participants. One-on-one interviews will be conducted in hopes of identifying themes and patterns of unhoused youth who have participated in substance abuse and their academic ability. Because this is a qualitative narrative study, the purpose is to listen to each individual's experiences in response to the interview questions, so we can identify themes of homelessness and perceived notions towards academia. Prior to the interview, participants were asked about their age, education level, and the number of times they have used drugs or alcohol throughout the year, as a result of the inclusion criteria. Researchers facilitating the interview were given a clipboard that listed the questions as well as space for them to write specific one-word themes that the participant emphasizes as well as unique experiences they feel would help understand this study more intently. Participants were asked, "Tell us your story: how did you end up homeless?" and "Who do you interact with on a day-to-day basis?" These two questions hit the two main ideas of this research study. The first question clarifies that the individual has been homeless for the past two years and has experiences to share; this could be in relation to how they ended up homeless and how they are coping with it. The second question describes their social interactions, as drug and alcohol use are popular social activities, especially among homeless individuals, which is why youth

are interacting with on a day-to-day basis is important to know. Finally, at the end of the interview, the interviewer will open up a space for the participants to discuss their perceptions on academics: "Why did you not continue or complete your high school degree? What do you think you and your peers need in order to view obtaining employment or opportunities to further your education? What are your remaining thoughts on the American education system?"

Ethical Considerations

To proceed with this research study, we must send the proposal to the IRB for approval. The proposal consists of transparent information, which participants will be able to view, and have an identical copy to read for future reference. Information included in the proposal is the purpose of the study, why this study benefits them, the promise to express confidentiality and anonymity, and compensation. Documents will be written very simply to accommodate a wide range of academic backgrounds; therefore, there will be distinct sections of the purpose, instructions of the study, and the resulting benefits/compensation. In the pursuit of IRB approval, each individual will be asked to give verbal and written consent prior to the study. This consent form will consist of a written and verbal instruction that explains that the study will be audio recorded and notes will be taken accordingly. Note that youth participants in this study cannot be minors, as it will complicate the IRB approval process because unhoused minors may not be able to obtain parental consent for reasons such as broken family dynamics or loss of a parent or guardian. According to the United Nations, youth are aged 15-24 years old; therefore, we will exclude ages 15-17 and include ages 18-24 years old (United Nations 2024).

The individual may choose to not answer certain questions and will have space to write additional comments or concerns. Right before the study, the interviewer will assure participants



Substance Misuse Influencing Academic Performance

of their confidentiality and anonymity rights. The interviewer will be similar in age (18-24 years) to minimize perceived intimidation and to ensure that the participant is more comfortable with expressing their responses. The interviewer will then begin the questioning by asking the participant to share their personal experiences on how substance abuse has influenced their past, present, and future behaviors towards themselves and their academic performance, if any. Because we are discussing studying unhoused youth, this population is more likely to accept all given incentives, and our goal is to decrease the possibility of participation being foreseen as coercive to the community and to the IRB. Therefore, incentives will be dispersed in these three categories: food/clothes, shelter, and education. For food and clothes, participants will be given a card that is solely for buying food and clothes. Each participant will be given 3 months of shelter in a local housing collaboration with the researchers and with access to a free quarter of school to complete either technical training or University studies.

Discussion

Significance

The importance of increasing the visibility of homeless youth is to further study the implications of substance abuse on developing individuals and their ability to flourish in an academic setting. Moreover, the more we fund research studies on homeless youth, the more we can prove that the stigmas of misbehavior are one of the lesser risk factors of this population, rather than the environmental influences in their lives that determine their behavioral outcome. This study, as well as many previous and future studies, will aid our ability to implicate health education and promotion throughout the community, and as a result there will be more people who understand the complexity of youth development and the importance of investing more time and effort into this vulnerable population. Additionally, in order to prevent

the increasing adult homeless population, it is crucial to observe the influx of youth who continue to experience homelessness until adulthood.

Limitations

Because of the vulnerability of homeless youth, they are not the most convenient population to study. This is because unhoused youth tend to be mobile, and therefore, it is more difficult to get a hold of them overtime if a long-term study were to proceed. As a result, it is crucial to honor and respect their requests for confidentiality and anonymity when providing them with the proper consent procedures. Additionally, bias is important when considering unhoused youth. Instances in this study could be observed around the location of the study itself, the Seattle Union Gospel Mission. This Mission implies religious considerations, and many would perceive this study as a religious intervention rather than a community-oriented service. A situation where there are less than fifteen participants but more than ten decreases the effectiveness of a qualitative study. Due to gathering a low number of participants, the purpose is to exhibit uniqueness in experiences through these one-on-one interviews; therefore, obtaining enough participants is possible through the approach of snowball sampling. Although this strategy increases participant bias, this process ensures that we obtain individuals for this study even with a less convenient, vulnerable population.

Future Directions

In conclusion, the development of homeless youth is greatly influenced by who they interact with on a social level as well as the accessible organizations that aid in their academic and professional development. Predicted outcomes of this intervention will most likely lead to increased awareness in the community, the harmful developmental effects of substance abuse, and the importance of advocating for education and professional endeavors for



Vicente

unhoused youth. Unfortunately, there will be an increasing need for funding from the community or from the government in order to implement more permanent and long-term interventions to be provided for this population due to its vulnerability in maturation and their ability to achieve their potential. All in all, the eventual outcome is decreased homelessness relapse and the ability for these individuals to transition out to obtain further education.

References

- Gomez, R., Thompson, S. J., & Barczyk, A. N. (2010). Factors associated with substance use among homeless young adults. *Substance abuse*, 31(1), 24–34. <https://doi.org/10.1080/08897070903442566>
- Green, H. D., Jr, de la Haye, K., Tucker, J. S., & Golinelli, D. (2013). Shared risk: who engages in substance use with American homeless youth? *Addiction* (Abingdon, England), 108(9), 1618–1624.
- Lankenau, S. E., Bloom, J. J., & Shin, C. (2010). Longitudinal trajectories of ketamine use among young injection drug users. *The International journal on drug policy*, 21(4), 306–314.
- Lundahl, L. H., & Cannoy, C. (2021). COVID-19 and Substance Use in Adolescents. *Pediatric clinics of North America*, 68(5), 977–990. <https://doi.org/10.1016/j.pcl.2021.05.005>
- Orenstein GA, Lewis L. Eriksons Stages of Psychosocial Development. [Updated 2022 Nov 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan Available from: <https://www.ncbi.nlm.nih.gov/books/NBK556096/>
- Saperstein, A. M., Lee, S., Ronan, E. J., Seeman, R. S., & Medalia, A. (2014). Cognitive deficit and mental health in homeless transition-age youth. *Pediatrics.*, 134(1), e138–e145.
- Slesnick, N., Kang, M. J., Bonomi, A. E., & Prestopnik, J. L. (2008). Six- and twelve-month outcomes among homeless youth accessing therapy and case management services through an urban drop-in center. *Health services research*, 43(1 Pt 1), 211–229.
- Slesnick, N., Guo, X., Brakenhoff, B., & Bantchevska, D. (2015). A comparison of three interventions for homeless youth evidencing substance use disorders: results of a randomized clinical trial. *Journal of substance abuse treatment*, 54, 1–13.
- Tompsett, C. J., Domoff, S. E., & Toro, P. A. (2013). Peer substance use and homelessness predicting substance abuse from adolescence through early adulthood. *American journal of community psychology*, 51(3-4), 520–529.
- United Nations. (2024). Youth. United Nations. <https://www.un.org/en/global-issues/youth#:~:text=Who%20Are%20the%20Youth%3F,of%2015%20and%2024%20years>.
- YouthCare. Why are youth homeless? (2023, July 31). <https://youthcare.org/why-are-youth-homeless/>



TRAUMATIC EXPERIENCES OF WOMEN WHO HAVE RECENTLY EXPERIENCED HOMELESSNESS

Elise Bao

ABSTRACT: Due to COVID-19, the housing instability crisis is on the rise. It particularly affects women, who are more at risk of victimization, traumatic events, and having a serious mental illness such as PTSD. Yet, existing research does not describe how these events shape women's lives, especially those who have experienced homelessness for shorter periods of time. This proposal aims to gain a better understanding of how women experiencing housing instability are impacted by these traumatic events. Using a qualitative method study design and narrative and phenomenological approaches, one-on-one interviews will be conducted covering multiple topics including participants' feelings of safety, concerns, and substance use. This research seeks to educate and raise awareness about the need for interventions and policies to ensure access to safer environments.

Introductions & Background

Homelessness is an undeniable rising issue in the United States. As a result of the last sanitary and economic crisis, COVID-19, hundreds of thousands of people lost their stable housing overnight (Grammatikopoulou et al., 2021). The pandemic also caused shelters to reduce capacity which increased the number of unsheltered people, this has notably been observed in King County where this study will take place (USAFacts, 2023). These issues raise multiple concerns as most people experiencing homelessness will undergo at least one traumatic event during their lifetime according to a study conducted by North and Smith (1992). These traumatic events can result in the development of Post-Traumatic Stress Disorder, commonly called PTSD, which is a disorder that people develop after experiencing or witnessing a disturbing or shocking event. Their unsecured situation puts unhoused people at higher risks of victimization and traumas, especially women (North & Smith, 1992).

Therefore, it is imperative to gain a better knowledge of how women experiencing homelessness are affected by traumatic events,

in order to find solutions to reduce their exposure to them as early as the first few moments of being unhoused.

Homelessness and Housing Instability

According to the U.S. Department of Housing and Urban Development, an unhoused person is someone who does not have stable housing for more than 14 days, trades sexual acts for housing, or is being trafficked (2019). As of 2022, the United States had a homeless population of about 600,000 people (National Alliance to End Homelessness, 2023). Unfortunately, COVID-19 played a big role in aggravating the problem as 568,000 people suddenly lost their housing in 2019 with one-third of them residing in unsheltered places (Grammatikopoulou et al., 2021). However, one issue connected with these statistics is the lack of data concerning the ones who live with family members or friends rather than living in public areas, also known as "invisible homelessness" (Tinland et al., 2013). They are considered "invisible" as they do not use services offered for unhoused people and use temporary lodgings which makes them harder to assess during research or data collection (Grammatikopoulou et al., 2021). According to



Bao

a previous study, this issue is more prevalent in women as they are more vulnerable (Tinland et al., 2013). The U.S. crisis of homelessness keeps growing and is still misunderstood because of the lack of accurate data (Grammatikopoulou et al., 2021).

Trauma and Homelessness

For a lot of people, becoming homeless can be a traumatic experience or an onset of PTSD (Price & Glorney, 2022). Firstly, losing stable housing can be a serious source of stress, especially if there are dependents involved. Additionally, many people also lose contact with their families or social networks which can cause a feeling of isolation and loneliness (Babayan, 2021). Losing housing also entails constant questioning about where to find food and shelter. As these are necessities for survival, not being certain to have them every day can be a significant stressor. The National Alliance to End Homelessness also mentions that being homeless can be a “breaking point” for those who had already been traumatized in the past or had behavioral issues (2024.).

People experiencing homelessness are more at risk of experiencing traumatic events than people who are not. Results of a previous study demonstrated that victimization can be both a factor to homelessness but also an impact from it (Tinland et al., 2018). Unhoused women often undergo events that put them at risk for trauma. Some of them mentioned being stalked, sexually assaulted, or even attacked because of their gender. They feel “surrounded by people who wanted to actively abuse or take advantage of them” (Price & Glorney, 2022). Findings from Price and Glorney’s study suggest that there are connections between trauma and female homelessness notably due to high rates of victimization (2022). Furthermore, it is important to mention the stressors of being a parent while being unhoused. Taking care of a child can be an additional stressor as their health is a direct concern for their caretaker.

Some worries are notably related to children’s physical or emotional issues, hospitalization, or placements away from home (Bassuk et al., 1996).

Having PTSD or experiencing traumas can also be an onset or a cause of homelessness (North & Smith, 1992). As mentioned earlier, Post-Traumatic Stress Disorder (PTSD) is a disorder that can be developed after experiencing or witnessing a traumatic or distressing incident. PTSD symptoms manifest in various ways and at various times, they are primarily grouped into three categories (National Alliance to End Homelessness, 2024). The first one is symptoms that consist of reliving the event such as nightmares. The second one is avoidance which is often described as numbness (National Alliance to End Homelessness, 2024). The third one is changes in reactions and thinking, like feeling emotionally distressed or having severe anxiety for example (National Alliance to End Homelessness, 2024). Based on a study, the development of PTSD precedes the onset of homelessness in about three-quarters of both men and women (North & Smith, 1992).

Furthermore, it has been proven that traumatic and adverse childhood experiences are linked to an increased likelihood of homelessness, and critical substance use disorder. Adverse childhood experiences, or ACEs, are traumatic events that happen during one’s childhood (Centers for Disease Control and Prevention, 2023). They are common in the United States with 64% of adults reporting experiencing one (Centers for Disease Control and Prevention, 2023), and can be assessed using one of the official questionnaires, such as the one developed by Drs. Anda and Felitti, that have been made as a screening tool for ACEs (Schulman & Maul, 2019). According to Garfin et al., ACEs can lead to “social and occupational impairments that cause or maintain homelessness” (2022). These impairments include mental health issues, substance use issues, or even familial instability (Centers for Disease Control and Prevention,



2023). People who are unhoused are extremely vulnerable as they do not have access to the protection that provides a stable home. They are more likely to experience trauma, whether it is before they experience homelessness or after, than those who do not experience it at all (Tinland et al., 2018).

Gender Differences

A traumatic event is defined as a shocking and dangerous event that has caused a lot of stress to a person (National Institute of Mental Health, 2024). Unfortunately, those are highly common to people experiencing homelessness with almost 90% of women reporting having experienced one in their lifetime (Davis & Kutter, 1998). According to a study, rape is one of the highest reported traumas in unhoused women (20%) while assault is the highest reported in men (21%) (North & Smith, 1992). Unfortunately, the study does not mention whether the traumatic event happened before or after the onset of homelessness, making the connection unclear. Although women are less likely to experience becoming unhoused compared to men, they are more at risk for many life-threatening factors (Tinland et al., 2013; Statista, 2023). In fact, cis-women represented 38% of the unhoused population in the United States in 2022 (National Alliance to End Homelessness, 2024). Women experiencing homelessness are at greater risk of having a serious mental illness which can make them more vulnerable to victimization (Bonugli et al., 2013). In fact, it has been demonstrated that living with a serious mental illness while being unhoused can increase the chances of being assaulted, having physical illnesses, or even suicide (Bonugli et al., 2013). Moreover, women experiencing homelessness lack independent living skills which is crucial to sustaining a stable housing and lifestyle, particularly in the areas of budgeting and money management (Davis & Kutter, 1998).

Women are more likely to develop PTSD than men because of the different exposures to certain types of traumas, such as sexual assault, which are more commonly experienced by women, and also because of culture and gender roles (Vernor, 2019). Although men and women tend to experience PTSD in similar ways, research shows that they are more likely to cope in different ways. Women would internalize more which can cause different disorders' symptoms to develop, like anxiety for example (Vogt, 2023). On the other hand, men are more likely to use externalizing coping mechanisms like substance misuse (Vogt, 2023).

PTSD and Homelessness in Women

Women experiencing homelessness and housing instability while also coping with past trauma and PTSD are at an increased risk. PTSD is known to be linked with depression which is associated with reduced quality of life and increased suicide risk (Tinland et al., 2013). The disorder's symptoms also impede people's ability to perform daily activities and make them more likely to isolate from their social lives (Davis & Kutter, 1998). That being said, another factor that leads to increased isolation is the victimization of women. Being a victim of many offenses creates a need to be hyper-vigilant and aware at all times, making them avoid certain places and social interactions, and increases symptoms of depression at the same time (Bonugli et al., 2013). A previous study suggests that as a way to feel safer, many women have also tried to gain protection from men which has often led them to form unsafe relationships (Price & Glorney, 2022). A majority of unhoused women will resort to substance use to cope with the constant stress they are going through on a daily basis (Bonugli et al., 2013). According to Bonugli et al., unhoused women know that using substances makes them more vulnerable to victimization, but they would rather numb the pain they are feeling (2013). When women experience homelessness, they are more likely to undergo challenges such as depression,



Bao

isolation, substance use, and domestic violence which are amplified by trauma and mental health issues that naturally stem from housing insecurity.

Gaps in Knowledge and Significance of Proposal

Homelessness has been a constantly rising issue these past years and although we are gaining more knowledge on the topic thanks to previous studies, as of right now, our knowledge about the experiences of recently unhoused women is still limited. It is especially significant to focus on this now as we are slowly coming out of a pandemic but are also transitioning to a more stable economic status. This would be a great time to research this topic as we now know that many were impacted by the pandemic and solutions need to be put in place for those who were affected.

Most research has been about finding a connection between homelessness and traumatic events in women, but to our knowledge, there have been few, if any, studies that have specifically examined new trauma experienced by women who are recently unhoused. This is notably important because “the average length of stays in emergency shelters is 51 days for single women and 70 days for families” (National Coalition for the Homeless, 2009). This highlights how little time sheltered women have to find a stable situation before becoming unsheltered.

Moreover, many studies were conducted more than two decades ago and may not be relevant to the present experiences of unhoused women. Oftentimes, these studies were geographically precise which leaves less room for generalization and broader understanding. There was no research found in King County which is one of the counties with the highest homeless population in the United States and could be an interesting location to study (USAFacts, 2023).

Further research is needed, as traumatic events can impact those who survive them for a lifetime and it is known that unhoused people, especially women are more at risk to experience them (Davis & Kutter, 1998). Understanding how women are exposed to trauma in the first moments of experiencing homelessness would allow us to find solutions to prevent any more traumas, keep women safe, and possibly help them find a safer situation. That being said, more qualitative data would be helpful to have a firsthand point of view or interpretation of the ones experiencing it.

Research Question & Hypothesis

Women experiencing homelessness are at an increased risk of traumas such as assaults, infections, or even starvation compared to women with stable housing (Grammatikopoulou et al., 2021). Most of them had been exposed to more traumatic events prior to being unhoused which can have a significant impact on their mental health. Our hypothesis is that even women experiencing homelessness for short periods of time, despite available resources, are still vulnerable and at risk of experiencing traumatic events. There has been little research made on women who have experienced homelessness for a shorter period of time and its relationship with trauma exposure, therefore we will be conducting a qualitative inquiry to investigate the causes and possible solutions to what impacts women experiencing homelessness in King County. This qualitative research will allow us to gain a better understanding of what women who have experienced unhousing for less than six months endure daily since they started experiencing unhousing instability, and what could be done to make sure they feel safer. This study is based on this question: What are the traumatic experiences of women who have recently experienced homelessness or housing instability in King County?



Research Approach

Research Design

As mentioned earlier, this study will be conducted as a narrative and phenomenological research. We understand that quantitative data is important, however, this method was chosen because understanding the participants' experiences and emotions is more relevant for this research. We aim to advocate for better resources and think that doing so will allow participants to have a voice that can be useful for future research and findings. Our study also aims to find patterns, if any, that could give us a better perception of what the participants commonly experience.

Study Population and Sampling

The participants of this study will include around 30 females over the age of 18 who have been experiencing homelessness for at least 14 days and up to six months in King County. Women will be considered in this study if they have not had stable housing for six months or less. They will need to be able to communicate fluently in either English or Spanish to be considered for the study and will be required to demonstrate the ability to give informed consent as assessed by the MacArthur Competence Assessment Tool for Clinical Research. This research will use convenience sampling during the recruitment of the participants. Flyers will be posted on bus stops, street signs, near homeless shelters, and in parks. We also intend to collaborate with different shelters located in King County such as WHEEL Women's Shelter or Operation Nightwatch, where individuals will have the opportunity to learn more about our study, have their questions answered and possibly be recruited if interested.

Operationalization & Measurement

For this study, the independent variable will be homelessness and the dependent variable

will be traumatic events. Our definition of homelessness will be focused on women who have experienced unhousing instability for at least 14 days and up to six months. Unhousing instability includes women living in temporary accommodations, in shelters, on the streets, in their cars, and with friends and family. Traumatic events will include all events that happened after the onset of homelessness that have caused a great amount of stress to the participants. These variables will not be assessed with any tools but will be self-reported by the participants instead.

Data Collection and Analysis

For this study, the data will be collected through semi-structured, one-on-one interviews with open-ended questions to allow participants to tell their stories freely. These interviews will be conducted in person and will cover multiple topics including participants' feelings of safety, concerns, and substance use over approximately ten questions. They will take place in a location that provides privacy and comfort in the city where participants are recruited. Before the interviews, the participants will be reminded that they have the ability to stop the interview at any point in time. Every participant will be asked the same questions, and their answers will be audio recorded for transcribing purposes. The interviewers will also have the ability to take notes during the interviews. Interviews will last approximately one hour but can be shortened or lengthened depending on the participants' needs.

The data of this study will be obtained using coding from the recordings of the interviews. These recordings will be transcribed and then checked for accuracy. Coding will be done on recordings, transcriptions, and notes in order to find themes, patterns, and similarities.

Ethical Considerations

This study will require an Institutional Review Board (IRB) approval before any recruitment of



Bao

participants for their protection throughout the research process. The recruitment will be based on voluntary participation and every participant will be allowed to withdraw at any time from the study. Participants will be required to give their informed consent, including both written and verbal, before the interview begins. As the nature of the topics mentioned is sensitive, participants will be given a list of all the questions that will be asked to them during the interview ahead of time and will have the option of not answering any that they are uncomfortable with. Each participant will receive a hygiene kit and a \$20 gift card for their chosen store as an incentive. Participants' safety and health will be our priorities during this study, as a consequence, every participant's identity will remain confidential to the interviewers and on the records which will be destroyed after the study.

Discussion

Significance

For many people and especially women, developing PTSD and experiencing traumatic events is common before and while being unhoused. This research's results will allow us to gain a better understanding of the types of traumatizing experiences women who have experienced homelessness for a shorter period of time undergo, how often they have experienced them, and how it affects them. King County has one of the highest populations of homeless people in the United States and it is essential to recognize what could be helpful for them at this time to find a way to stop this crisis (USAFacts, 2023). As the pandemic is slowly calming down, these pieces of information will be crucial to finding solutions for those who have been impacted by it and things that could be done to help women and people experiencing homelessness in general to get back on their feet.

Limitations

Some of the limitations of this study are the small sample size. As the study conducted is qualitative, the ideal number of participants would be around 30 which can be a barrier to generalization. The defined geographical area is a limitation as all participants will be recruited in King County. Participants will also be required to be fluent in English or Spanish which can leave out a lot of other women's perspectives on the topic who could have other experiences due to not speaking one of these languages. Although the study aims to recruit participants with different residence types for diversity purposes, it is expected that most of them will be recruited from homeless shelters which can exclude women who may have undergone different events due to their circumstances. The study could also be limited because of the researcher's implicit bias which is something that will be worked on to prevent it as much as possible.

Future Directions

Future research could potentially study the effectiveness of the policies or infrastructures put in place to protect unhoused women from experiencing traumatizing events. They could also highlight the differences or similarities, if any, found in different states and their causes. This will help us generalize information and results countrywide to potentially increase national resources. As it is one of our limitations, researchers could look into different residence types and social identities and how they affect the population's circumstances. Future research should determine interventions that women could use to cope with different stressors and traumas they are exposed to on a daily basis including mental health services, community-based services, or assistance to safe housing and employment. They should focus on women's safety and identify support interventions that would create a positive impact.



References

- Bassuk, E. L., Weinreb, L. F., Buckner, J. C., Browne, A., Salomon, A., & Bassuk, S. S. (1996). The characteristics and needs of sheltered homeless and low-income housed mothers. *JAMA*, 276(8), 640-646. 10.1001/jama.1996.03540080062031
- Bonugli, R., Lesser, J., & Escandon, S. (2013). “The second thing to hell is living under that bridge”: Narratives of Women Living with Victimization, Serious Mental Illness, and in Homelessness. *Issues in mental health nursing*, 34(11), 827-835.
- Centers for Disease Control and Prevention. (2023). Fast Facts: *Preventing Adverse Childhood Experiences* |Violence Prevention|Injury Center. CDC. <https://www.cdc.gov/violenceprevention/aces/fastfact.html>
- Davis, J., & Kutter, C. J. (1998). Independent living skills and posttraumatic stress disorder in women who are homeless: implications for future practice. *American journal of occupational therapy*, 52(1), 39-44.
- Garfin, D. R., Amador, A., Osorio, J., Ruivivar, K. S., Torres, A., & Nyamathi, A. M. (2022). A multi-method exploration of mindfulness as a coping tool: Perspectives from trauma-exposed, unhoused women residing at a drug treatment facility. *Stress & health*, 39(2), 347-360.
- Grammatikopoulou, M. G., Gkiouras, K., Pepa, A., Persynaki, A., Taousani, E., Milapidou, M., Smyrnakis, E., & Goulis, D. G. (2021). Health status of women affected by homelessness: A cluster of in concreto human rights violations and a time for action. *Maturitas*, 154, 31–45.
- HUD Exchange. (2019). HUD’s definition of homelessness: Resources and guidance. *HUD Exchange*. <https://www.hudexchange.info/news/huds-definition-of-homelessness-resources-and-guidance/>
- National Alliance to End Homelessness. (2023). State of homelessness: 2023 Edition - endhomelessness.org. *National Alliance to End Homelessness*. <https://endhomelessness.org/homelessness-in-america/homelessness-statistics/state-of-homelessness/>
- National Alliance To End Homelessness. (2024). Addressing post-traumatic stress disorder caused by homelessness. *Housing matters*. <https://housingmatterssc.org/wp-content/uploads/2018/11/PTSD-and-Homelessness.pdf>
- National Institute of Mental Health. (2024). Coping With Traumatic Events. *NIMH*. <https://www.nimh.nih.gov/health/topics/coping-with-traumatic-events>
- North, C. S., & Smith, E. M. (1992). Posttraumatic among homeless men and women. *Psychiatric services*, 43(10), 1010-1016.
- Price, H., & Glorney, E. (2022). The challenge to survive: trauma, violence and identity in the lived experience of homeless women. *The journal of forensic practice*, 24(4), 436-452.
- Schulman, M., & Maul, A. (2019). Screening for adverse childhood experiences and trauma. *Center for health care strategies*. https://www.chcs.org/media/TA-Tool-Screening-for-ACEs-and-Trauma_020619.pdf
- Statista. (2023). Share of homeless individuals in the U.S. by gender 2022. *Statista*. <https://www.statista.com/statistics/962171/share-homeless-people-us-gender/>
- Tinland, A., Boyer, L., Loubiere, S., Greacen, T., Girard, V., Boucekine, M., Fond, G., & Auquier, P. (2018). Victimization and posttraumatic stress disorder in homeless women with mental illness are associated with depression, suicide, and quality of life. *Neuropsychiatric disease and treatment*, 14, 2269-2279. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6129029/>
- USAFacts. (2023). Which cities in the US have the most homelessness? *USAFacts*. <https://usafacts.org/articles/which-cities-in-the-us-have-the-most-homelessness/>
- Vernor, D. (2019). PTSD is more likely in women than men. *NAMI*. <https://www.nami.org/Blogs/NAMI-Blog/October-2019/PTSD-is-More-Likely-in-Women-Than-Men>



Bao

Vogt, D. (2023). Research on Women, Trauma and PTSD. *U.S. Department of Veterans Affairs*. [https://www.ptsd.va.gov/professional/treat/specific/ptsd_research_women.asp#:~:text=Although%20women%20and%20men%20may,abuse%20\(9%2C18\).](https://www.ptsd.va.gov/professional/treat/specific/ptsd_research_women.asp#:~:text=Although%20women%20and%20men%20may,abuse%20(9%2C18).)



MATERNAL MORTALITY AND SEVERE MATERNAL MORBIDITY AMONG BLACK WOMEN: A QUALITATIVE PHENOMENOLOGICAL STUDY

Nadira Hajimohamed

ABSTRACT: Black women face high rates of maternal morbidity and mortality in the United States, where they are 3-4 times more likely to experience complications and pregnancy-related deaths (Hailu et al., 2022). They face racial disparities in severe maternal morbidity and receive inadequate care to prevent pregnancy and delivery complications. I will use a qualitative phenomenological study to explore the lived experiences of Black women in the state of Louisiana surrounding severe maternal morbidity to draw out risk factors, barriers between healthcare professionals and patients, and improvements to maternal health equity. There will be in-depth semi-structured focus groups composed of 3-5 participants and one interviewer each. A limitation to this research is that this is not a representation of the United States as a whole, since southern states do have higher Black populations, which may not be the same for states in the West or East of the United States. This research can be extended by further looking into in-hospital births, birthing centers, and at-home births, comparing and contrasting the different outcomes within each facility. The lived experiences of Black women who have faced maternal morbidity highlight a broader system of preventable disparities while giving a voice for Black women to share their experiences in hopes of leading to change.

Introduction & Background

Overview of Maternal Mortality Among Women of Color

Maternal care is essential to women's health, enabling support before and during pregnancy, childbirth, and postpartum. Maternal care aims to ensure the health and well-being of the mother and baby while preventing and managing potential health risks. Maternal mortality (MM) refers to the death of a woman during pregnancy, childbirth, or within 6 weeks of the termination of pregnancy. Common causes that contribute to maternal mortality include hemorrhage, preeclampsia, eclampsia, infections, and obstructed labor. In the United States, Black maternal care faces structural racism as a result of racial disparities

and inequality. Black women are 3-4 times more likely to experience high rates of maternal mortality and 2-3 times more likely to face higher rates of severe maternal morbidity (Hailu et al., 2022). 80% of pregnancy-related deaths are preventable, impacting women of color, particularly Black women (CDC, 2022). High maternal mortality rates not only represent the racial and systemic disparities in healthcare systems, but also the lack of training provided to healthcare professionals to help combat the disparities in care.

Maternal Mortality Rate/Disparities in the United States

Despite its position as a developed, high-income country that spends trillions of dollars yearly on the health care system, the United States has continued to see high rates



Hajimohamed

of maternal mortality and morbidity when compared to other 'developed' countries. As of 2021, the reported rate of maternal deaths in the United States was 32.9 for every 100,000 live births and was previously 23.8 per 100,000 live births in 2020 (Hoyert, 2021). In Louisiana, the reported rate of maternal deaths in 2016 was 77.6 per 100,000 live births, compared to the U.S. reported rate of death at 21.8 per 100,000 live births (Kieltyka et al., 2016). The reported rate of pregnancy-related deaths affected women of older ages who carry higher risks of complications during pregnancy and childbirth. 2020 was also the year of a global pandemic taking the lives of over one million Americans and six million of the global population (WHO, 2024). Pre-existing racial, healthcare access and income disparities contribute to higher rates of maternal mortality. Shortages of healthcare providers, delays in seeking or obtaining care due to the fear of getting infected, along with overwhelmed healthcare systems could have also led to worse outcomes. Black women are far more likely to experience pregnancy-related death and complications than white women, regardless of their income and educational levels. Although Black women are shown to have higher rates of underlying health issues like hypertension, cardiovascular problems, induction, and cesarean births, they have less access to preventative/screening care (Salinas et al., 2021).

Severe Maternal Morbidity & Maternal Mortality

Severe maternal morbidity (SMM) refers to the rate of unexpected outcomes of labor and delivery that result in short-term or long-term complications to a woman's health. Similar to the causes of maternal mortality, conditions like hemorrhage, preeclampsia, eclampsia, cardiac events, and infections affect maternal deaths along with disabilities, injuries, and critical illnesses suffered during and after delivery. 75% of maternal deaths and complications are due to excessive bleeding (CDC, 2023).

Canty (2022) conducted a study with Black women who suffered from SMM where their interactions with health care professionals and their race were reoccurring themes that affected their experience. Implicit racial biases of healthcare providers result in the dismissal of symptoms and pain reports, delayed diagnosis, and inadequate treatment, which only worsens the risks of SMM. In another study, Medicaid coverage versus commercially insured participants has been shown to influence the type of care women receive (Wang et al., 2021). It has a significant impact on risks for maternal mortality and morbidity. Women who had Medicaid insurance plans described extended waiting periods, lack of communication among providers, and disagreements regarding the plan of care. Policies and interventions that address the coverage gap between Medicaid and private insurance are needed to overcome disparities.

Most Common Causes of Maternal Mortality and Morbidity/Risk Factors

Leading contributors to pregnancy and childbirth complications that carry high risks of maternal mortality and morbidity are all nearly preventable and, to some extent, predictable with adequate quality care. According to the World Health Organization (WHO), severe bleeding is the leading cause of pregnancy-related deaths and complications, accounting for 75% of deaths (2023). Hemorrhage is excessive bleeding during childbirth which can occur either before, during, or after delivery and is also known to be the leading cause of maternal mortality (Wormer et al., 2023). Postpartum hemorrhage is defined to be an estimated 500 mL of blood loss associated with vaginal delivery, and 1000 mL of blood loss with cesarean delivery (Wormer et al., 2023). Some of the primary causes of postpartum hemorrhages (PPH), as defined by Wormer, include uterine atony, retained placenta, abnormal placentation, and uterine inversion (2023). Uterine atony is the lack of contractions of the uterus, also known to be the most common cause of PPH



(Wormer et al., 2023). Abnormal placentation is when the placenta attaches itself deeply to the uterus or other surrounding organs, making it difficult to remove after childbirth and causing excessive bleeding (Bauer & Bonanno, 2009). Normally, the placenta detaches from the uterus and exits the vagina about half an hour after the baby is delivered. Uterine inversion is when the placenta remains attached to the uterus and exits, pulling the uterus inside out (Thakur, 2022). Uterine inversion not only causes severe bleeding and its occurrence rare, but the risk of mortality remains high.

Hypertension (high blood pressure) is when the pressure of an individual's blood vessels is too high and is common during pregnancy. Preeclampsia is a serious disorder that follows the conditions of high blood pressure and excess protein in the urine which can affect all organs in the body and usually begins after 20 weeks of pregnancy. Symptoms of preeclampsia include nausea or vomiting, trouble breathing, swelling of hands and face, and changes in vision (CDC, 2023). On the other hand, eclampsia is seizures that occur during pregnancy (CDC, 2023). Eclampsia is a rare but serious complication of preeclampsia. Black women face higher risks of developing preeclampsia and experiencing other severe complications.

Limited access to healthcare services, experiences of racism, and unequal treatment from healthcare providers can lead to postpartum depression among Black women. Postpartum depression (PPD) is a form of clinical depression that occurs after pregnancy. It is characterized by persistent feelings of anxiety, sadness, and exhaustion that interfere with the mother's ability to take care of herself and her baby. Factors that contribute to PPD include hormonal changes, lack of sleep, and stress of childbirth (Mughal, 2022).

Gaps of Knowledge

While maternal mortality and morbidity rates rise in the United States, Black women and women of color are 2-3 times more likely to have pregnancy-related complications and deaths compared to white women (CDC, 2023). Maternal mortality remains a public health concern, where it is clear disparities among different racial and ethnic groups play a major role in the outcome of pregnancy-related deaths and complications. The significant gaps in knowledge are rooted in systemic and institutional biases and disparities that dictate access to proper maternal care. While there is plenty of research on maternal mortality rates, contributing risk factors (such as hypertensive disorders), and socioeconomic disparities, there is not enough research on strategies that address the root cause of these disparities or interventions and policies that promote equitable access to maternal healthcare. This study is meant to investigate Black women and women of color's experiences with in-hospital births, birthing centers, and at-home births, while evaluating the types of care provided. I will also investigate how certain policies like implicit bias and cultural competence training for healthcare providers improve maternal health outcomes.

Significance & Impact

Despite the advancements in healthcare over the decades, maternal mortality is a prevalent issue that is shown to affect Black women and women of color. High maternal mortality rates among Black women and women of color are the outcome of cycles of intergenerational health disparities and inequity. The purpose of this study is to investigate racial disparities among Black women and women of color face that result in higher rates of maternal mortality and morbidity, incorporating qualitative methods to ensure maternal health policies and programs that protect and support Black women and women of color while aiming to improve access



Hajimohamed

to essential healthcare before, throughout, and after childbirth.

Research Approach

Research Question & Hypothesis

Throughout the research of this study, I have learned that racial disparities and deeply rooted systemic racism play a major role in the rate of maternal mortality and morbidity among Black women. Maternal mortality and morbidity among Black women in the United States represent a public health issue that is characterized by racial disparities. Black women are disproportionately affected, experiencing higher rates of maternal morbidity and mortality when compared to white women. My research question is: what factors contribute to the resilience and long-term physical, psychological, and financial effects on Black women who experienced maternal morbidity and mortality in the United States? Addressing systemic racism within the healthcare system, such as improving access to quality care, promoting culturally competent care, and addressing socio-economic determinants all contribute to reducing the rate and negative outcomes of maternal mortality and morbidity among Black women in the United States.

Research Design

A phenomenological approach enables deep exploration into the lived experiences of individuals and communities to extract themes regarding a phenomenon that may not be fully captured using quantitative data alone. In this study, we will conduct a qualitative phenomenological study to explore the lived experiences of severe maternal morbidity among Black women in the United States and examine the results of severe maternal mortality and morbidity. This study centers around the voices of those directly impacted by prominent patterns that drive disproportionate adverse outcomes. It opens spaces for Black women

to share traumatic events and experiences that have gone unheard.

Population & Sampling

This is a qualitative study with 25-35 participants between the ages of 25-45 who have experienced severe maternal morbidity. The participants of this study are Black women in the United States, more specifically in Louisiana, where the rate of maternal mortality is the highest among all states and there is a larger Black population. While the sample size of this study is relatively small, it aligns best with in-depth qualitative research. The goal of this study is not to achieve a sample size that represents the entirety of the Black female population in the U.S., but to deeply explore the lived experience of communities in Louisiana. The findings can later identify themes and challenges that likely resonate with Black women who face similar disparities across the United States. Participants must have given birth within the past 2-3 years with at least one live birth. The CDC (2023) defines the experiences of severe maternal mortality as eclampsia, hemorrhage, cardiovascular complications, and postpartum depression. We will be using the snowball method to gain participants.

Operationalization

As this is a phenomenological approach, this research proposal will look over the common forms of severe maternal morbidity and mortality among Black women. Since this is a qualitative study, data will consist of focus groups that undergo thematic analysis as detailed in the analysis portion of this study. Focus groups will be recorded with the permission of the participants and will be double-checked via notes. Codes for healthcare disparities, social determinants, maternal experiences, and cultural competence are used to capture key concepts, patterns, and ideas that will be grouped into broader themes related to maternal mortality and morbidity among Black women.



Data Collection

Data will be collected in face-to-face, in-depth conversational focus groups with 3-5 participants and a researcher present. The duration of the interview/focus groups will last anywhere between 85-120 minutes in a community setting like a health clinic or neighborhood gathering site to establish a trusted environment. The women in this study will share personal experiences that may or may not be traumatizing or triggering to talk about, like their experience giving birth and communication with nurses and doctors, so the health and well-being of the participants is our number one priority. Having interviewers who understand the struggles of a Black woman creates a safe space for Black women to share their experiences without the fear of judgment. The interviewer of each focus group will be a Black woman. All focus groups will be audio-recorded and handwritten by the interviewer with the consent of each participant. Any information that participants want to keep private will not be audio-recorded or written down. Focus group sessions will follow a semi-structured guide to establish steps to take based on community-driven solutions by promoting questions centered around care encounters, social vulnerabilities, access barriers, experiences with access to care during pregnancy, and relationships with healthcare providers.

Analysis

Qualitative data collected from focus groups will be coded using thematic analysis to identify common trends and patterns from participants. This study will conduct a series of 5 focus groups with 3-5 participants in each who have experienced pregnancy-related complications. With the data collected from the focus group, we would see the trends and patterns between maternal mortality and morbidity that are displayed and use statistical methods to analyze the maternal mortality rates in Louisiana to identify trends, patterns, and potential risk

factors using health records and public health databases.

Ethical Considerations

To uphold ethical guidelines throughout the research with IRB approval, participants will be given verbal and written consent forms to ensure that each individual is aware of the purpose of the study. Since this is a research proposal on maternal mortality and morbidity, individuals participating in this study are particularly vulnerable, due to sensitive health issues that need awareness. We can incorporate culturally competent care and other forms of support to ensure the well-being of each participant. The interviewer will be trained on trauma-informed techniques that include being nonjudgmental, active listening, recognizing signs of distress, validating emotions, and understanding how one's own biases and nonverbal responses can unintentionally retraumatize participants. We will also be providing resources like maternal groups provided by physicians and mental health professionals for mental support. The purpose is to observe different maternal complications Black women face and the connection between severe maternal mortality and morbidity. Participants, healthcare professionals, and interviewers need to go over consent forms during the interview and have the right to deny any questions asked and leave at any given time. Any questions and concerns will be answered at the beginning and the end of the interview to ensure that participants are comfortable moving forward with the study. Data collected in this study will be kept confidential to protect participants' personal information and privacy.

Discussion

Significance

Maternal mortality is the rate of deaths of women during pregnancy, at delivery, and within one year of giving birth, and it is a critical public health issue. Despite the advancements



Hajimohamed

in healthcare over the decades, maternal mortality is a prevalent issue that is shown to affect Black women and women of color. In the United States, 80% of pregnancy-related deaths are preventable and particularly impact Black women who are three times more likely to die from pregnancy-related complications when compared to white maternal mortality rates (CDC, 2023). The significance of this study is to address multifaceted indicators that contribute to maternal health disparities along with policies put in place to ensure equitable maternal health outcomes. Louisiana has a high rate of maternal deaths, and it also happens to be one of the states with a high Black population. Studying the experiences of Black women in the state of Louisiana can contribute not only to the understanding of maternal health disparities among Black women, but it could also provide policy changes and create targeted interventions that can serve as a model for other regions facing similar issues.

Limitations

There are limitations to this study. The data collected is focused on Louisiana which may not represent the United States as a whole. The rate of mortality and morbidity is higher in southern states where there is a higher population of Black women and higher numbers of Black women giving birth when compared to other parts of the states. The size of this study is relatively small with 25-35 participants which can reduce the generalizability of the results to a wider population within the United States. A common occurrence is that data collected within one state does not represent the whole of America. Although this is the truth, systemic racism and racial disparities are still a health and social issue that is effective across the United States.

Future Research

With the data collected in this research proposal, we could incorporate the focus groups

on the lived experiences of Black women who experienced SMM and their relationships with healthcare professionals and providers in Louisiana. It can be extended by further looking into different birthing locations to compare and contrast the different outcomes within each facility. We could conduct a mixed-methods exploratory approach to collect data on the rate of maternal mortality and morbidity and create methods to combat severe complications by using culturally competent care and improving healthcare training focused on implicit biases, which tend to be a major indicator in the death of Black women in the United States. By extending this research proposal, we can observe and create policy changes and programs that better represent Black women and women of color in the United States, while addressing maternal health disparities. We could also explore how intersectionality influences maternal health outcomes among women of color.

References

- Bauer, S. T., & Bonanno, C. (2009). Abnormal placentation. *Seminars in perinatology*, 33(2), 88–96. <https://doi.org/10.1053/j.semperi.2008.12.003>
- Canty L. (2022). The lived experience of severe maternal morbidity among Black women. *Nursing inquiry*, 29(1), e12466. <https://doi.org/10.1111/nin.12466>
- Centers for Disease Control and Prevention. (June 26, 2023). *Health care expenditures*. <https://www.cdc.gov/nchs/hsr/topics/health-care-expenditures.htm>
- Centers for Disease Control and Prevention. (June 19, 2023). High blood pressure during pregnancy. <https://www.cdc.gov/bloodpressure/pregnancy.htm#:~:text=This%20condition%20happens%20when%20you,away%20after%20you%20give%20birth.>
- Hailu, E. M., Maddali, S. R., Snowden, J. M., Carmichael, S. L., & Mujahid, M. S. (2022). Structural racism and adverse maternal health outcomes: A systematic review. *Health & place*, 78, 102923. <https://doi.org/10.1016/j.healthplace.2022.102923>



- Hoyert DL. 2021. Maternal mortality rates in the United States, 2021. *NCHS Health E-Stats*. 2023. DOI: <https://dx.doi.org/10.15620/cdc:124678>
- Kieltyka, L., Lake, C., Mehta, P., Schoellmann, K. (Aug, 2018). *Louisiana Maternal Mortality Review Report 2011- 2016*. https://ldh.la.gov/assets/oph/Center-PHCH/Center-PH/maternal/2011-2016_MMR_Report_FINAL.pdf
- Mughal S, Azhar Y, Siddiqui W.(Jan 2023). Postpartum Depression In: *StatPearls Treasure Island (FL)*. <https://www.ncbi.nlm.nih.gov/books/NBK519070/>
- Salinas, J., & Salinas, M. (2021). Commentary: Systemic Racism in Maternal Health Care: Centering Doula Advocacy for Women of Color During COVID-19. *Family & Community Health*, 44(2), 110–111. <https://doi-org.offcampus.lib.washington.edu/10.1097/FCH.0000000000000293>
- Thakur M, Thakur A. Uterine Inversion. [Updated 2022 Nov 28]. In: StatPearls [Internet]. Treasure Island (FL): *StatPearls Publishing*; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK525971/>
- Wang, E., Glazer, K. B., Sofaer, S., Balbierz, A., & Howell, E. A. (2021). Racial and Ethnic Disparities in Severe Maternal Morbidity: A Qualitative Study of Women’s Experiences of Peripartum Care. *Women’s health issues: Jacobs Institute of Women’s Health*, 31(1), 75–81. <https://doi.org/10.1016/j.whi.2020.09.002>
- World Health Organization. (March 31, 2024). WHO COVID-19 Dashboard. <https://data.who.int/dashboards/covid19/deaths?n=c> *World Health Organization*. (February 22, 2023). *Maternal Mortality*. <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality#:~:text>
- Wormer KC, Jamil RT, Bryant SB.(Jan 2023). Acute Postpartum Hemorrhage. *StatPearls* [Internet]. Treasure Island (FL) <https://www.ncbi.nlm.nih.gov/books/NBK499988/>





QUALITATIVE STUDY TO UNDERSTAND THE JOURNEY AND EXPERIENCES OF ADOLESCENTS WHO UNDERGO MISUSING OPIOIDS

Yahya Wardak

ABSTRACT: The opioid epidemic has turned into a serious public health issue in US, with a morbidity rate to increase by a staggering 43%. Adolescents are the most vulnerable, experiencing the ominous consequences of opioid abuse, which includes overdose and death. This research proposal explores the popularity and consequences of opioid addiction among adolescents and teens, giving insight into the underlying factors contributing to this devastating trend. This proposal uses an phenomenological qualitative research approach in order to gain insight in the experiences, feelings, and emotions of adolescents misusing opioids. From this research, we want to create intervention methods to decrease this alarming public health issue.

Introduction & Background

Introduction to the Problem

Currently, in the United States, the opioid epidemic has reached its highest point, causing the morbidity rate to increase by an astonishing 43% (University of Washington Addiction, Drug & Alcohol Institute, 2022). According to the Centers for Disease Control and Prevention (CDC), the COVID-19 pandemic has caused opioid overdose death rates to increase (2022). The most susceptible to the opioid epidemic are adolescents, and they are dealing with the consequences of misusing opioids, such as overdose or even death (Yaster et al., 2020). Understanding what adolescent opioid users go through, in terms of their feelings and emotions, can shed light on this dark situation, which can possibly lead to prevention and intervention methods to decrease and prevent the cycle of misuse.

Definitions and Statistics

Opioid addiction is when an individual has lost self-control in taking opioids regardless of having the ambition to stop (Ljungvall et al.,

2020). This term can be confused with opioid use disorder, which refers to the frequent use of opioids that causes health issues, impairments, and failure to meet personal responsibilities (Ljungvall et al., 2020). When examining the situation's statistics, a 2016 opioid outbreak totaled over 12% of all deaths among 15-24 years olds (Hudgins et al., 2019). In a Risk Behavior Survey, which discusses the misuse of narcotics, the survey reports that the prevalence of misuse is 17% among 12th-grade students in 2017 (Hudgins et al., 2019). Lastly, in past years prescription opioid misuse among adolescents and young adults has increased from 0.7% to 16.3% (Hudgins et al., 2019). The misuse of prescription opioids may cause an excess amount available.

Overprescribing Opioids

One potential factor that's inciting the epidemic is the excess of opioids that patients have (Yaster et al., 2020). After conducting interviews with the patient's parents, in their research study, Hunsberger and his researchers discovered that their children, ages 1-21 years old had more than half of unconsumed opioids left (2019). In Hunsberger's Study, many of



Wardak

the parents weren't sure what to do with the leftover opioids (2019). Some of the parents went as far as disposing of them without proper guidance (Hunsberger et al., 2019). In another study, Ross-Durow examined the homes of students that were prescribed pain medicine and discovered that all of the participants had unsupervised access to their excess medication (2013). With the excess amount left and with no supervision, adolescents can be at risk for abusing opioids (Ross-Durow et al., 2013). There's no doubt there will be leftover pain medicine after postoperative pain. With these given studies, all patients may be guaranteed an excess number of opioids. With that guarantee, there is risk of abusing the pain medicines.

Misuse and Abuse

An important motive that is occurring during the opioid epidemic is the misuse of medication, which can lead to addiction (Yaster et al., 2020). According to a retrospective study examining the years 2015-2016, out of the 32.8 million individuals who used prescription opioids, 21% were adolescents (Hudgins et al., 2019). Out of those adolescents who responded, 3.8% were misusing prescription opioids and obtained them from friends or a prescriber (Hudgins et al., 2019). Another potential risk factor comes with the abuse of heroin, which is an illicit drug. A strong correlation between the misuse of prescription opioids during adolescence can transition to heroin use in young adulthood (Cerdá et al., 2019). The pathway to using heroin varies among patients, but the majority begin when there's a restriction to obtaining prescription opioids (Monico et al., 2018). There are many factors (both social and environmental) that are involved in using heroin after prescription opioids, but the common theme that researchers found was that patients don't need a prescription for heroin and that heroin is much cheaper than prescription opioids (Monico et al., 2018). Misusing opioids can hinder the lives of adolescents and can possibly lead them to use illegal substances.

Treatment Options

Patients that are dealing with opioid addiction or misuse can attend a rehab center or therapy. But there aren't many strategies when it comes to dealing with excess opioids. Garren and his research team discovered that patients who were given postoperative counseling on storing and disposing methods of opioids had fewer issues being stuck with the excess amount (2019). That said, there should be a rule allowing doctors to give patients postoperative directions when dealing with opioids.

Gaps of Knowledge

When examining the gaps of knowledge for this situation, there are a few issues that one must be aware of. The first one is, patients will most likely be left with excess opioids after postoperative pain (Garren et al., 2019). This may be a concern that almost all patients will deal with when prescribed pain medicine. Another unknown factor that must be resolved is a prevention method focusing on adolescents abusing opioids (Hudgins et al., 2019). In a past study done by researchers in Sweden, they interviewed 10 people who were undergoing chronic opioid therapy (Ljungvall et al., 2020). After analyzing the interviews, they came up with solutions that should be implemented into the Swedish healthcare system, such as monitoring patients who are using opioids over a long period of time and creating a trustworthy and reliable relationship between a healthcare provider and patients. This entire study was done with adults; however, we want to conduct a similar qualitative study, but focused primarily on adolescents, ages 15-18 years in drug treatment centers.

Research Question and Hypothesis

In the United States, we are facing a terrible opioid epidemic causing the mortality rates to increase by 50% (Yaster et al., 2020). To make matters worse, the most vulnerable to



Experiences of Adolescents Who Undergo Misusing Opioids

the opioid epidemic are adolescents, and they are also dealing with the consequences of misusing opioids (Yaster et al., 2020). While adolescents do face overdose deaths, Cerdá and his researchers further discovered how misusing opioids can lead to illicit substance use such as heroin among adolescents and young adults (2015). Our qualitative research method will explore the experiences that adolescents go through when misusing opioids. Specifically, our research question is: what are the experiences that adolescents (ages 15-18 years) endure when addicted to misusing unneeded prescription opioids? For this research project, we intend to investigate the themes based on the accounts and phenomena of participants who are currently placed in Drug Treatment centers to share during the in-depth interview session.

Research Approach

Research Design

The type of study that we will be administering is a phenomenological qualitative research project. The reason we have selected this approach is because we want to examine the experiences, emotions, and feelings that our participants have when misusing unneeded opioids. With this research model, we can gain an understanding of the phenomena as individuals present their journeys through their lens. Using phenomenology helps give direct awareness of those experiences they have faced.

Study Population and Sampling

Our study population is going to be adolescents, particularly, high school-aged students (15-18 years old). To qualify for this study, participants must have an addiction to pain medicine and must be admitted to a drug abuse treatment program (Bieber et al., 2008). To be included, they must have had pain for at least three months before opioid exposure, treated chronic pain with prescription opioids, and their first exposure to opioids must have

been for treating their chronic pain. If the participants meet all the requirements, then they are eligible to be part of the study. We will enroll about ten people for a single in-depth interview and will sample them by using the convenience method. We will do this by placing and handing out flyers in varying drug treatment locations in Seattle. The reason we chose the sampling method is because we are looking for specific participants that can be part of the study.

Operationalization and Measurement

In this study, we are focused on adolescents that are misusing opioids and have an addiction to them. Opioid addiction is defined as an individual that has lost self-control in using opioids (Ljungvall et al., 2020). This is the most severe stage of opioid use disorder. On the other hand, opioid use disorder is defined as constantly in-taking opioids causing impairments and health issues (Ljungvall et al., 2020). In the Introductions section, we mentioned overprescribing opioids, which ultimately means physicians prescribing an excess number of opioids to patients (Yaster et al., 2020). For the participants that we will interview, they need to go through recovery in the Drug Abuse treatment program and must be clean for four weeks. When focusing on this qualitative study, we will be conducting interviews that consist of open-ended questions with ten individuals (that are adolescents) who are misusing opioids.

Data Collection

All interviews will be audio recorded and then transcribed verbatim for analysis in English (Ljungvall et al., 2020). The reason for this is we will have two coders closely read and analyze the transcripts. The themes that we may encounter are losing control of oneself when using opioids, dependency on the medication, and being stigmatized for using pain medication (Ljungvall et al., 2020).



Wardak

Data Analysis

For the analysis section, we plan to use Interpretive Phenomenological Analysis (IPA) (Ljungvall et al., 2020). For this analysis method, each transcript will be evaluated for their differences in claims and experiences by two members of the research team who will be coders. From here, they will examine key ideas and main themes through different perspectives. To do this they will have to reread the transcripts several times. After this is done, both coders will then compare their interpretations of the transcripts and identify patterns, connections, and differences from the varying themes they discovered. After this step, we will then compile and present the key themes and ideas from the interviews.

Ethical Considerations

Before conducting our study, we will wait until we receive IRB approval by submitting our proposal to the University of Washington. The participants in this study will be informed about the risks, benefits, and purpose of this study and are encouraged to ask any questions if they have any. Also, the participants must provide verbal and written consent before the interview. For those who are minors, we ask for the parents' permission to conduct the interview with their children, and we will reassure them that all of this information will be kept confidential. We will then advise the participants that this is all voluntary and may opt out whenever they feel the need. Since the interviews will take place in person, we plan to tell the participants that their identities and the stories they present will be kept confidential among the research team. The only matter we will share with the public is the themes we discover from the interviews. We encourage the participants to give detailed answers to the questions about their lived experiences of misusing pain medicine, but overall, they have control over what they want to present to us. The interviews will take place in a public hospital building or treatment center,

so no suspicion arises with our applicants. They will all be given \$75 for their participation in the interview, so they do not feel like their time will be wasted.

Discussion

Significance

Overall, what we are trying to accomplish is better well-being for adolescents that are unfortunately mixed into the opioid pandemic that we are currently facing in the United States. As mentioned earlier, doing a qualitative study that involves interviews with open-ended questions can give us a unique perspective of what the victims are experiencing with their health. To add on, interviews give rich data, create empathy and strong understanding, and give compelling information about the subject's lifestyle that cannot be obtained by using a quantitative approach. When examining the study population, they are not usually acknowledged in the opioid pandemic (Yaster et al., 2020), and are therefore, an understudied population. The sampling technique that we will use is convenience sampling. With this method, we are collecting specific types of participants who are addicted to misusing opioids. Therefore, we are getting data from the exact population that we want.

Limitations

As mentioned earlier, we will be conducting interviews, so keeping the participant's identification anonymous will not be possible. But to solve this issue, we need to keep their identities confidential among the research crew. The interview will consist of 10 participants, which may be a small number for even a qualitative study, but we are expecting to have in-depth interview sessions with all the participants. Since we are doing in-person interviews, we may deal with the Hawthorne effect, which is when individuals may behave differently when being observed by a researcher.



Experiences of Adolescents Who Undergo Misusing Opioids

This is a natural cause that all participants may have when participating in a study. We will just try to make them feel welcome into the interview as much as possible. Convenience sampling is a non-probability technique. This means there is no randomization among our population; therefore, there is a potential bias in this study. However, there's no other way to go around this because we are looking for specific individuals (not random ones), which is not possible using the probability technique. Lastly, we are interviewing 10 people in one city, so the experiences that the participants share will not represent everyone in the United States. But acquiring the emotions and experiences that these participants present to us can certainly open other doors when dealing with the opioid epidemic.

Future Directions

If this study gets conducted and we receive data, we will then investigate the common health disparities or issues those adolescents are going through. We also want to perform this study on other groups that are facing this crisis, such as young adults and minority groups. From there, we will try to come up with resolutions that can resolve the issues that they are dealing with. Also, when we examine the issues adolescents face when abusing pain medicine, we can try to construct a prevention method that prevents adolescents from abusing opioids in the future, such as developing policies for prescribing opioids to inform patients and parents of potential risks and dangers that they need to be aware of when using opioids.

References

- Bieber, C. M., Fernandez, K., Borsook, D., Brennan, M. J., Butler, S. F., Jamison, R. N., Osgood, E., Sharpe-Potter, J., Thomson, H. N., Weiss, R. D., & Katz, N. P. (2008). Retrospective accounts of initial subjective effects of opioids in patients treated for pain who do or do not develop opioid addiction: A pilot case-control study. *Experimental and Clinical Psychopharmacology*, 16(5), 429–434. <https://doi.org/10.1037/1064-1297.16.5.429>
- Centers for Disease Control and Prevention. (2022, February 14). Understanding drug overdoses and deaths. *Centers for Disease Control and Prevention*. Retrieved October 16, 2022, from <https://www.cdc.gov/drugoverdose/epidemic/index.html>
- Cerdá, M., Santaella, J., Marshall, B. D. L., Kim, J. H., & Martins, S. S. (2015). Nonmedical prescription opioid use in childhood and early adolescence predicts transitions to heroin use in young adulthood: A national study. *The Journal of Pediatrics*, 167(3). <https://doi.org/10.1016/j.jpeds.2015.04.071>
- Garren, B. R., Lawrence, M. B., McNaull, P. P., Sutherland, R., Bukowski, T. P., Nielsen, M. E., Woody, N., Clark McCall, M. H. A., Ricketts, K., Chidgey, B. A., & Ross, S. S. (2019). Opioid-prescribing patterns, storage, handling, and disposal in postoperative pediatric urology patients. *Journal of Pediatric Urology*, 15(3). <https://doi.org/10.1016/j.jpuro.2019.02.009>
- Hudgins, J. D., Porter, J. J., Monuteaux, M. C., & Bourgeois, F. T. (2019). Prescription opioid use and misuse among adolescents and young adults in the United States: A national survey study. *PLOS Medicine*, 16(11). <https://doi.org/10.1371/journal.pmed.1002922>
- Hunsberger, J. B., Hsu, A., Yaster, M., Vozzo, P. T., Gao, S., White, E. D., Yenokyan, G., Vickers, B., & Monitto, C. L. (2019). Physicians prescribe more opioid than needed to treat pain in children after outpatient urological procedures: An observational cohort study. *Anesthesia & Analgesia*, 131(3), 866–875. <https://doi.org/10.1213/ane.0000000000004392>



Wardak

- Ljungvall, H., Rhodin, A., Wagner, S., Zetterberg, H., & Åsenlöf, P. (2020). "My life is under control with these medications": An interpretative phenomenological analysis of managing chronic pain with opioids. *BMC Musculoskeletal Disorders*, 21(1). <https://doi.org/10.1186/s12891-020-3055-5>
- Monico, L. B., & Mitchell, S. G. (2018). Patient perspectives of transitioning from prescription opioids to heroin and the role of route of Administration. *Substance Abuse Treatment, Prevention, and Policy*, 13(1). <https://doi.org/10.1186/s13011-017-0137-y>
- Ross-Durow, P. L., McCabe, S. E., & Boyd, C. J. (2013). Adolescents' access to their own prescription medications in the home. *Journal of Adolescent Health*, 53(2), 260–264. <https://doi.org/10.1016/j.jadohealth.2013.02.012>
- University of Washington Addiction, Drug & Alcohol Institute. (2022, August 29). Opioid trends across Washington State. *Washington state opioid trends*. Retrieved October 16, 2022, from https://adai.washington.edu/WAdata/opiate_home.htm
- Yaster, M., McNaull, P. P., & Davis, P. J. (2020). The opioid epidemic in Pediatrics: A 2020 update. *Current Opinion in Anaesthesiology*, 33(3), 327–334. <https://doi.org/10.1097/aco.0000000000000865>



OBESITY IN AMERICA: CROSS-SECTIONAL STUDY ON THE ASSOCIATIONS BETWEEN FAST FOOD RESTAURANTS' DENSITY AND OBESITY AMONG U.S. ADULTS IN WASHINGTON STATE

Giselle Mak

ABSTRACT: Obesity has become the world's most significant public health epidemic, and the prevalence of obesity and diet-related health problems have skyrocketed with the rapid growth of fast-food restaurants. Despite the rising prevalence of this issue, there is limited research on this topic. This research proposal aims to bridge the knowledge gap and to explore the correlation between fast-food restaurant density and obesity in the United States through a quantitative approach, using the measurement of the body mass index and participants' residential proximity to fast food restaurants. The goal of this research is to provide valuable insights to help healthcare professionals and policymakers to create tangible interventions on obesity, and overall improve public health outcomes.

Introduction & Background

Globalization's Impact on the World

As the world advances in development and technology, globalization has overwhelmed the world with an abundance of food. The world has transitioned from food scarcity to food abundance, shifting health concerns from malnutrition to overweight health problems. Globalization has increased the accessibility and affordability of ultra-processed food across the world and results in a diet shift from traditional diets of minimally processed food to ultra-processed food diets in people. This ultra-processed food diet has now fully taken over as the mainstream diet – the media has named it the western diet, as many of the ultra-processed foods originated from the western countries. The skyrocketing rate of the overweight and obese population can be seen shortly after World War II and due to the convenience, accessibility, affordability, and marketing, the western diet, also known as the ultra-processed diet is now the new daily diet for many people. A new type

of restaurant known as the fast-food restaurant has gained popularity, entering the food industry around the globe, to better serve the public diet preference.

Obesity Risk Factors

Along with the many benefits brought by the fast-food business, the ultra-processed food diet also brings in a new kind of public health crisis around the globe, Obesity. Obesity is defined as a noncommunicable disease of “abnormal or excessive fat accumulation that presents a risk to health”, according to the World Health Organization (2022). Every 3 in 4 American adults are found to be overweight or obese in the US, making Obesity one of the prominent leading health diseases around the world (NIH, 2022). Obesity-related diseases including cardiovascular diseases, type 2 diabetes, and musculoskeletal disorders are the top rank of the main cause of diseases (CDC, 2019). This is an alarming global issue that affects everyone as we have shifted our diet to ultra-processed food. Among all the countries in obesity rate, the



Mak

United States was ranked 12th highest obesity rate with a 36.2% obesity rate (ProCon, 2020) and is the only developed country that places in high ranking in obesity rates. The new survey done in 2023 shows nearly half of the United States adults (41.9%) are obese (TFAH, 2023). Comparing the data from 2020 and 2023, there is a significant increase of 5.7% obesity rate. It tells us an alarming fact that more Americans are getting obese as the years go by. As a result of the high obesity rate, the US spends \$173 billion a year on treating obesity and around \$327 billion on diabetes annually for treating ultra-processed food related health problems (CDC 2020). The obesity rate is anticipated to rise in the coming years, further increasing healthcare spending in the United States.

U.S. Healthcare Spending

A handful of research demonstrated a strong correlation between obesity and higher medical costs in the United States. The significant amount of healthcare spending on obesity and diabetes, in combination with other healthcare spending, places the United States in first rank on healthcare spending among all the developed countries. According to OEDC Health Statistics (2022), the United States healthcare spending has skyrocketed, consistently spending a greater percentage of GDP on healthcare since 1980. As of 2021, the US healthcare expenditure was twice as much as the second ranked country, Germany, and three to four times higher when compared to the lowest-ranked developed countries, South Korea, New Zealand, and Japan. Despite being the first ranked for healthcare spending, the United States is the only country that does not provide health coverage among the other developed countries (OEDC Health Statistics, 2022). The surge in obesity rates appears to coincide with the start of the high percentage of GDP allocation on healthcare spending. Would a decrease in obesity decrease the U.S. national GDP percentage on healthcare spending? Cawley et. al (2021) conducted a cross-sectional analysis study on the medical

spending between adults with obesity and adults with no obesity on medical spending. The finding shows a significant increase of \$2,505 in medical care with adults diagnosed with obesity, in comparison with individuals without obesity - a suggestion of relation of healthcare spending with the rate of obesity in the US. Similarly, a study conducted by Ramasamy et. al (2019) found that obesity across classes I, II, and III was associated with a substantial economic burden, contributing to an increase in healthcare cost. Moreover, research by Revels et. al (2017) found that obesity is linked to a 36% increase in both inpatient and outpatient spending, along with a 77% increase in medication costs. It is predicted by the NIH 2015, that the healthcare expense will increase up to 956.9 billion from 860.7 by 2030. These collective findings underscore the substantial economic impact of obesity on healthcare expenditure. The United States has been actively working to reduce healthcare expenditure in the past decades. However, to reduce healthcare expenditure, it is essential to allocate resources to the root of the cause - obesity, and design intervention programs to effectively reduce healthcare spending in the US.

Dietary Shift to Ultra Processed Food

As ultra-processed food is gradually replacing the minimally processed food diet, there seems to be a rapid decline in fruit and vegetable consumption in contrast. According to the CDC from 2019, it is found that only 1 in 10 adults get recommended fruit and vegetable consumption. There are numerous studies that show a correlation between diet and obesity. In a study of "Public Health Response to Ultra-processed Food and Drinks," Jean Adams and her colleagues found a consistent correlation of higher sales of ultra processed drinks and BMI seen in women and men and an extra 508 kcal calories were consumed by participants on ultra-processed diets in comparison to unprocessed diets, along with an increase of 0.9kg weight gain findings over the span of two weeks (Adams



et. al 2020). The shift from a non-processed diet to one high in ultra-processed foods exacerbates negative health outcomes, resulting in a rapid increase of healthcare spending around the world. Numerous studies have revealed the detrimental health outcomes associated with ultra-processed food diets, such as obesity and non-communicable diseases. More resources and expenditure are required due to the decline of health outcomes. Consequently, more people are suffering from economic hardships including inflation and high expenses, forming a vicious circle in the health industry. This is an urgent public health issue that needs to be addressed to minimize all the undesirable outcomes. Health outcomes and cost of healthcare expenditure will continue to rise if no effective health interventions on ultra-processed foods are implemented.

Leading Cause of Obesity

Healthy diets have been proven to be the key factor that contributes to an individual's health. With the rise of health awareness, people are becoming more aware of the food they are consuming. However, with the rise of fast-food restaurants, it is increasingly difficult to find healthy food in this modern era. As fast-food restaurant businesses such as McDonald's, Burger King, and KFC, are becoming more prominent in the US, dominating the food market in the United States. The affordability, accessibility, and convenience that fast food restaurants provide have attracted many people to choose fast food over the traditional, expensive, time-consuming, and inaccessible unprocessed diet. In addition, fast-food restaurants invested \$14 billion annually in food advertising to further increase their presence in the food industry. The significant marketing investment from unhealthy food sources has greatly outcompeted the healthy diet marketing of merely \$1 billion (Ha, 2020), resulting in an unprecedented wave of fast-food diets around the world. The amount of fast-food consumption shows an alarming public health concern. There

is seemingly more evidence suggesting a direct correlation between the high number of fast-food restaurants to the high obesity prevalence rate.

Research Question and Hypothesis

According to IBIS World 2023, there were 198,153 numbers of fast-food restaurants in the United States that were opened in the US. As the public demand for fast food is increasing, the number of fast food restaurants is also growing annually. The rapid growth of fast-food restaurants also increases the rate of obesity. The expansion of fast-food restaurants in America seems to coincide with the rise in obesity rates. Yet there is little to no research done on the correlation of fast-food restaurant density and obesity. This study aims to explore the impact of proximity to fast-food restaurants residence has on an individual health outcome and to understand how the accessibility of fast-food restaurants affects the obesity rate among US adults. It is our responsibility to further explore and understand the topic of fast-food restaurant density, to develop effective interventions against obesity and other diet-related illnesses. This study will be conducted with a quantitative approach to determine the correlation between fast-food restaurants and obesity rate using the Body Mass Index (BMI) guideline from the Center of Disease Control and Prevention (CDC). If individuals live near fast food restaurants, will the individuals have a higher BMI than other individuals who live further from fast food restaurants? By the end of this study, we aim to find an answer to these questions and explore the possible factors that contribute to this worldwide epidemic.

Research Approach

Study Design

A cross-sectional study will be conducted to see the individual dietary habits as it is considered the most appropriate method due to the benefit



Mak

of minimizing bias on self-report obesity risk. Height and weight will be collected to calculate an individual risk for obesity. Other health information including dietary behavior and the frequency that they visit fast food restaurants, takeouts, and how often they cook at home will also be collected. Fast-food restaurants were defined as those like chains like McDonald's, Pizza Hut, Burger King, and so on; fast-casual restaurants were defined as somewhat quieter and slower paced than fast-food restaurants, for example, Noodles and Company, Panera Bread, or cafeterias (Burgoine et. al 2018).

Population and Sample

This study will use convenience sampling recruitment by posting flyers and posts on Instagram and Facebook. This recruitment method enables a wide-reach group of audience and is cost-effective. The eligibility of the participants must be above 18 years old and Washington state residents. Selected participants will fill out an application and undergo a series of background and identification checks to ensure individual eligibility. An approximate 2,000 participants will be recruited in the study.

Operationalization

According to the 2022 CDC guidelines, a BMI under 18.5 is defined as underweight, 18.5 to 25 is a healthy weight, 25 to 30 is overweight. BMI is equal to or greater than 30 is obesity. This guideline will be used to calculate the individual obesity risk.

Data Collection

Participants will be asked for their demographic data including gender, age, ethnicity, address, and dietary habits. The address given by the participants will be used to determine the location of their house and to determine the density of the fast-food restaurant as to the location they reside in. A survey will be conducted using the Likert scale and open-ended questions to determine their diet preference

and habits including the frequency of fast-food restaurant consumption, how often they cook at home, as well as their vegetable and processed meat consumption habits. Processed meat is defined as products such as bacon, ham, sausage, meat pies, kebabs, burgers, and chicken nuggets (Burgoine et al., 2018).

Data Analysis

A fast-food density map in Washington State will be generated based on the participants approximate residential address. A multivariable linear and binomial logistic regression model (Burgoine et al.,2018) will be used to determine the correlation between the accessibility of fast-food restaurants and BMIs, as well as to explore whether it will be a factor in increasing their chance of obesity risk.

Ethical Consideration

Details of this study will be thoroughly recorded on the paper including the ethical guideline, regulation, and the potential risks of this study for IRB approval before the start of this study. To address the ethical aspect of this research, participants are given a clear overview and purpose of this study. All benefits and potential risks of participating in the study will be clearly stated and reinstated verbally by our researchers. Participants are asked to sign and verbally consent to participate. Participants are given the autonomy to participate voluntarily in the study and the option to withdraw from the study if they no longer want to participate. To ensure clarity of the study, interpretation services will be provided if participants need assistance in English. \$40 gift cards will be given to participants at the end of the study to compensate for their valuable time. To protect the identity of participants in this study, each participant will assign an identifier for data reference purposes that is only known to the research team for data collection purposes. Participant identification will be removed from the published paper and will not be seen by the public.



Discussion

This study provides the most up-to-date and comprehensive evidence of the association between obesity and high fast-food restaurant density among the US adult population, which may provide further evidence to support current existing research. This research adds to the growing body of literature about fast food outlet density in the neighborhoods associated with obesity and overweight. With the increasing number of fast-food restaurants in the US, it is essential for us to understand the outcome of the large number of fast-food restaurants on public health. In addition, this study can be used to help policymakers regulate fast food business in residential areas, such as implementing regulations to increase healthy food options and other healthy diet promotions to enhance public health outcomes and to reduce the substantial healthcare expenditure in the US.

Limitations

This study is subject to some limitations. This study employed a cross-sectional study design, and it may not be representative of the whole population in Washington State. The recruitment of this study uses convenience sampling by posting on social media, which adds a possible limitation of recruiting younger adult sample size. The findings of this study may not be applicable to other parts of the US. Given the frequency of dietary habits and food preferences are self-reported, responses may vary from individual to individual. Future studies can be conducted to minimize the limitations of this study by conducting a qualitative study, to understand the reasoning behind participants' dietary choices and factors that may have guided participants in their dietary choices. Future mixed-method study can be conducted in addition to the quantitative study to explore the impact of fast-food restaurants and public health marketing on individual's diet choices to promote healthy diets.

References

- Adams, J., Hofman, K., Moubarac, J. C., & Thow, A. M. (2020). Public health response to ultra-processed food and drinks. *BMJ (Clinical research ed.)*, 369, m2391. <https://doi.org/10.1136/bmj.m2391>
- Cawley, J., Biener, A., Meyerhoefer, C., Ding, Y., Zvenyach, T., Smolarz, B. G., & Ramasamy, A. (2021). Direct medical costs of obesity in the United States and the most populous states. *Journal of Managed Care; Specialty Pharmacy*, 27(3), 354366. <https://doi.org/10.18553/jmcp.2021.20410>
- Centers for Disease Control and Prevention. (2022, July 14). Why it matters. *Centers for Disease Control and Prevention*. <https://www.cdc.gov/obesity/about-obesity/why-it-matters.html>
- Centers for Disease Control and Prevention. (2022, June 3). Defining adult overweight & obesity. *Centers for Disease Control and Prevention*. <https://www.cdc.gov/obesity/basics/adult-defining.html>
- Centers for Disease Control and Prevention. (2022, May 17). Adult obesity facts. *Centers for Disease Control and Prevention*. <https://www.cdc.gov/obesity/data/adult.html>
- Cuesta-Valiño P, Rodríguez PG, Núñez-Barriopedro E. Perception of Advertisements for Healthy Food on Social Media: Effect of Attitude on Consumers' Response. *International Journal of Environmental Research and Public Health*. 2020; 17(18):6463. <https://doi.org/10.3390/ijerph17186463>
- Gibney M. J. (2018). Ultra-Processed Foods: Definitions and Policy Issues. *Current developments in nutrition*, 3(2), nzy077. <https://doi.org/10.1093/cdn/nzy077>
- Ha, E. (2020, April 20). Food marketing. UConn Rudd Center for Food Policy and Health. <https://uconnruddcenter.org/research/food-marketing/#a1>



Mak

- IBISWorld - industry market research, reports, and Statistics23. *IBISWorld Industry Reports*. (2023, November 27). <https://www.ibisworld.com/industry-statistics/number-of-businesses/fast-food-restaurants-united-states>.
- Imes, C.C., Burke, L.E. The Obesity Epidemic: The USA as a Cautionary Tale for the Rest of the World. *Curr Epidemiol Rep* 1, 82–88 (2014). <https://doi.org/10.1007/s40471-014-0012-6>
- Inc., N. N. (n.d.). Direct and indirect cost of obesity among the privately: *Journal of Occupational and Environmental Medicine*. LWW. https://journals.lww.com/joem/fulltext/2019/11000/direct_and_indirect_cost_of_obesity_among_the.3.aspx
- Kruger, D. J., Greenberg, E., Murphy, J. B., DiFazio, L.A., & Youra, K. R. (2014). Local Concentration of Fast-Food Outlets is Associated with Poor Nutrition and Obesity. *American Journal of Health Promotion*, 28(5), 340–343. <https://doi.org/10.4278/ajhp.111201-QUAN-437>
- Mirror, mirror 2021 – reflecting poorly: Health care in the U.S ... (n.d.). https://www.commonwealthfund.org/sites/default/files/2021-08/Schneider_Mirror_Mirror_2021.pdf
- Most obese countries in the world: Procon.org. *Obesity*. (2022, February 12). <https://obesity.procon.org/global-obesity-levels>
- Revels, S., Kumar, S. A. P., & Ben-Assuli, O. (2017). Predicting obesity rate and obesity-related healthcare costs using data analytics. *Health Policy and Technology*, 6(2), 198–207. <https://doi.org/10.1016/j.hlpt.2017.02.002>
- Richardson, A. S., Boone-Heinonen, J., Popkin, B. M., & Gordon-Larsen, P. (2011). Neighborhood fast food restaurants and fast food consumption: a national study. *BMC public health*, 11, 543. <https://doi.org/10.1186/1471-2458-11-543>
- State of obesity 2023: Better Policies for a healthier america. *TFAH*. (2023, November 22). <https://www.tfah.org/report-details/state-of-obesity-2023>
- U.S. Department of Health and Human Services. (n.d.). What are overweight and obesity?. *National Heart Lung and Blood Institute*. <https://www.nhlbi.nih.gov/health/overweight-and-obesity>
- Wang, Y., Beydoun, M. A., Liang, L., Caballero, B., & Kumanyika, S. K. (2008). Will all Americans become overweight or obese? Estimating the progression and cost of the US obesity epidemic. *Obesity* (Silver Spring, Md.), 16(10), 2323–2330. <https://doi.org/10.1038/oby.2008.351>
- World Health Organization. (2022). Obesity. *World Health Organization*. <https://www.who.int/health-topics/obesity>



A QUALITATIVE APPROACH ON CLIMATE JUSTICE FOR COMMUNITIES: IMPACT OF DISCRIMINATION & REDLINING IN SEATTLE WASHINGTON

Annie Edwards

ABSTRACT: Climate justice is centered around climate change and the ability make the burden of climate change to be more equitable. Redlining was a way to divide people through property ownership. This was done by putting immigrants and people of color in select neighborhoods that were poorly graded by the homeowner’s loan corporation (HOLC). The ranking scale was graded A-D on a map, grade A was labeled most desirable while grade D was labeled undesirable. Seattle Washington has a history of redlining. The effects of redlining are still seen today with some areas who were graded D, having higher temperatures, more concrete, and less trees compared to grade A areas. This can have negative health effects and medical costs for those who are impacted. Doing a qualitative research project in a historical grade D area could for insight from the communities who live in the area. This can let us know how they feel about their community having resources to combat issues that can arise with climate change.

Climate Change

According to (National Aeronautics and Space Administration [NASA], 2022) the threat of climate change has increased significantly. The temperature of the planet has been recorded since 1880 (NASA, 2022). The hottest years on earth have been increasing in the past nineteen years since the year 2000 (NASA, 2022). Rising temperatures can cause the environment to change and determining how that change will impact humans is important. Knowing how this change will impact will help with providing the correct resources to combat some of the preventable situations where illness or death may occur. When the threat of illness or death is discussed, it can cause upsetting and overwhelming emotions for people. While investigating this, knowing where to start should include the mental health of the residents in communities.

Inequalities in Climate Change Burden

Residents of communities are already seeing the effect that climate change has. Climate change brings extreme heat to different parts of the world, and it can concentrate through heat waves (Renteria et al., 2022). These heat waves have increased mortality rates (Renteria et al., 2022). In cities heat waves are coming more often and having a longer duration (Jesdale et al., 2013). Social inequalities can exacerbate the rate at which racial diversity groups are impacted by intense heat (Renteria et al., 2022). This can be problematic if the built environment of a racially diverse community is not prepared to handle the heat. The community members may be aware of the faults in their environment, but they should not carry the burden of heat risk (Renteria et al. 2022). Heat risk is not the only worry for residents. Climate change can bring new threats to health like air pollution, infectious disease, and heat stroke. There are community members



Edwards

that are more vulnerable to heat like the elderly, children, people with disabilities, people with pre-existing conditions and poor populations (Schinasi et al., 2022). It is important to gather information from the community on how to best serve special populations to best support them.

History Of Redlining Policy

From the 1930s to 1960s, the Homeowner's Loan Corporation (HOLC) and Federal Housing Authority created a federal housing policy (Bose et al., 2022). This housing policy was called redlining. The redlining policy used a map to decide on a ranking scale what a neighborhood's value was based on the racial majority and environment conditions in the area (Bose et al., 2022). The ranking scale was A-D (Fig 1), A was shaded green on a map, and it was most desirable; B was shaded blue, and it was labeled slightly less desirable; C was shaded yellow, and it was labeled a declining neighborhood and D was shaded red and was labeled as undesirable (Schinasi et al., 2022). Due to the policy, it was decided that predominantly white neighborhoods were grade A while a non-white neighborhood would be graded a D (Bose et al., 2022). Ranking non-white neighborhood, a grade D meant that they would not receive real estate credit and not receive investments into their community, further declining the value of the community (Noelke et al., 2022).

The Lasting Effects of Redlining

Although the policy has ended, the effect of lacking investment in communities contributes to the current environment of these communities. Whether a community has more tree coverage in one area or less parks in another it amounts to how climate change will impact a community by different rates. On a national level it was found that the temperature of redlined areas is about 2.6 degrees Celsius warmer than in non-redlined areas (Hoffman et al., 2020). Extreme health which is attributed to climate change has become the leading cause of death in the summer

season (Hoffman et al., 2020). If communities had investment they could have improved and maintained green spaces. Directed lack of investment for certain groups communities is environmental injustice. This is now brought on by racism and it influences the right to a healthy living environment (Bramble et al., 2023). Redlining has now been done and there has been some research on the health impacts. However, research on how the racist extremes of historical redlining and climate change anxiety intersect on community is limited. Redlining has multiple layers of issues and structural racism is one of the bigger contributors.

Structural Racism

Redlining is a part of structural racism (Swope et al., 2022). This contributes to not having an equal chance to be a homeowner and continuing of neighborhoods not being invested in (Swope et al., 2022). Neighborhoods not being invested in creates restrictions on employment, insufficient education options, inconsistent housing, and lack of access to health care (Bikomeye et al., 2021). All these situations can then lead to poverty and how the location you live in puts you at risk for negative health outcomes (Swope et al., 2022). All these potential outcomes can then contribute to psychosocial stress which can be brought upon different situations (Swope et al., 2022). Climate change stress has been rising in recent years and some people are getting very worried about climate change, this is being called climate anxiety (Chou et al., 2023). Redlining has set communities to not be invested in, which has worsened the effect of climate change over time (Noelke et al., 2022). The lack of investment for these neighborhoods meant that the environment was not going to be funded to improve since banks did not deem them as credit worthy (Swope et al., 2022). Now is the time to hear from community members who reside in the original areas that were affected by the HOLC redlining policy.



Involving The Communities

The purpose of this research is to ask the residents who live in historically redlined areas how they perceive the threat of climate change. The resident's perception will help guide efforts on providing the correct resources that will benefit them the most. This will contribute to community-based research to have them be a part of decision making. It is important that communities are involved in the planning process of what to keep, add, or remove in their environment. The people who make up the community in the neighborhood need to be involved in decision making since they will be the ones utilizing the resources. Communities can make decisions on what they would find beneficial based on the findings of this research. When they collectively agree on what they would find helpful they then can advocate and support funding for resources that would help ease some climate change anxiety.

Gaps In Knowledge

A gap in knowledge is the community members' perspective of how climate change impacts their community. There has been a lot of research done on how extreme heat temperatures have disproportionately impacted people of color but there is not much research on how redlining and climate change will impact mental health. Another gap in knowledge is if there are enough mental health services to provide resources for people in these communities struggling with climate change anxiety. A gap in knowledge may be whether community members are aware of how their built surrounding environment could be affected by climate change and if they have any worries. Learning how the community members perceive the threat of climate change will be important knowledge to gain.

Importance

The importance of this project is to raise awareness about climate change anxiety for

people living in historically redlined areas. The objective is to find what resources are lacking to support residents living in redlined areas and how it contrasts with non-redlined areas. Knowledge gained from the study will provide what resources of the built environment need to change or improve. These changes for people living in redlined areas could begin to ease climate change anxiety knowing that their surroundings have improved.

Significance

Understanding what part of climate change is most impactful to negative mental health outcomes can become vital for these community members. In response, knowing what resources are needed can save the lives of people who reside in redlined areas.

Research Question

This study is necessary because climate change anxiety is changing living environments, and we would like to know how people in redlined communities are responding to these changes.

Historically the people living in these communities were marginalized and not invested into (Swope et al., 2022). Although HOLC housing policy has changed we are interested in researching how the residents feel about climate change. Our research question is: Do people who live in historically redlined areas have climate change anxiety?

Research Design

This is a qualitative narrative research design. This design was chosen to hear direct insights from the community. A qualitative approach will help gain a better understanding of how to understand their climate change anxiety. Non-probability convenience sampling will be used to have members of the community participate. Our goal is to understand how climate change and redlining intersect. We seek to understand



Edwards

the emotion that climate change can evoke from the residents in historically redlined communities.

Population & Sampling

The research is based on the 11 grade D “hazardous” locations of historically redlined areas in Seattle Washington. Focus groups from each community age groups 19-25,26-38,39-45,4660,61+. We will recruit members by convenience sampling from these members from the 11 grade D “hazardous” locations of historically redlined areas by zip code.

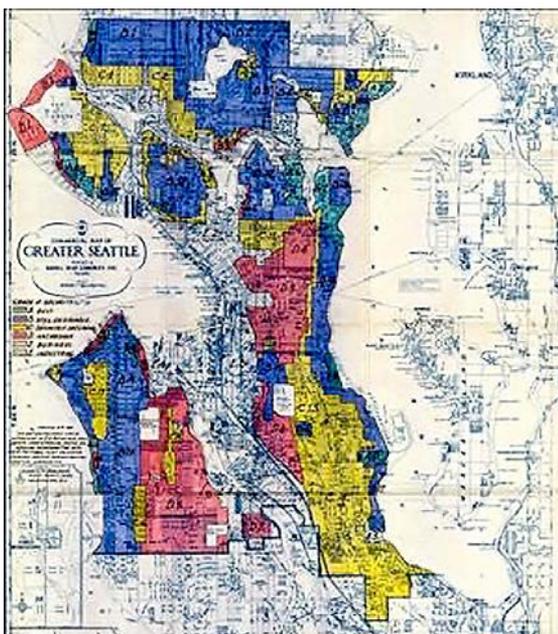


Figure 1

This image came from HistoryLink.org, it is a map of the Seattle area with the areas that were graded in the HOLC policy.

Key: A was shaded green on a map, and it was most desirable; B was shaded blue, and it was labeled slightly less desirable; C was shaded yellow, and it was labeled a declining neighborhood and D was shaded red and was labeled as undesirable (Schinasi et al., 2022).

Data Collection

There will be 11 focus groups conducted in-person. From the 11 grade D “hazardous” locations 1 focus group will be conducted in each area. There will be one researcher as the facilitator to lead the focus group. A researcher as the written recorder to assist the facilitator. Then another researcher will use the recorders notes and audio recording to do the qualitative analysis for the data of the focus group. The use of audio recordings will be transcribed and anonymous. The facilitator of the group will ask 15 questions in plain language about the perceptions of climate change, how they cope with emotions related to climate change, how climate change is discussed with friends and family, changes they have made in response to climate change, and if they have barriers while making these changes. Each interview will estimate for one hour. We will offer 5 USD to each study participant for contributing to this study.

Data analysis

Two researchers will use the audio recordings and we believe that at least half of the 11 redlined communities will have climate change anxiety. The age group of 19-25 will have elevated levels of climate change anxiety compared to the other four age groups. We believe this because a study conducted (Hickman et al., 2021) found that the younger group was found to be more anxious due to feeling like they had a lack of control over climate change.

Ethics Statement

For the research on the effect climate change has on those who live in historically red lined areas it is important to ask the communities for their consent to participate. A draft of what data is being collected, why this research is important, and how this research will or will not benefit them will be included. The community will be able to provide insight as to how climate change has impacted their climate change anxiety.



As we conduct our research, we want to be mindful of the discrimination that has been faced by the residents in the communities. The statistical data we collect will not identify any person. For our community engagement part of our research, we will give the community an opportunity to help form questions to ask during the focus group. They will be informed about what questions we are asking ahead of the interview. We will allow them to review and choose to proceed forward with the option to stop and quit at any point in the interview. We will ask for verbal and written consent to do the interview. We will let them know that their response will be kept confidential. We will have IRB approval. Their responses will be altered to hide identifiable information. The research we get will be shown to the public as that will be disclosed to participants.

Discussion

Significance

The importance of this project is to raise awareness about the potential health complications that can arise from climate change for people living in historically redlined areas. The objective is to find what resources are lacking to prevent these health complications in the redlined areas and how it contrasts with non-redlined areas. Knowledge gained from the study will provide what resources of the built environment need to change or improve for people living in redlined areas. On a national level It was found that the temperature of redlined areas is about 2.6 Celsius warmer than in non-redlined areas (Hoffman et. Al, 2020). Extreme health which is attributed to climate change has become the leading cause of death in the summer season (Hoffman et. al, 2020). Understanding what part of climate change is most impactful to negative health outcomes and in response knowing what resources are needed can save lives of people who reside in redlined areas.

Limitations

A limitation to our research is that we are only conducting these focus groups in Seattle, Washington where climate change heat waves are not as intense compared to other parts of the country. Another limitation is that while conducting focus groups it is with a small amount of the population of the residents so they will not represent the entire community. We did not do a study of people living in other graded areas on the map. This means that we cannot make comparisons about the different HOLC area grading on the data that was collected.

Future Directions

One option for moving forward after the study is to create a tool kit with the residents that is for the community for how to manage climate change anxiety. This tool kit would provide tips and reminders about what the community can act on climate change and how to take care of themselves. Another option is to create a group that meets up to share about climate change in a community center. This could allow for the community to connect and relate about their concerns. For re-doing this study, an option could be to include all the HOLC redlined graded areas in the state and doing a quantitative study. This way comparisons could be made about each graded area and more residents could be reached. If this study was done again, it could include the other HOLC redlined policies in other cities across the United States.



Edwards

References

- Bikomeye, J. C., Namin, S., Anyanwu, C., Rublee, C. S., Ferschinger, J., Leinbach, K., . (2021). Resilience and Equity in a Time of Crises: Investing in Public Urban Greenspace Is Now More Essential Than Ever in the US and Beyond. *International journal of environmental research and public health*, 18(16), 8420. <https://doi.org/10.3390/ijerph18168420>
- Bose, S., Madrigano, J., & Hansel, N. N. (2022). When Health Disparities Hit Home: Redlining Practices, Air Pollution, and Asthma. *American journal of respiratory and critical care medicine*, 206(7), 803–804. <https://doi.org/10.1164/rccm.202206-1063ED>
- Bramble, K., Blanco, M. N., Doubleday, A., Gassett, A. J., Hajat, A., Marshall, J. D., & Sheppard, L. (2023). Exposure Disparities by Income, Race and Ethnicity, and Historic Redlining Grade in the Greater Seattle Area for Ultrafine Particles and Other Air Pollutants. *Environmental Health Perspectives*, 131 (7), doi: 10.1289/EHP11662
- Chou DT, Abelama Neto E, Thomas I, Martin A, Benoit L. Climate awareness, anxiety, and actions among youth: a qualitative study in a middle-income country. *Psychiatry*, 45(3), 258-267. doi: 10.47626/1516-4446-2022-2890.
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, E., Mayall, E., Wray, B., Mellor, C., & Van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *Lancet Planet Health*, doi: 10.1016/S2542-5196(21)00278-3.
- Honig, D. (2021) Redlining in Seattle. <https://www.historylink.org/file/21296>
- Jesdale, B. M., Morello-Frosch, R., & Cushing, L. (2013). The racial/ethnic distribution of heat riskrelated land cover in relation to residential segregation. *Environmental health perspectives*, 121(7), 811–817.
- NASA. (2023). Global surface temperature. *NASA*. <https://climate.nasa.gov/vital-signs/globaltemperature/>
- Noelke, C., McArdle, N., & Shafer, L. (2022). Mapping redlining grades to today's neighborhoods. *diversitydatakids.org*. <https://www.diversitydatakids.org/researchlibrary/blog/mapping-redlining-grades-todays-neighborhoods>
- Swope, C. B., Hernández, D., & Cushing, L. J. (2022). The Relationship of Historical Redlining with Present-Day Neighborhood Environmental and Health Outcomes: A Scoping Review and Conceptual Model. *Journal of urban health : bulletin of the New York Academy of Medicine*, 99(6), 959–983. <https://doi.org/10.1007/s11524-022-00665-z>



PERSPECTIVES OF OCCUPATIONAL STIGMA ON SEX WORKERS IN HEALTHCARE SETTINGS: A QUALITATIVE STUDY

Chuck Frickin-Bats

ABSTRACT: Those who are known to be involved in the sex trade are deeply impacted by occupational stigma and that has far reaching effects on their lives, extending even to their healthcare. Stigma has also has an impact on the research about those in the sex trade. The focus of these studies is sex workers' sexual and reproductive health. Reinforcing the idea that sex workers are only vectors of disease. There are very few studies about their general wellbeing and the healthcare they receive. From previous literature, we know that it is rare for sex workers to feel safe enough to disclose their work status for a variety of reasons including fear of arrest. We also know that when sex workers choose to disclose, they are often deeply shamed or even barred from returning to clinics and hospitals. How do those working in one of the most highly stigmatized professions experience interacting with the healthcare system? The narrative phenomenological approach of this study will provide vital perspectives from those living within the confines of occupational stigma and its impact on their ability to have their healthcare needs assessed and addressed. Studies exist that have measured how sex workers have previously interacted with the healthcare system through qualitative surveys. Very few studies exist that have put forth this type of data, making the proposed study invaluable to start creating room for sex workers within healthcare settings. However, when discussing studies to those who create policy numbers is not enough. Both qualitative and quantitative data is needed to paint a picture for policy makers to understand the lives of those who are impacted by the result of their policies.

Background and Introduction

Sex workers carry the burden of being in one of the most highly stigmatized professions worldwide. Historically and modern times sex work has been considered by society to be dirty, immoral, and sexually deviant. What is largely unknown is how occupational stigma creates and reinforces clinical repercussions for sex workers and trafficking victims in the healthcare settings where they seek help for their health. For decades, most academic studies about sex workers have focused on their sexual health, specifically their STI and HIV infection and transmission rates. These studies are essential for public health, but they neglect the rest of the sex workers' health. For example, with

the current pandemic, a PubMed search of 'sex work' and 'COVID-19' returned zero results, highlighting how little information is available on significant health issues in this population. If the data does not exist, then we will create it ourselves.

Data from Lazarus et al. (2012) has shown that disclosing one's status as a sex worker can create an impossible barrier to accessing comprehensive care. The American Academy of Family Physicians (1980) defines as the "concurrent prevention and management of multiple physical and emotional health problems of a patient over a period of time in relationship to family, life events and environment." Creating healthcare provisions for sex workers



Frickin-Bats

includes creating a compassionate and friendly environment, ensuring case-worker support, and staff who are trained in sensitive, trauma-informed, and gender-affirmative care with flexibility in appointments. Continuity of care for sex workers with the same primary care providers and access to specialists, including ones who can help with dual diagnoses, unstable housing, and domestic violence, is essential (Potter et al., 2022). Continuity is a critical component of high-quality care that Fraser and Clarke (2023) say can reduce urgent care visits and preventable hospital admissions.

It is necessary to learn about sex workers' experiences with barriers to accessing healthcare and the quality of care they receive when health providers know their work status to help create a more welcoming and inclusive healthcare system that addresses their needs. Sex workers have unique health challenges that are compounded by a general lack of disclosure. Doctors and staff cannot offer the correct services and appropriate treatments without a complete picture of their patients' needs (Global Network of Sex Work Projects, 2017).

Sex Work

The stigmatization of sex work is even reflected in the derogatory terminology society often uses to address this marginalized community, which carries negative connotations and imagery. Worldwide, prostitution is a crime, though the definition varies by who is enforcing it. According to Rivera (2023), a queer, Jewish and Puerto Rican pleasure activist that co-founded Reframe Health and Justice, the best practices for the words 'prostitute' and 'prostitution' is to use them only when referring to laws and criminal proceedings. Therefore, in Rivera's opinion, the term "sex work" is more appropriate. In the 1970s, the idea of "sex work" and "sex workers" became new terms created by the late Carol Leigh, known worldwide as the Scarlet Harlot. As a sex industry and pleasure activist, Scarlet Harlot wanted to highlight

that providing sexual services was a legitimate form of labor (Rivera, 2022). Sex work is an umbrella term for all forms of erotic services, such as stripping, phone sex, in-person services like trading sex, and more. For this proposal, sex work is defined as the commercial act of trading in-person sexual services and labor for money or other goods such as housing or food. Sex work is illegal in almost every country globally despite an abundance of studies that have shown the negative impact criminalization has on sex workers' access to critical health and other support services (Argento et al., 2020).

Sex trafficking

In 2000, the Trafficking Victims Protection Act defined sex trafficking as "... a commercial sex act that is induced by force, fraud, or coercion" (22 U.S. Code § 7102 - Definitions, 2013). Despite being frequently conflated, sex work and sex trafficking are different, but they do not exist on a binary. Involvement in the sex trade occurs for a variety of reasons influenced by an ever-shifting spectrum of choice, circumstance, and coercion, otherwise known as the Three Cs of Sex Work (Rivera, 2022).

- Choice: The worker can leave anytime and have many other job options. They are fully autonomous in their work and control their earnings and spending. These workers will usually hold social and economic privileges.
- Circumstance: Most sex work likely occurs in this area. On the choice end of the circumstance spectrum, the person's involvement is practical; why not make more money "selling their body" via sex on their terms? On the coercion end of circumstances, economic issues typically drive the involvement in the sex industry. Workers would prefer to have a different job but are stuck for one reason or another.
- Coercion: There may be times when they may not have autonomy over their work or their income as someone is controlling them,



but that does not automatically indicate that there is trafficking, nor does it mean the person being controlled is unhappy. These circumstances are not linear or permanent. Trafficking does involve coercion, and these are victims who want nothing to do with the industry.

It is important to note that there is infinitely more nuance to the sex worker versus trafficking victim discussion than is provided in this paper, but its importance cannot be understated. Trafficking victims are included in the papers' definition of the populations that deserve access to comprehensive healthcare that is in the sex trade, even if not explicitly stated elsewhere. For simplicity, in this proposal, sex workers are considered to have generally given consent to work. In contrast, sex trafficking victims do not consent to their involvement in the industry.

The Impact of Criminalization on Sex Workers' Health

Globally, prostitution is almost entirely criminalized, as it is in the US. Each state determines the legal status of prostitution, as well as the punishments for getting caught, which can have a lifetime impact. In 49 states, prostitution is illegal. In the 50th state – Nevada, there are six rural counties where prostitution is legal if done in a licensed brothel. Working under a government-controlled brothel has been described as the legal equivalent of being “pimped out” (Decriminalize Sex Work, 2023).

A unique exception to this almost uniform policy of criminalization comes from Rhode Island. In 1980, several factors led to changes in the state's prostitution laws that unwittingly omitted the law's section where prostitution was defined. While legislators cracked down on public soliciting, they unintentionally decriminalized indoor prostitution. The loophole went mainly unnoticed until 2003, when several massage and spa workplaces were raided, resulting in four arrests and charges of

prostitution. Citing a previous Rhode Island Supreme Court Ruling that there is no law in the state against indoor prostitution, the charges were dropped. Indoor sex work in Rhode Island was recriminalized in 2009 (Decriminalize Sex Work, 2022) (“R.I. Looks to Close Prostitution Loophole,” 2009).

This Rhode Island case study provides us with an opportunity to examine how criminalization can impact sex worker health and safety. For example, the National Bureau of Economic Research (2014) compared STI infection and rape rates of Rhode Island sex workers against people outside of the sex industry in the state from 2004-2009. Results showed a 31% decrease in reported rape cases; no other crimes showed the same pattern, removing the general possibility that policing or more extensive policies around public safety can be linked to the decline. Similar positive impacts on reproductive health and the spread of sexually transmitted infections have also been noted. During this brief period of decriminalization, a 40% decrease in cases of gonorrhea was also reported (Cunningham & Shah, 2014).

The results seen in Rhode Island are not unique. The World Health Organization (2024) says that modeling studies have suggested that decriminalizing sex work worldwide could decrease up to 46% of new HIV cases among sex workers in the following ten years. On the other hand, Lyons et al. (2020) found that the increasing criminalization of sex work across sub-Saharan Africa is positively associated with higher rates of HIV, even as global rates for HIV infections are falling for the rest of the world's population.

Stigma

Stigma is when one's reputation gets marked as a disgrace once associated with a distinct quality society disapproves of (Stigma, 2024). Scholars Toubiana and Ruebottom (2022) have suggested that those who enter the sex trade are



Frickin-Bats

automatically burdened with three simultaneous stigmas: social stigma (associations with pariahs), physical stigma (proximity to perceived dirt), and moral stigma (unrighteous acts) simply due to the nature of their labor. For example, sex workers have long been stigmatized as ‘vectors of sexual disease,’ which wraps up all three types of the mentioned stigmas into one tidy stereotype as sexual diseases are often considered ‘dirty,’ sex with strangers outside of marriage for money is immoral, and sex work is not socially acceptable.

Unsurprisingly, society’s stigmatization is reflected in the singular focus of medical and academic research on sexual and reproductive health in this population. As mentioned above, there are no published studies on how the COVID-19 pandemic has impacted this community. To illustrate this further, when we searched PubMed using the keywords ‘sex worker’ and ‘healthcare access’ together, approximately 70% of the results were directly related to the topics of ‘HIV,’ ‘STIs,’ and ‘STDs.’ Sex workers undeniably carry the burden of higher rates of STI infection and transmission when compared to those who do not engage in sex work. Still, workers also have much higher STI exposure rates, making it an unfair comparison. While HIV and other sexually transmitted infections are important to consider, so are other pressing health concerns like chronic disease. However, when PubMed was again queried to find studies on ‘sex work’ + ‘diabetes,’ there were zero results, and when ‘sex work’ + ‘cancer’ was combined, the overwhelming majority of results were about HPV and cervical cancer. The dearth of research on other important health topics, like chronic disease and mental health, reveals how all other aspects of this marginalized group’s general health and well-being are wholly ignored in the research literature.

It is worth noting that infection and transmission of STIs among sex workers and trafficking victims would likely go down not only

with decriminalization, as modeled in Rhode Island by Cunningham, S., & Shah, M. (2014), but consistent access to stigma-free healthcare may also be a key factor. When compared to the general public across five metropolitan cities in Canada, sex workers had nearly triple the prevalence of unmet healthcare needs (Benoit et al., 2016). A study at a free sex worker clinic in San Francisco found that 70% of almost 800 sex workers did not discuss their work status with healthcare providers, feeling embarrassed about being a sex worker or having experienced prior discrimination, such as being explicitly told not to return to a clinic (Cohan et al., 2006). There is a stigma cycle with sex work, stigma, and healthcare. Sex workers and trafficking victims fear what will happen if they disclose their work status to healthcare workers and professionals, knowing there may be repercussions. Still, if they reveal their job, they are often treated precisely as they had feared, decreasing the likelihood of future divulgence (Singer et al., 2021). To illustrate this point, consider this quote from the COYOTE Rhode Island (Call off Your Old Tired Ethics) anonymous survey of Rhode Island sex workers called “Policing Modern Day Slavery in RI 2014-2016.”

“The hospital staff at the ER were very nice until the police showed up to take my report. Once they found out I was an escort, they told me that if I wanted to press charges against the man who raped me, that I would be arrested for prostitution. At this point, the hospital staff got cold, distant, and then some of them became downright rude to me” (coyotewebadmin, 2018).

Counting the Hidden

The criminalized, underground, and highly stigmatized nature of the industry makes properly quantifying the world’s sex trade population an impossible task (Sawicki et al., 2019). There is no concrete data on the sex worker or trafficking population size, only speculations and estimates. Historically, studies



on sex workers have recruited almost only cis women as participants, leaving out male and transgender sex workers. Today, there is still little data on these populations, and this proposed study allows all genders to be involved. The underrepresented quantitative data that does exist about these two populations has a narrow focus on HIV and lacks qualitative data to show the day-to-day lives of these participants, including how stigma about being a sex worker impacts their access to healthcare (Sawicki et al., 2019).

Nonetheless, a 2012 report by Fondation Scelles estimated that there were 40-42 million sex workers worldwide. There is no way to know if that estimate is high, low, or relatively accurate. Despite significant apparent bias in methodology and reporting as outlined below, this report has become one of the most widely used statistics in academia and the media when discussing the sex worker population. To start with, the Sexual Exploitation: Prostitution and Organized Crime Report (2012) does not distinguish between sex workers and trafficking victims—a necessary separation when studying population sizes, creating an immediate discrepancy in their data. Additionally, there is a significant conflict of interest as Fondation Scelles is a non-profit, sex work abolitionist group that wants to “build a world without prostitution” (Fondation Scelles, 2012). Their draconic agenda may bias their research design, data collection, analysis, and publication. Based on these flaws in the proposed methodology, the data from this sex work abolitionist group appears unreliable. Ultimately, between criminalization and the existence of groups with beliefs like such as this, it is likely that critical data like the population size and demographics of sex workers will stay unknown.

Research Question and Hypothesis

There are increased barriers and mistreatment that sex workers face when seeking healthcare due to occupational stigma. A Canadian study

by Lazarus et al. (2012) found compelling evidence that regardless of a sex worker’s demographics, the associated stigma hindered their ease of access to healthcare. Close to half of the 250 outdoor sex workers who participated in the Canadian study had encountered significant obstacles when seeking healthcare services within the previous six months. There are relatively few studies that have investigated the connections between the impact of the stigma of being a sex worker and their experiences in accessing and navigating their work status within healthcare settings. This proposed study seeks to answer the following question: how do sex workers experience the impact of occupational stigma on their ability to access healthcare settings, the quality of their medical treatment, and treatment from staff? Holding space for the personal narratives of sex workers will give crucial insight into how the phenomena of the occupational stigma of their work color their experiences with accessing healthcare services, how they are treated in healthcare settings, and the quality of care they receive.

Research Approach

Research Design

Studies thus far have shown that occupational stigma has wide-reaching impacts on sex workers, even in healthcare settings. Many studies have focused on quantitative results showing an association between stigma and healthcare when it comes to sexual and reproductive health. However, relatively few qualitative studies have been produced to capture the narratives of sex workers who have experienced the wide-reaching phenomenon of occupational stigma and healthcare. As such, we proffer a narrative phenomenological qualitative study offering the chance to capture and lift their voices.



Study Population and Sampling

As previously mentioned, the sex worker population can be challenging to reach due to their work being criminalized, underground, and highly stigmatized (Sawicki et al., 2019). This challenge also applies when recruiting the target population for this study. As such, snowball sampling is the best approach for reaching this population. Recruiting will start with distributing social media posts across Facebook, Twitter, Instagram, and TikTok to find potential participants. Emails with flyers will also be sent to local sex worker resources and potential community partners to request aid in recruitment. After each interview, participants will be asked if they know anyone interested in the study to try and increase the chances of finding a variety of participants. Given the discretion needed for recruitment and other study aspects, the snowball method offers the most privacy.

- A. The goal is to recruit twenty participants. Study eligibility requirements are as follows.
- B. someone of any gender who works in the sex industry who is
- C. over the age of 18 who
- D. lives in Pierce, King, or Snohomish County that has
- E. has traded oral, anal, or vaginal sex for something of value at least five times in the last six months who
- F. primarily works in King County that
- G. understands and speaks English who is
- H. mentally competent and is
- I. able to give informed consent.

Operationalization

In this study, sex work is defined as the act of trading in-person sexual services for money or other goods such as housing or food. Sex workers are considered to have given

consent to be involved in the sex trade, while sex trafficking victims do not consent. The occupational stigma associated with sex work is a profoundly discrediting social distinction that marks a person as a criminal pariah unworthy of being involved in society, potentially for a lifetime. Healthcare settings are any formal medical set-up where patients can seek medical and psychiatric help and have vision and dental care. Healthcare staff are anyone working in the above settings who interacts with patients. Barriers are anything that the participants view as reasons why they were not able to access healthcare settings.

Data Collection

Those interested in the study will email a specific address to answer questions about it, verify if they are eligible to participate and schedule an interview. Individual, semi-structured, in-depth interviews will be conducted via a secure connection on Zoom or in a private conference room at the local public library. The interview instrument will be designed with the help of current and former sex workers and allied shareholders in the community. Current sex work literature and previous related studies will also be used to build the interview questions. Interviewers will include current and retired sex workers trained to work in qualitative studies, as participants may feel more relaxed being interviewed by a peer. A predetermined set of open-ended questions to help guide each interview and allow room for additional probing when a topic arises organically. One example question might be, “If you have revealed your work status during a visit with your primary care provider, what was their initial response?” Followed by, “How were you treated after that revelation?” Each interview aims to create a space where the participants can share their stories and have it matter. As such, each participant is asked at the end of the interview to choose the top three things that they think need to be fixed to improve sex workers’ health



outcomes. The answers will be used to create future interventions for those in the sex trade.

Data Analysis

The interviews are recorded, allowing each one to be transcribed and analyzed by AI. The transcription technology will allow for thematic and content analysis of the interviews, looking for themes and patterns as the words get coded. More importantly, it provides for interpretive phenomenological analysis (IPA), an essential element for this study. IPA allows for data analysis that helps create an understanding of the sex workers' lived experiences and how the sex workers assign significance to them. It is exceedingly likely that the results of the investigation will show that occupational stigma has a monumental impact on sex workers' interactions with healthcare, like facing difficulty accessing health services, receiving poor or no care, or being treated poorly by health staff.

Ethical Considerations

In consideration of their historical mistreatment by academia and society in general, this study must be for the benefit of sex workers and not just another arbitrary thought experiment. It is essential to include people with lived experience in creating and carrying out the study to develop a better environment of sensitivity and social awareness. Research in marginalized populations that is for them and by them is difficult to find. To ensure that the principles of ethical research, especially given this at-risk population, are respected, this study will first seek the approval of the Internal Review Board. After being approved and the interview instrument created, volunteers will be pursued to participate in the study. Incentivizing a study recruiting and studying marginalized populations is a tricky subject to navigate. However, given that sex workers are, by design, paid for their time, incentivization made sense.

The entire interview can be recorded and transcribed. At the beginning of each interview,

the participants will consent to be recorded; then, they will review the informed consent form with the interviewer. If there are questions, all the time will be taken to answer them until the participant is satisfied. At this point, they will give their verbal consent to be involved in the study. During interviews, participants will be encouraged to share their experiences. With each new section of the interview instrument, participants will also be reminded that they can skip any questions, take a break if needed, stop recording, or stop the interview at any time if anything distresses them. They will also be reminded that dropping out of the study will not affect receiving the incentive.

Knowing the participants exist under criminalization, confidentiality in this study is critical. As another layer of safety, all communications with participants, whether voice, video, or emails, will be deleted within one year of the study's conclusion. No identifying information will be used in interviews - each interview will be assigned a number. All interviews, recordings, and transcripts will be double-backed in a password-protected cloud and physical hard drive. The research teams will do their utmost to protect the participants' identities.

Discussion

Significance

Sex worker's rights are human rights. "The right to the highest attainable standard of physical and mental health" was declared a human right by the United Nations (OHCHR, 1966) .

Due to the stigma of their career, most sex workers choose not to disclose their work status to their healthcare providers, which can lead to adverse health outcomes, including shortened life spans. Our interviews will allow sex workers to share their lived experiences and speak for themselves. We will lift their voices while creating abundant data to help develop



Frickin-Bats

programs to reduce the stigma they face. A merit of the study includes gaining introspection into how stigma impacts workers uniquely and phenomenologically in healthcare settings. Studies can then be created around those two aspects of sex work stigma and healthcare.

Limitations

The choice of snowball recruiting can limit the participant demographics and can bias results. However, since marginalized and criminalized communities can be hard to find, it is often the easiest method to reach them. Participants may also drop out due to the sometimes transient nature of the job, fear of repercussions, lack of internet, or lack of privacy. If more people are eligible and interested in the interview, we can attempt to fill the empty interview spot until saturation. Another limitation is being unable to include the narratives of sex workers who did not speak English or those below a certain education level, given the further challenge of reaching them. Given the sensitive and personal nature of many of the questions in the interview and the many abuses sex workers face from the general public, we have ensured that the interviews will be conducted only by current or past sex workers. Recall bias is an essential consideration when asking about emotionally charged situations. Lastly, the study size is small and cannot be extrapolated.

Future Directions

It is possible to develop an easy-to-understand, culturally competent healthcare training curriculum for healthcare workers to lower bias against sex workers based on data from this study. Once that is created, its implementation must be measured quantitatively and qualitatively. Will it have an impact on healthcare workers' attitudes towards sex workers and sex worker patients? It has been shown that more sex workers than not choose not to disclose their work status in healthcare settings. This phenomenon deserves to be

investigated further, especially qualitatively. Lastly, the three questions participants were asked at the end of the interviews – the top three things that they think needed to be fixed to improve sex workers' health outcomes should be given immediate attention for further analysis.

References

- 22 U.S. Code § 7102 - Definitions. (2013). LII / *Legal Information Institute*. <https://www.law.cornell.edu/uscode/text/22/7102>
- Albright, E., & D'Adamo, K. (2017). Decreasing human trafficking through sex work decriminalization. *AMA Journal of Ethics*, 19(1), 122–126. <https://doi.org/10.1001/journalofethics.2017.19.1.sect2-1701>
- Argento, E., Goldenberg, S. M., Braschel, M., Machat, S., Strathdee, S. A., & Shannon, K. (2020). The impact of end-demand legislation on sex workers' access to health and sex worker-led services: A community-based prospective cohort study in Canada. *PLOS ONE*, 15(4), e0225783. <https://doi.org/10.1371/journal.pone.0225783>
- Benoit, C., Ouellet, N., & Jansson, M. (2016). Unmet health care needs among sex workers in five census metropolitan areas of Canada. *Canadian Journal of Public Health*, 107(3), e266–e271. <https://doi.org/10.17269/cjph.107.5178>
- Cohan, D., Lutnick, A., Davidson, P. J., Cloniger, C., Herlyn, A., Breyer, J., Cobaugh, C., Wilson, D., & Klausner, J. D. (2006). Sex worker health: San Francisco style. *Sexually Transmitted Infections*, 82(5), 418–422. <https://doi.org/10.1136/sti.2006.020628>
- Comprehensive Care, Definition of. (1980). *AAFP*. <https://www.aafp.org/about/policies/all/comprehensive-care-definition.html>
- coyotewebadmin. (2018). Policing modern day slavery in RI. *Call off Your Tired Old Ethics*. Retrieved February 26, 2024, from <http://coyoteri.org/wp/policing-modern-day-slavery-2014-2016/>



- Cunningham, S., & Shah, M. (2014). Decriminalizing indoor prostitution: Implications for sexual violence and public health. *National Bureau of Economic Research*, Working Paper 20281. <http://www.nber.org/papers/w20281>
- Decriminalize Sex Work. (2022, July 20). Rhode Island - *Decriminalize sex work*. <https://decriminalizesex.work/advocacy/state/ri/>
- Decriminalize Sex Work. (2023, September 4). Prostitution laws by state: Where is prostitution legal? <https://decriminalizesex.work/advocacy/prostitution-laws-by-state/>
- Fraser, C., & Clarke, G. (2023, November 10). Measuring continuity of care in general practice - The Health Foundation. *The Health Foundation*. Retrieved May 8, 2024, from <https://www.health.org.uk/publications/long-reads/measuring-continuity-of-care-in-general-practice>
- Fondation Scelles. (2012). Sexual exploitation: Prostitution and organized crime. *Economica*. https://www.fondationscelles.org/pdf/rapport_mondial/sexual_exploitation_prostitution_Fondation_Scelles.pdf
- Global Network of Sex Work Projects. (2017). The Meaningful involvement of sex workers in the development of health services aimed at them. [Briefing Papers]. https://nswp.org/sites/default/files/briefing_paper_meaningful_involvement_in_health_services_nswp_-_2017.pdf
- Jeal, N., & Salisbury, C. (2004). A health needs assessment of street-based prostitutes: Cross-sectional survey. *Journal of Public Health*, 26(2), 147–151. <https://doi.org/10.1093/pubmed/fdh124>
- Lazarus, L., Deering, K. N., Nabess, R., Gibson, K., & Shannon, M. W. T. a. K. (2012). Occupational stigma as a primary barrier to health care for street-based sex workers in Canada. *Culture, Health & Sexuality*, 14(1/2), 139–150. <https://www.jstor.org/stable/41426452>
- Lyons, C., Schwartz, S., Murray, S. M., Shannon, K., Diouf, D., Mothopeng, T., Dramé, F. M., Djaló, M. A., & Baral, S. (2020). The role of sex work laws and stigmas in increasing HIV risks among sex workers. *Nature Communications*, 11(1). <https://doi.org/10.1038/s41467-020-14593-6>
- Ma, H., & Loke, A. Y. (2019). A qualitative study into female sex workers' experience of stigma in the health care setting in Hong Kong. *International Journal for Equity in Health*, 18(1). <https://doi.org/10.1186/s12939-019-1084-1>
- McIntyre, A. (2014, July 15). Study: Rhode Island accidentally decriminalized prostitution, and good things happened. *Vox*. <https://www.vox.com/2014/7/15/5898187/prostitution-rhode-island-decriminalized>
- Office of the High Commissioner for Human Rights. (1966). International covenant on economic, social and cultural rights. *United Nations*. <https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-economic-social-and-cultural-rights>
- Platt, L., Grenfell, P., Meiksin, R., Elmes, J., Sherman, S. G., Sanders, T., Mwangi, P., & Crago, A. L. (2018). Associations between sex work laws and sex workers' health: A systematic review and meta-analysis of quantitative and qualitative studies. *PLOS Medicine*, 15(12), e1002680. <https://doi.org/10.1371/journal.pmed.1002680>
- Potter, L., Horwood, J., & Feder, G. (2022). Access to healthcare for street sex workers in the UK: Perspectives and best practice guidance from a national cross-sectional survey of frontline workers. *BMC Health Services Research*, 22(1). <https://doi.org/10.1186/s12913-022-07581-7>
- R.I. looks to close prostitution loophole. (2009, June 18). *CBS News*. <https://www.cbsnews.com/news/ri-looks-to-close-prostitution-loophole/>
- Rivera, J. (2022). Towards bodily autonomy: A healing justice anthology decolonizing sex work and drug use. *Creative Muses*.



Frickin-Bats

Sawicki, D. A., Meffert, B. N., Read, K., & Heinz, A. J. (2019). Culturally competent health care for sex workers: An examination of myths that stigmatize sex work and hinder access to care. *Sexual and Relationship Therapy*, 34(3), 355–371. <https://doi.org/10.1080/14681994.2019.1574970>

Singer, R., Johnson, A. K., Crooks, N., Bruce, D., Wesp, L., Karczmar, A., Mkandawire-V alhmu, L., & Sherman, S. G. (2021). “Feeling safe, feeling seen, feeling free”: Combating stigma and creating culturally safe care for sex workers in Chicago. *PLOS ONE*, 16(6), e0253749. <https://doi.org/10.1371/journal.pone.0253749>

Stigma. (2024). <https://dictionary.cambridge.org/us/dictionary/english/stigma>

Toubiana, M., & Ruebottom, T. (2022). Stigma hierarchies: The internal dynamics of stigmatization in the sex work occupation. *Administrative Science Quarterly*, 67(2), 515–552. <https://doi.org/10.1177/00018392221075344>

World Health Organization. (2024). Global HIV, hepatitis and STIs programmes. <https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/populations/sex-workers>



EVALUATING EDUCATIONAL EFFORTS TO SUPPORT TRAUMA-AFFECTED STUDENTS

Kori Cantwell

ABSTRACT: Traumatic events happen in everyone's lives, and they can create impactful and irreparable consequences for those who experience them. In recent years, community events such as the COVID-19 pandemic and school shootings are becoming more prominent. For students in elementary schools, trauma can affect their performance, mental health, relationships, and self-esteem. It's up to school districts, administrators, and teachers to provide support to students who are affected by traumatic events. This can look like ensuring training is completed, creating multi-tiered systems of support, and establishing and cultivating loving classroom communities. This research paper analyzes the different educational efforts to support trauma-affected students and strives to create more trauma-aware schools, classrooms, and educators.

Introduction

Trauma affects everyone, at all stages in their lives. It can make or break a school year for students and can lead to yearlong mental health struggles. Traumatic events affect many children in schools every day, but they often aren't receiving the support that they need to get past these events. In today's school communities, there is not enough awareness amongst educators and school administrators about the prevalence and negative effects that traumatic events have on students. Even in the last few years, more and more students are dealing with trauma at home that can include parental dysfunction, drug use, family death, and others. However, there are some schools implementing training and awareness programs for educators that are reducing the effects of traumatic events on students. In one school, a therapeutic approach had positive effects that "indicated a decrease in trauma-related symptoms for students who received HEARTS therapy" (Dorado et. al. 2016). In the Healthy Environments and Response to Trauma in School (HEARTS) program, teachers receive training on the effects of traumatic events on students as well as ways to teach these students in a more effective manner. This has been

successful in mitigating the effects of trauma on children and adults alike and should be used in every school nationwide to create trauma-informed school communities everywhere.

In school districts across the country, there is a lack of resources and support available to scaffold the learning and development of students experiencing trauma. The COVID-19 pandemic, along with the high presence of school shootings in the past few years have exacerbated the number of students suffering from traumatic experiences (Walkley & Cox, 2013, Grieg et al. 2021). These events impact not only the students experiencing them, but educators and school staff as well as entire communities. To mitigate these negative effects, there needs to be systems in place that can reduce the effects from traumatic events on students. The recent uptick in school shootings and the pandemic are not the only events that affect student performance and mental health.

Traumatic events such as divorce, family death, mental health, etc. greatly impact the way that students learn and experience school. "Childhood trauma can adversely impact academic performance, classroom behavior, and student relationships" (Berger 2019). These are all essential functions of children in the school



Cantwell

environment, and all of them become impaired when students are experiencing traumatic events. This can affect other students, teachers, administrators, and the school community if there aren't systems in place to support students. After experiencing trauma, students may have lifelong mental health, trust, and emotional issues. However, there are ways that educators can intervene to ensure that trauma doesn't have a lasting impact.

Teachers are the backbone of classrooms and can make or break a student's experience in school. It's important that they are working to support students in any way they can. Two ways educators can support students in the classroom include building a strong classroom community as well as instructing according to student strengths. Positive psychology or using students' strengths to promote growth and healing has been instrumental in creating a trauma-informed school community (Brunzell et al. 2016). Incorporating this tool in classrooms could be an important step to informing educators about creating a trauma-informed classroom community. This can also boost the classroom community that teachers have and encourage community building within schools. In addition, teachers can transform their community circles to better support their students and improve behavior. This can be done by implementing restorative practices in the classroom (Schepers et al. 2023). However, some teachers often have a "tried and true" method that works for them over the years and won't change their ways of teaching.

It can be difficult to ask educators to change their teaching methods after doing things one way for so long. This can be the hardest part of implementing trauma-informed teaching and building a trauma-informed community. However, implementing a required training can be a great starting point to giving instructors the tools that they need. A study found that incorporating a required training across an entire school system may be the best way

to create trauma-informed schools and communities (Blanton et al. 2022). Although some teachers incorporated what they learned into their classrooms, the result was ultimately not effective in school or district-wide contexts. There is also no way to check if these systems are being used correctly in every school or every district. (Blanton et al. 2022). The question I will be researching is, how can educators and school administrators work together to create a trauma-aware school community?

Literature Review

Firstly, in order to support students who are experiencing traumatic events, it's important to identify what constitutes "trauma" and how these events affect the learning and development of students. Trauma is defined as "an overwhelming experience that can forever alter one's belief that the world is good and safe" (Brunzell et al. 2016). This is a broad definition and can include events both small and large. Kids often don't even understand that they are going through a traumatic event until they reach adulthood. These experiences can range from parental divorce or death to community experiences such as school shootings or the COVID-19 pandemic (Walkley & Cox 2013). These traumatic events are more common than you would think, with around 40% of students experiencing or witnessing a traumatic event (Brunzell et al. 2016). Experiencing these events often or for a prolonged period can lead to toxic stress, which can dramatically alter the brain, stress response, and self-regulation skills. If a child is exposed to toxic stress for a long period of time, they may have lifelong effects such as mental illness, inability to form relationships, and anger issues (Walkley & Cox 2013). These experiences not only alter the way that children view the world, but also the ways in which they learn and develop. As children reach adulthood, these traumatic events often continue to affect their daily life in many ways and can alter the way they experience the world forever.



Supporting Trauma-Affected Students

After going through the COVID-19 pandemic, everyone's worlds were altered. Sick policies have changed, masks are seen as normal, and some people are still working from home. This traumatic event changed how we experience the world, and it's no different for other traumatic events that happen to children. According to a study done by the University of Melbourne, the effects of these events impact how students build healthy relationships and develop their self-regulation skills (Brunzell et al. 2016). These skills and relationships are the backbone of emotional intelligence as adults and if schools aren't well versed in supporting trauma-affected students, it will hinder the development of these skills. In addition to this, they are also more prone to experiencing things such as suspensions, expulsions, detention, failing, delays in various developmental domains, and being wrongly assigned to special education (Brunzell et al. 2016). These experiences not only impact student success, but students' opinions of school in general. If students don't enjoy school, they are less likely to try to be successful. Since these traumatic events affect students' experience and success in future grades, early intervention should be a priority. Providing teachers with the tools to use in their classroom can be a catalyst in preventing the failure of students as they progress to high school and through adulthood. In addition to this, allowing teachers to understand the prevalence of trauma in their students is important to influencing how much they care about this issue.

Gaining awareness is the first step to creating a trauma-informed classroom community. A lot of the time, teachers aren't aware of students experiencing trauma because they don't get to know their students. A great teacher will get to know each of their students, be curious about their lives, and be ready to support them. Once you know your students, you will know their strengths and their areas of growth. One way that teachers have gained awareness is to learn student strengths and teach to those. By emphasizing strengths in the classroom and

asking students to set goals in relation to them, we can mitigate some of the effects of trauma. In addition, it has been shown to "increase school performance, achievement, and wellbeing; and to be an effective tool in planning higher education and career paths with students" (Brunzell et al. 2016). This is a great curriculum element that should be given to teachers so they can increase the success of the students who experience trauma in their classrooms. By giving students a tool to use in building their future success, the traumatic events they are exposed to won't have as large of an impact. In addition, students will feel better about themselves, have something to work towards, and feel as though their teacher truly cares about them.

Caring deeply about students is an essential part of being an educator, as this allows teachers to build a relationship of trust and mutual respect. In addition to this, there are other pieces of a classroom that can impact student success and create a trauma-informed classroom community. According to a group of educators, there are six things that contribute to a trauma-informed classroom: "creating a sense of safety, practicing trustworthiness and transparency, utilizing peer support, employing collaboration, practicing empowerment and fostering voice and choice, and recognizing cultural, historical, and gender issues" (Blanton et al. 2022). By bringing these aspects into the classroom, teachers can create a trauma-informed community in the classroom in which children feel safe to share their struggles with the teacher. Peers can also be a form of support for one another, by offering support or recognizing that there may be multiple students experiencing different things. By teaching to strengths, teachers are empowering their students to recognize their strengths despite adversity. Lastly, recognizing the factors that may contribute to more traumatic events, such as gender, race, and sexuality, prepares teachers to better support these students in the classroom.

Teachers aren't just given a group of students with a thriving classroom community. It's an



Cantwell

aspect of teaching that must be worked on every single day. This often involves a community circle or other community building projects. Although these are common for most teachers, they can be used differently to impact students more effectively. A newly researched practice called restorative justice is one way that teachers can respond to trauma in the classroom by focusing on community. These restorative justice practices are based on indigenous methods, and they work to “proactively and responsively prioritize relationships, community building, and self-reflection while repairing harm and holding those accountable when harm is caused” (Schepers et. al 2023). One of the main ways this is integrated in all classrooms today is with community circles. All students and teachers sit in a circle and answer a question, and this often works to build community, support all students, and establish trust among peers and teachers. However, the community circle is often used as “fun” and not in the ways it’s intended. To ensure that a community circle is effective, consider talking about shared classroom values, discussing issues that happen at recess, or working to “repair harm” (Schepers et. al 2023). The community circle includes six practices that create a trauma-aware classroom community: “empowerment; voice and choice, historical, culture, and gender issues, safety, trustworthiness and transparency, peer support, and collaboration and mutuality” (Schepers et. al 2023). Most teachers have a community circle each day, so making it more intentional by focusing on issues that affect the classroom is a change that can create a trustful and supportive classroom community. This is another way that teachers can allow students to be the leaders in the classroom and can make educators more aware of their own bias.

The first step to becoming a trauma-aware educator is to be aware of their own bias. Each educator comes from their own backgrounds and has their own set of experiences. The way that teachers can use this to their advantage is to acknowledge this bias and use it to improve

their practice. One way this can be done is for teachers to continue educating themselves. Not every teacher will look for this on their own, so training must be made available to teachers by the school district. One program that already exists is called Healthy Environments and Response to Trauma in Schools (HEARTS), which is a vast prevention program that touches many parts of the school system to mitigate the negative effects of traumatic events on students. One of their goals is to support these students by ensuring that educators are well-informed and trained on topics related to caring for those experiencing trauma. They provide three levels of support, ranging from individual prevention methods to worldwide (Dorado et al. 2016). This intensive program is a great example of something that should be implemented in districts around the country. By providing proper training to teachers, support for students, and overall awareness, the effects of traumatic events on students can be minimized.

A whole-school approach is an intensive and supportive one that will support each level of the school system needed for real changes to be made. The HEARTS program begins at Tier 1, which provides support to all students, adults, and systems in the school. These range from “classroom training on stress” for students, to “skill-building workshops” for educators (Dorado et al. 2016). Moving up in Figure 1, the supports in Tier 2 get more intensive and individualized. Secondary interventions here include supporting at-risk students, wellness for staff that addresses teacher burnout, and revising discipline policies in the school. These efforts then move on to Tier 3, which is a more intensive support system (Dorado et. al. 2016). Students may receive individualized therapy, along with their families. In addition, Individualized Education Plan (IEP) assessment may begin here as well as providing extra supports in the classroom to trauma-impacted school staff and involving all student caregivers. These three tiers ensure that at each level, students and staff are supported, while also ensuring that



the district is improving upon practices and methods to ensure efficacy and evaluation of their individual systems. This is a supportive model that will improve upon teacher and staff knowledge of trauma, while also supporting students individually.

Another approach to teacher training is a systems-aware approach that engages teachers in discussions. These conferences encourage educators to share their own experiences, opinions, and beliefs when it comes to caring for

trauma-affected students. This is a great way for educators to get involved and informed about trauma-aware practices. In addition, it allows multiple teachers, administrators, and school personnel to work together to create a plan to improve their schools or districts. Along with this collaborative ability, the systems-aware approach creates “safe spaces” where multiple perspectives are heard to develop an inclusive environment for students and staff (Greig et al. 2021). Organizing a taskforce such as this can be a great way to involve educators outside

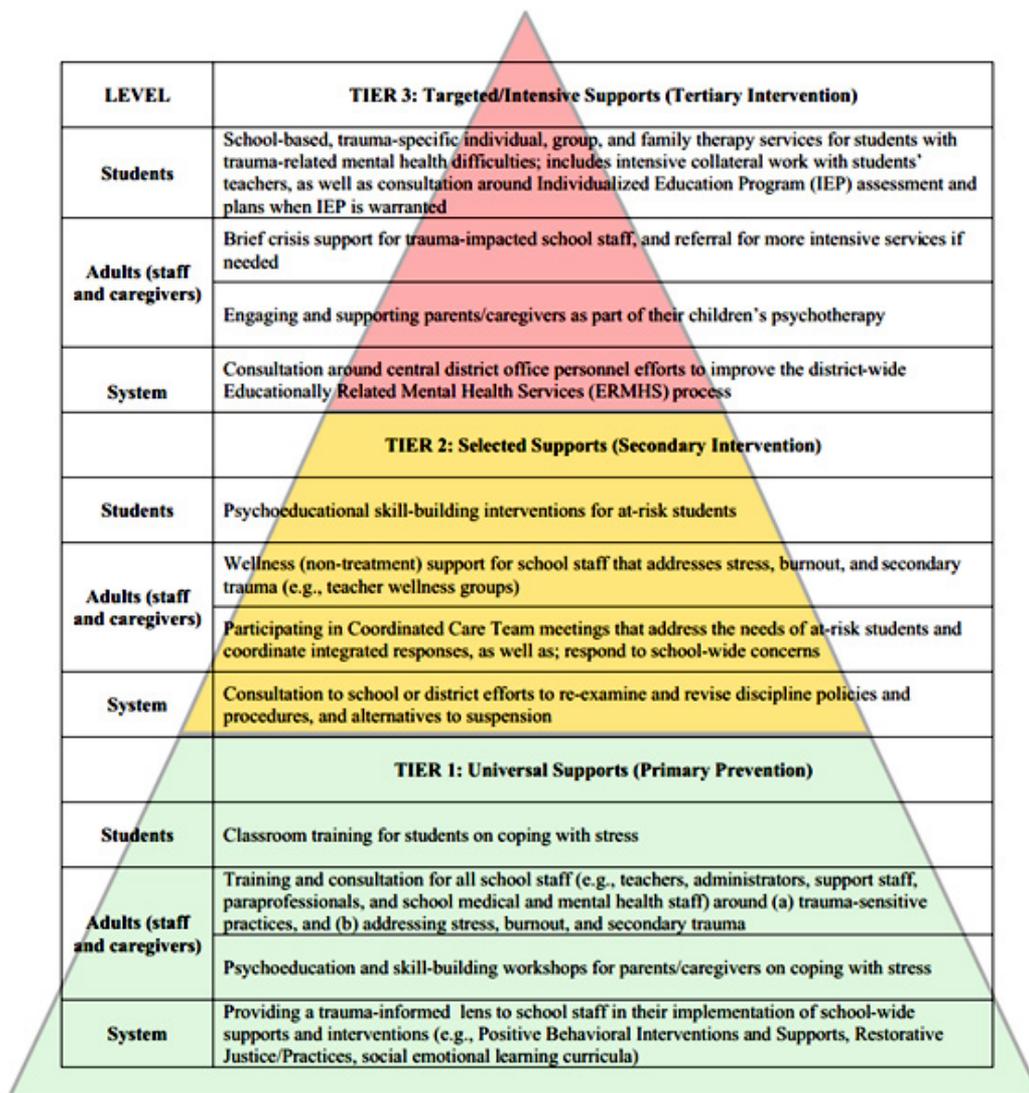


Figure 1: Examples of HEARTS tiered supports at three levels of intervention. Dorado et al. 2016



Cantwell

required training. This taskforce can tackle tasks such as scheduling training, following up on teaching methods, and ensuring all children are cared for. This, in addition to monthly or tri-monthly trauma-informed training would allow for more awareness and approaches to developing trauma-aware communities. It would also promote a school community that discusses trauma openly and has plans to improve the way the school supports trauma-affected students.

Although these plans seem supportive, intentional, and effective, the school system is often not this way. For example, trauma-informed training is not offered in every district, and there are some limitations to these trainings that are not always considered. Although training is offered, evaluations of the staff after the training are not always completed. To see the effects of trauma decrease, educators must take what they have learned into practice in the classroom (Berger 2019). Teachers may not mean to forget what they have learned in these trainings but they have a lot of other things to think about. This may mean that enforcing a trauma-informed classroom is not at the top of their list of things to do. In addition to this, veteran teachers may not want to implement new ways of teaching. This, and the idea that change in a large system such as a school district takes time, are huge barriers to the implementation of these programs (Walkley & Cox 2013). Many new teachers may already know that changing anything in the school system can take years. Implementing an entire new training or task force can be difficult and time-consuming, but the importance of these programs is essential to scaffold the learning and development of the students, who should be the most important people in a school.

Although there are limitations, there have also been findings from the literature that have shown these programs to be extremely effective. The educators that participated in the HEARTS program stated that “they had significant increases in their understanding of trauma and use of trauma-sensitive practices, as well as significant improvements in their students’ ability to learn, time on task, and school attendance” (Dorado et al. 2016). These findings show that educators are learning from the training and taking what they learned into the classroom. This is a great first step to ensuring that educators become more aware of what may be happening in their students’ lives. It’s also important to note that the mental health of their students greatly improved after the HEARTS program was implemented (Dorado et al. 2016). The school that implemented this program also reported that students “improved in their adjustment to trauma, regulation, intrusions, attachment, and dissociation” (Dorado et al 2016). As we can see from these results, implementing an entire school approach to create a trauma-informed community greatly decreases the effects from traumatic events. Not only this, but it creates a trauma-aware community that has support at every level of the school system and prepares students for a successful life despite adversity.

Limitations and results aside, there are noticeable gaps in the research and literature available to analyze methods of mitigating the effects of trauma on students. Although there is ample research and evidence that trauma negatively impacts learning and development, there is not enough research on what schools or teachers can do to reduce these impacts. There needs to be more research on specific training methods and resources for teachers to be more prepared to meet the needs of their trauma-affected students. This means that more schools across the country should be creating and implementing programs that inform teachers and administrators about the negative effects of trauma and how to create a trauma-aware



school. In addition, it's important that educators and school administrators work together to establish training and resources if there are none available at their schools. This will allow the research to be supported by more training and results. The current literature is too scarce for the training that is offered to support trauma in the classroom.

Conclusion

Students experiencing trauma often cannot fully participate in school and aren't able to gain the necessary learning and development due to traumatic events. They need extra support and assistance from teachers to be successful. However, as the literature has expressed, there is not enough training available to educators and schools to meet the needs of these students. In addition, educators are overworked and underpaid, and often won't have the time or energy to learn new practices or techniques. At least 40% of students are experiencing trauma in schools right now (Brunzell et. al. 2016). This statistic needs to be addressed throughout the entire school system in order to make a change. The HEARTS training and systems-aware approach mentioned in the literature review have been successful but are not implemented in every district, or even every state.

Districts must prepare teachers with ways to support these students as well as create school or district-wide systems to support students experiencing trauma in the community. After having regularly scheduled training sessions, schools will become more aware of the signs of trauma and how to support those experiencing it. Teachers experience burnout from being overworked and unsupported with student behaviors, and these behaviors are often due to experiencing or witnessing traumatic events (Grieg et al. 2021). Regular training can also include ways to reduce stress or support mental health, which will be helpful to teachers experiencing burnout. By instructing teachers on how to best support these students, training

can also contribute to reducing teacher turnover. In combination, this will allow communities to build trauma-informed schools that have the tools needed to support those experiencing trauma.

Traumatic events affect a child forever by causing lifelong mental illnesses and negatively impacting their ability to build relationships. Mitigating the negative effects of these events can alter the course of their lives and improve their learning and development. To do this effectively, educators must be provided with training to increase their awareness of the effects of traumatic events. Increasing the awareness of educators will decrease the effects of traumatic events on students. However, training needs to be implemented district-wide at every level. This falls on school administrators and district personnel. The effectiveness of the teachers' curriculum and adaptation of training materials must also be observed throughout the school year. In addition, new training should be created often to support a system that is constantly striving to improve the lives of their students and teachers. Educators themselves can work to create a classroom community that is not only aware of trauma, but celebrates it. This can be done by focusing on positive psychology and restorative justice practices. To ensure that a school is truly trauma-informed and equipped to mitigate the effects of traumatic events on students, educators and school administrators alike must work together to create a system of support that reaches each student.



Cantwell

References

- Berger, E. (2019). Multi-tiered approaches to trauma-informed care in schools: A systematic review. *School Mental Health*, 1-15.
- Blanton, M. A., Richie, F. J., & Langhinrichsen-Rohling, J. (2022). Readiness to Change: A Pathway to the Adoption of Trauma-Sensitive Teaching. *Behavioral Sciences*, 12(11), 445. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/bs12110445>.
- Brunzell, T., Waters, L., & Stokes, H. (2016). Teaching with strengths in trauma-affected students: A new approach to healing and growth in the classroom. *American Journal of Orthopsychiatry*, 85(1), 3.
- Dorado, J. S., Martinez, M., McArthur, L. E., & Leibovitz, T. (2016). Healthy Environments and Response to Trauma in Schools (HEARTS): A whole-school, multi-level, prevention and intervention program for creating trauma-informed, safe and supportive schools. *School Mental Health*, 8(1), 163 - 176.
- Greig, J, Bailey, B, Abbott, L, & Brunzell, T. (2021). Trauma-Informed Integral Leadership: Leading School Communities with a Systems-Aware Approach. *International Journal of Whole Schooling*, 17 (1), 62-97.
- Schepers, O., Brennan, M., & Bernhardt, P. E. (Eds.). (2023). Developing trauma-informed teachers: Creating classrooms that foster equity, resiliency, and asset-based approaches ~ research findings from the field. *Information Age Publishing*, Incorporated.
- Walkley, M., & Cox, T. L. (2013). Building trauma-informed schools and communities. *Children & Schools*, 35(2), 123 - 126.



UYGHUR FORCED LABOR: THE ROLE WE PLAY

Liam Hunter

ABSTRACT: Regardless of current existing humanitarian efforts, the Uyghur population in Xinjiang, China are subject to forced labor. Human rights advocates have classified China's treatment of Uyghur people as ethnic cleansing and genocide. This humanitarian crisis has a long-written history, yet nothing effective has been accomplished. America's foreign policy, the Uyghur Forced Labor Prevention Act (UFLPA), has fallen short of its goals and failed to support those it was made to support. Approaching the second year since the creation of UFLPA, it is becoming increasingly important to alter the current trajectory. Attempts toward improving UFLPA to better support the Uyghur population are necessary for human rights movements globally. America must focus on utilizing its ability to publicly denounce countries while working toward eliminating e-commerce related to forced labor. Through my research, I propose policy change disabling the selling of forced labor goods through E-commerce websites and expanding labor laws onto offshore labor. I subsequently propose a national mindset change to repudiate countries backing China (whether willingly or not) in hiding human rights abuses.

Introduction

In this research paper, I will be analyzing the forced labor of Uyghur people in the Xinjiang Autonomous Region of China. I will be discussing the benefits, loopholes, and struggles of current U.S. foreign policy serving to assist Uyghurs in internment camps and forced labor situations. I argue that current U.S. foreign policy is lacking in both the economic and humanitarian aspects needed to support Uyghurs. Not to mention the existence of the Uyghur Forced Labor Prevention Act serving as an economic sanction on China. To effectively support the Uyghur population in China, a more thorough policy must be constructed. After discussing the history of Uyghurs and Xinjiang, the stakeholders involved, and the current U.S. foreign policy, I will go on to discuss policy recommendations to better combat the forced labor and humanitarian abuses on the Uyghur population.

This paper highlights and focuses on America's actions in foreign policy against

human rights abuses toward the Uyghur population. In preparation and research, I visited Washington D.C., and got the opportunity to speak directly with congresspeople, embassy officials, and prevalent NGOs. Coordinating with these influential figures, I was able to grasp the realistic struggles of U.S. foreign policy and human rights activism. Communicating with international affairs officers helped me understand the restrictions behind the current structure of U.S. foreign policy, further leading me to realize the importance of discussing its faults. This paper comes from the optimistic hope of human rights activism paired with a realistic understanding of current structural barriers.

Background & History

Uyghurs are a group of Turkic-speaking people who originated near central Asia. Their population is considered to be followers of the Sunni Islamic religion. The Uyghur territory was absorbed into Chinese rule during the Qing Dynasty in the 18th century. Shortly after, China



Hunter

constructed the new capital, Dihua, in the area now known as the Uyghur Autonomous Region of Xinjiang, in Northwestern China. Due to the location and amount of undeveloped land, Dihua quickly became “the greatest city and center of trade in Central Asia.” (Britannica, 2023).

Following the financial significance of Dihua, came large numbers of ethnic Chinese people (Han) during the establishment of the autonomous region in the 1950s. Even while still being considered a Uyghur city at its core, the infrastructure and power exist majorly in the hands of the Han Chinese, especially after the influx of Han since the 1990s. Ever since the overtaking of the Qing dynasty, ethnic tension between Uyghur and Han populations brought about protests, violence, and discrimination. The most notable protest occurred in July 2009, reporting 200 deaths and 1,700 injuries through “knife-wielding assailants and suicide bombers” (Lotha, 2023). The CCP (Chinese Communist Party) retaliated to these protests with shootings, wide-scale arrests and most importantly, a security overhaul. In this overhaul, the government established “cameras, checkpoints, and constant police patrols in Uyghur-dominated areas” (Lotha, 2023). These cameras and checkpoints allowed for domination over the security and freedom of Uyghur people. It is not known when exactly the CCP started its ‘re-education efforts,’ however, it is estimated by experts that these efforts “started in 2014, and were drastically expanded in 2017” (Maizland, 2022).

These reeducation efforts, otherwise known as Xinjiang internment camps, are nothing less than an act of cultural genocide towards the Uyghur people. These camps attempt to wipe out Uyghur religious and cultural beliefs, while enforcing inhumane conduct such as forced labor and torture (Bureau of International Labor Affairs, n.d.).

Living in Xinjiang

As of 2022, Xinjiang autonomous region has a population of 25.87 million people, and 11 million people, or 45%, of the population are estimated to be Uyghurs (Textor, 2023). An estimated 10 million are Han Chinese, and the remaining people fall under other Muslim ethnic groups such as Kazaks, Kyrgyz, Uzbeks, and Huis (Textor, 2023).

While the exact number will never be known, it is estimated that over one million Uyghur people have been “arbitrarily detained in the far western region of Xinjiang and across China.” (Bureau of International Labor Affairs: Against their will, n.d.). Those being detained are placed in the Xinjiang internment camps, for what the Chinese government calls “vocational education and training centers” (Maizland, 2022). Those in internment camps are stripped of their rights and identity, rarely being able to see their families, and forced to work under what is considered modern-day slavery (U.S. Department of State, 2021). These people are physically and psychologically tortured, raped, and forcibly sterilized. Those who haven’t been detained undergo constant discrimination, and most desperately seek to flee the country for their safety.

Amidst this crisis, one Non-Governmental Organization (NGO) was created to directly tackle the inhumane treatment of Uyghurs. Like any other NGO, it alone lacks the power to tackle or criticize humanitarian crimes; however, it is currently focusing on carrying the Uyghur voices and experiences that are being suppressed. This NGO, Uyghur Tribunal, was set into motion in June 2020 through a formal request by Dolkun Isa, the President of the World Uyghur Congress. In September 2020, The Uyghur Tribunal (‘Tribunal’) set out to investigate “ongoing atrocities and possible Genocide against the Uyghurs, Kazakhs, and other Turkic Muslim Populations.” (Evidence Uyghur Tribunal, 2020). The creation of the



Tribunal is backed and supported by another NGO, the Coalition for Genocide Response. The Tribunal serves as a collection of evidence and stories from victims, as well as a center for global news about Uyghurs. This NGO holds public hearings where witnesses are allowed to present their evidence, which is live streamed to be seen around the world.

Further clarifying the role of the Tribunal, it is important to discuss the legal restrictions faced when attempting to criticize or hold the perpetrators accountable. “It is alleged that the People’s Republic of China (“PRC”) has and continues to perpetrate the most serious of international crimes against the Uyghurs, Kazakhs, and other Turkic Muslims in the Uyghur region of Northwest China... If it were realistically possible to bring the PRC to any formal international court - in particular to the International Court of Justice (ICJ) - there would be no need for the establishment of a people’s tribunal.” (Uyghur Tribunal, n.d.). The issue at hand is that although China ratified the Genocide Convention, it subsequently entered a reservation against ICJ jurisdiction. To enter a reservation when signing a law is to partially sign the agreement. In this case, China held a reservation against Article IX of the Genocide Convention. (Article IX from the Convention on the Prevention and Punishment of the Crime of Genocide/Genocide Convention cited below).

“Article IX

Disputes between the Contracting Parties relating to the interpretation, application or fulfilment of the present Convention, including those relating to the responsibility of a State for genocide or for any of the other acts enumerated in article III, shall be submitted to the International Court of Justice at the request of any of the parties to the dispute.”

Setting a reservation against Article IX signifies that the PRC is unable to be brought to The International Court of Justice to face trial for

any alleged Genocide-related crimes, hence the importance and reason for the creation of the Tribunal. While the Tribunal doesn’t have the power to enforce or sanction, it is a group focused on reviewing evidence and reaching judgment on the state of international crimes that have been allegedly caused by the PRC. This paper uses statements and evidence brought about by the Uyghur Tribunal to highlight the humanitarian crisis at hand. The following paragraph is a summarization of the victim’s statement made to the Uyghur Tribunal and publicly released on the Tribunal’s website.

On Monday the 13th, of September 2021, Gulzire Alwuqanqizi stated her experiences as a Uyghur detained in China. Before 2017, she lived in Kazakhstan and only returned to Xinjiang to visit her daughter. However, as she landed in Xinjiang, her Kazakhstan green card and Chinese passport were confiscated, and she was detained and interrogated. Afterwards, she was dropped off at Ghulja. When she asked the Uyghur mayor for her passport back, she was told she was going to “study for fifteen days.” However, she ended up being detained “in four different facilities over the course of 437 days” (Evidence Uyghur Tribunal, 2020). In 2017, at the Yining County Vocational School, she was forced to get an injection they called the ‘anti-flu shot’. She was forced to sign an agreement and after a few days, she noticed the injection made it harder to think, and that many women had stopped menstruating after the injection. She was forced to go against her religion and eat pork while being humiliated. Gulzire was placed in a caretaker role for these women, she would have to take the fingerprints and names of women before they got violently raped. She helped the women shower afterward and made them feel safe. The men who raped these women were all Han Chinese men. The following year in 2018, she was taken back to her birthplace in Ghulja, a Uyghur village, and “forced to say nice things about the re-education centres” (Evidence. Uyghur Tribunal, 2021). Afterward, she was forced to work at a factory making



Hunter

gloves for a year. She ended up being released after a month and a half because her husband had been publicizing her case and uploading photos and videos of her detention. After almost two months, she made 220 Yuan, which is roughly equivalent to \$30. After several interrogations, she was able to return to Kazakhstan in 2019. Gulzire's experiences are only one of the millions who have been wrongfully detained in Xinjiang.

The biggest difficulty these people faced in fleeing from the Chinese government was identity. China is able to strip these people of all identification, thus making it difficult to even flee to a different country. The Chinese government has taken many different stances on its actions within Xinjiang. Originally, they denied all allegations of the existence of internment camps in Xinjiang, and now they are trying to call them voluntary vocational education. However, the select committee hearing on the Uyghur Genocide found evidence of CCP and PRC's involvement in decision-making for crimes to be committed against the Uyghurs (Select Committee on CCP, 2022). Even with China's government insisting they have discontinued any human rights violations occurring, countless studies and testimonies have proven its continuous existence.

As previously mentioned in Background & History, Xinjiang became the center of trade and is largely responsible for exports and financial improvements in China. It is important to understand the connection between the Uyghur forced labor and the benefits that China receives economically.

Xinjiang Finance

Understanding the economic benefits and business perspective of forced labor is integral to analyzing the potential reasons why the PRC may feel keen on maintaining such a workforce. Rather than supporting or arguing against the issue as a whole, it is important to dissect the

foundations leading up to the issue. Such as, a reason there may be a major need for labor.

To establish this need for labor it is important to examine the current workforce in China, additionally, external contributors to workload or economy. East Asian countries such as Japan, Korea, and China, have been experiencing shrinking populations and workforce declines due to their declining national birth rates. Schöttli reported that China, Japan, and South Korea have the largest elderly population and lowest fertility rates. Stating that 12% of China's population (166 million people) are older than 65 years old, and a 0.49% decrease in growth rate (Schöttli, 2023). For Japan specifically, this has led to new migration policies. According to a legal archive in Osaka, Japan, 2023 brought immigrant policy revisions that allowed for a broader definition of refugee status (HURIGHTS OSAKA, 2023). These countries can be seen seeking newer and more experimental methods of expanding their workforce to compensate for population declines. Additionally, China is the largest recipient of outsourced American labor (Hammer, 2017). Offshore outsourcing of labor is when a company hires workers and moves jobs outside of their own country. In this case, many American companies are outsourcing manufacturing jobs to China due to "lowered manufacturing wages between 47 to 86 percent." (Peralta, 2014). In this day and age, where technological advancements connect people worldwide, it has become increasingly simple to outsource labor to countries like China. At this point we have established two main ideas: China is losing its workforce, and work from other countries is being outsourced to China.

These ideas imply that China is desperately in need of a workforce to fulfill the work that needs to be done. Xinjiang is seen as a major trade center, and the Chinese government wishes to maintain China's image as a major economic force. Now, onto the how and what. How are they going to obtain a higher



Uyghur Forced Labor: The Role We Play

workforce and what are they willing to do to maintain their economic power? Another major topic being discussed in China is the One-Child Policy they previously had established. Currently, China is moving away from this and seeking to incentivize childbirth to increase its national birth rate and future workforce. These policy changes are important for China and will improve its workforce in the long run undoubtedly. However, what can be done right now? The Chinese government has been in a long quarrel with the Uyghur people, the surveillance and threats were only exaggerated after the presumed start of Xinjiang internment camps in 2014. Now China has this large, alienated population that could majorly benefit their declining workforce. The Uyghur's sedentary lifestyle had been preserved for centuries. Meaning they had already been specializing in work such as growing several crops such as cotton, and industrial jobs such as petroleum extraction, mining, and manufacturing. China is making use of the Uyghur population in Xinjiang to create forced labor that brings China significant economic benefits.

The benefit of the Uyghur population to China's declining workforce is their exploitability. China already has a lower rate of income compared to other countries, however, with forced labor they can pay Uyghur people little to no money in exchange for leaving them alive. A website called Radio Free Asia (RFA) gives a lot of recent news about the Uyghur people in China. RFA managed to get into contact with a Uyghur laborer working at Qinghua Energy Company and interviewed about the working conditions (Hoshur, 2022). Since 2009, a man has worked as a coal miner and maintenance worker, receiving a monthly salary of 1,500 yuan (\$217). While he has worked day and night for years without sick leave, he hasn't even earned 5,000 yuan in total yet. Taking a day off costs the worker a majority of their salary. He is forced to live at the worksite and work from early morning until night. He has worked there for 10 years now and working conditions have not changed. Because

of the working conditions, he has fallen severely ill, making it harder for him to work. A security director, who was also a CCP official, "Told RFA that Uyghur workers at the plant usually are paid a monthly salary of about 1,000 yuan... He also praised Qinghua Energy for providing employment opportunities to Uyghurs" (Hoshur, 2022). Not only is the Uyghur population exposed to inhumane working conditions, but they are treated as if the job itself is a great honor due to the discrimination they face. When RFA later tried to contact the company for an interview, they were told they would not do online interviews and would like RFA to come to the factory. The little information we have on the working conditions is further restricted by China's media and ability to censor information they would see as harmful to the country.

Exploited Exportations in China

Many goods are being exported from China as a result of child or forced labor. Not only by the Uyghur people but by exploited laborers all around the country. On the next page, you will find a summarized list I made of banned exported goods from China, the means of exploitation, and who is being exploited; Case relevant data from the Bureau of International Labor Affairs subdivision of the U.S. Department of Labor (List of goods, n.d.). The data is relevant in understanding the abundance of forced labor exportations throughout China, not just among the Uyghur people.



Hunter

Exported Goods	Exploitation Type	Exploiting who?
Polysilicon	Forced Labor	Uyghur, ethnic Kazakhs, Muslim minorities
Electronics	Child/Forced Labor	13-15 year olds, children from Henan, Shanxi, Sichuan provinces.
Solar Modules	Forced Labor	Parts used in Solar modules are made by forced labor, such as Polysilicon, photovoltaic ingots/wafers, solar cells, and more.
Hair Products	Forced Labor	Uyghur, ethnic Kazakhs, Muslim minorities
Cotton	Child/Forced Labor	Students in Xinjiang and Gansu province are forced to pick cotton as early as third grade as a way to assess their promotion to higher grade levels.
Lithium-Ion Batteries	Child Labor	Parts used in Lithium-Ion Batteries are made by Child labor, using cobalt ore mined in the Democratic Republic of the Congo.
Textiles	Child/Forced Labor	Uyghur, ethnic Kazakhs, Muslim minorities
Photovoltaic Ingots	Forced Labor	Parts used in Photovoltaic Ingots are made by forced labor using polysilicon.
Thread/Yarn	Forced Labor	2,000 adult Uyghurs and Ethnic Kazakhs, moved to yarn factories in Xinjiang
Toys	Child/Forced Labor	13-16 years old, children in Sichuan, Guangxi, primarily in Guangdong areas
Photovoltaic Wafers	Forced Labor	Parts used in Photovoltaic Wafers are made by forced labor using polysilicon.
Fish	Forced Labor	3,000 fishing vessels, migrant workers from Indonesia and Philippines
Tomato Products	Forced Labor	Uyghur, ethnic Kazakhs, Muslim minorities.
Bricks	Child/Forced Labor	8-17 years old, children in Shanxi and Henan provinces.
Solar Cells	Forced Labor	Parts used in Solar Cells are made by forced labor using polysilicon.
Gloves	Forced Labor	1,500-2,000 ethnic minority workers sent to glove factories, Uyghurm ethnic Kazakhs, Muslim minorities.

(Figure 1: Made by Liam Hunter, sourced from “list of goods.” U.S. Department of Labor)



Stakeholders

Aside from the clear stakeholders, those being the Uyghurs and Han Chinese in Xinjiang, as well as the PRC/CCP, many others are either directly affecting the situation or indirectly being affected by these atrocities. Stakeholders include government entities, as well as whole populations, but not exclusive to international brands and corporations.

Uyghur Populations

Needless to say, Uyghur populations throughout the world are affected by the Xinjiang internment camps within China. The capital of Xinjiang and many surrounding villages is considered to be the homeland of Uyghurs. Similar to the experience of Gulzire Alwuqanqizi highlighted earlier in this paper, many Uyghur people have families who remain in Xinjiang. However, the risk of detainment has made returning to Xinjiang safely, impossible. With the current geopolitical situation, it is hard to determine where Uyghur people can safely hide. Many countries willingly, or unwillingly, support the detainment of the Uyghur population and deport those found outside of China back to China. The power that China has in this world puts Uyghur people all around the world at risk. Amnesty International describes the feeling of Uyghurs globally as “Nowhere feels safe” (2022). Describing that a majority of Uyghur people live in neighboring countries, such as Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkey. Outside of the Xinjiang area, there is an estimated 1-1.6 million Uyghurs (Amnesty International, 2022). Until the humanitarian crisis is solved, these people will undoubtedly live a life of fear. Amnesty International reports that China is taking intimidation campaigns abroad. Many of them have contacted authorities regarding Chinese intimidation tactics using social media and informants to harass Uyghurs and attempt to detain them.

Other Countries

Current geopolitical situations make creating public stances on the matter of Uyghur discrimination difficult. Economic and political struggles exist between America and China, trickling down to their respective beneficiaries. The risk of losing influence over voicing a potentially controversial stance leaves external countries better off staying undecided, whether being certain of a choice or not. Amidst this fear and risk, many countries have taken firm stances or conducted legal processes either in support of or indirectly harmful to the Uyghur population.

Canada

In January 2021, “Canada announced new measures to help address the risk of being complicit in human rights abuses in Xinjiang, China” (Government of Canada, 2022). Canada takes a similar stance to America. The International Labour Organization attempts to educate the public on the situation in Xinjiang while pushing for the limiting of exports coming from forced labor in China.

Morocco

On December 15th, 2021, “the Moroccan Court of Cassation ruled in favor of Idris Hasan’s extradition” (Morocco, 2023). In response, Amnesty International and other NGOs sent a joint letter to the Prime Minister of Morocco to cancel the extradition. While this letter managed to put the extradition on temporary hold, many fear Idris Hasan will be sent back to China. “Idris Hasan has been detained at China’s request since July 2021” (Morocco, 2023). In 2023, Idris remains under Moroccan custody in solitary confinement.

Egypt

According to the UN Refugee Agency, Egyptian police rounded together and detained Uyghur students living in Cairo. Students were detained in their homes, restaurants, and



Hunter

even at airports. Since July 4th, 2017, more than 200 Uyghur students have been detained and deported. International law “requires that people living in foreign countries not be returned to situations in which they are likely to face persecution”, said Sophie Richardson, the China Director for Human Rights Watch (Radio Free Asia, 2017).

Russia

In 2022, a similar humanitarian crisis occurred in Ukraine. Human Rights Watch reports that the Chinese government’s repression in Xinjiang is as much of a concern as Russia in Ukraine (Roth, 2022). In Russia, compulsory labor was introduced as a form of criminal punishment in 2017. Freedom United refers to Russia’s commercialization of forced labor in prisons as well as profiting from wartime as “prison slavery” (Moscow Times, 2023). Based on recent events and the reactions from within the country, it can be inferred that Russia may take China’s side and see the atrocities against Uyghurs as no concern to humanitarian laws.

Saudi Arabia

Saudi Arabia is considered a key ally of China and has shown support for Beijing’s crackdown on Uyghur culture. In 2019, “Saudi Crown Prince Mohammed bin Salman, the country’s de facto ruler, told his hosts: “We respect and support China’s rights to take counterterrorism and de-extremism measures to safeguard national security” (Jardine, 2022). Afterwards, Saudi Arabia goes on to endorse China’s Xinjiang policies in two joint letters sent to the United Nations in 2019 and 2020.

International Companies

Another major stakeholder in the Xinjiang internment camps is international companies. While America is considered to have the largest economy, China has the largest consumer class populous, with 899 million people (Wolfgang et al., 2023). Meaning to any international

company, being blacklisted from China could have devastating impacts on profits. However, regardless of this, many major companies are critiquing the human rights violations in China. H&M, Nike, New Balance, Uniqlo, Adidas, and many more major companies have spoken against the Xinjiang forced labor. In retaliation, China has started a national boycott against these companies. These boycotts censor and erase these companies from Chinese search engines, stopping Chinese citizens from purchasing anything from these international companies. Human Rights Watch puts to question what will happen as companies like Nike and H&M see their stock fall, highlighting how big of an impact the Chinese consumer population has on international companies (2021). Some companies have retracted their statements in fear of these boycotts. According to Human Rights Watch in 2021, many companies have either taken down their statements or stood with China and voiced their use of Xinjiang goods. Inditex (owner of Zara), PVH, and VF have all taken down their statements against Uyghur forced labor. Fila and Hugo Boss stated in March of 2021 that they will continue to use cotton from Xinjiang (Human Rights Watch, 2021).

International companies are stuck in a dilemma. The financially beneficial option for them is to support Uyghur forced labor, by doing this they will gain access to cheaper cotton exports as well as the ability to sell products in China. However, the ethical option is to speak against China, which will result in losing all trade with China, causing stocks to decline, profits to sink, and cost of production to increase. Regardless of where the company is from, the financial risks create barriers to decision making based on morality.

American Companies

International company or not, restrictions set by the government must be followed. American companies have to follow Uyghur Forced Labor Prevention Act (UFLPA) laws that were made



Uyghur Forced Labor: The Role We Play

effective on June 21st, 2022. In the following section, UFLPA will be analyzed in more depth. The UFLPA restricts the importation of goods into the United States that were manufactured wholly or in part by forced labor in the Xinjiang Uyghur Autonomous Region. American companies are given two different options; stay neutral or stand against Uyghur Forced Labor. They are federally forced to abide by these laws and stop the usage of any goods from Xinjiang; however, this does not mean they need to publicly stand against China. They are still allowed to stay neutral to maintain selling goods in China. With the growing focus on humanitarian rights and social activism throughout the United States, many companies that don't publicly stand against forced labor, not to mention those who support it, will be negatively seen within America. The position or stance they decide to make again lies in moral righteousness. This law restricts these American companies, however, this does not in any way protect them from the Chinese boycotts or financial downfall that could ensue.

Uyghur Forced Labor Prevention Act

The Uyghur Forced Labor Prevention Act (Public Law No. 117-78) uses Section 307 of the Tariff Act of 1930 to legitimize their need for enforcement towards goods produced in Xinjiang. Section 307 of the Tariff Act of 1930 "prohibits importing any product that was mined, produced, or manufactured wholly or in part by forced labor, including forced or indentured child labor" (Congressional Research Service, 2023). Additionally, this act utilizes the Forced Labor Enforcement Task Force (FLETF) to ensure strategies toward such prohibitions are created and thoroughly enforced. In this act, there are 6 statements; these 6 statements can be found cited below from Public Law 117-78 (UFLPA):

1. To strengthen the prohibition against the importation of goods made with forced labor...
2. To lead the international community in

ending forced labor practices wherever such practices occur through all means available to the United States government...

3. To coordinate with Mexico and Canada to effectively implement Article 23.6 of the United States-Mexico-Canada Agreement to prohibit the importation of goods produced in whole or in part by forced or compulsory labor...

4. To actively work to prevent, publicly denounce, and end human trafficking including with respect to forced labor...

5. To regard the prevention of atrocities as it is in the national interest of the United States, including efforts to prevent torture, enforced disappearances, severe deprivation of liberty, including mass internment, arbitrary detention, and widespread and systematic use of forced labor...

6. To address gross violations of human rights in the Xinjiang Uyghur Autonomous Region...

- a. Through bilateral diplomatic channels and multilateral institutions

- b. Using all the authorities available to the United States Government, **including visa and financial sanctions, export restrictions, and import controls.**

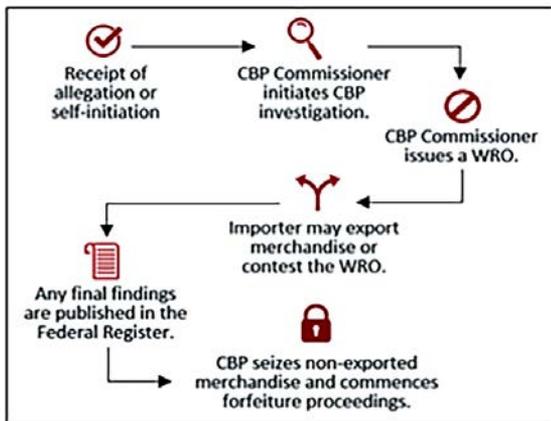
This legislation was initiated on June 21st, 2022. UFLPA overhauls how the U.S. tackles imports in two critical ways. The first is by determining that "any goods, wares, articles, and merchandise mined produced or manufactured wholly or in part" (Flacks, 2022) in Xinjiang should be assumed to be a product of forced labor. The second is the pressure placed on the Forced Labor Enforcement Task Force to develop strategies to prevent such importation.

The current strategy that is being adopted by the FLETF is to work with the U.S. Customs and Border Protection (CBP) to conduct inspections on shipments entering the United States. Using Section 307 of the Tariff Act of 1930 to enforce and apply the UFLPA, the CBP is tasked with determining and ensuring goods



Hunter

that are created through forced labor are not allowed into the United States. In a figure made by the Congressional Research Service (Figure 2, 2024), the method of applying Section 307 is shown. This 6-step process serves as a foundation for how the CBP will inspect shipments and determine the validity of allegations.



(Figure 2: Application of Section 307 from CRS)

The UFLPA serves as step 1, ‘Receipt of allegation or self-initiation’, prompting CBP to initiate an ongoing investigation. The CBP commissioner then confirms the validity of the allegation before initiating the investigation (step 2). In the case of UFLPA and goods exported from Xinjiang, the CBP is tasked by the FLETF to conduct a continuous investigation on any shipments coming into the U.S. If the CBP detects shipments that are prohibited by UFLPA regulations, they will issue a withhold of release of such goods (WRO). From there, the importer is allowed to either contest the WRO or export the merchandise to a different country. UFLPA ensures that the WRO cannot be contested, forcing the importer to export the merchandise elsewhere. Afterwards, according to step 5 of Figure 2, any findings are then published in the Federal Register. This thorough process allows us to determine the exact amount of denied shipments and restricted importations that have occurred since the enactment of UFLPA.

The CBP website contains a section devoted specifically to the statistics of the ‘Uyghur Forced Labor Prevention Act Enforcement’. This interactive data chart gives an up-to-date analysis of the total amount of shipments that came and were denied, as well as released. Focusing on the expected monetary value of such shipments while documenting what type of products were being shipped. Interestingly enough, the CBP has found forced labor products from Xinjiang being shipped from countries all around the world: Malaysia, Vietnam, China, Thailand, Mexico, and others. It is inferred that products from Xinjiang are shipped to warehouses in neighboring countries to attempt to bypass UFLPA regulations. According to the statistical evidence found on CBP, 6,045 shipments have been inspected. While 983 shipments are still pending official inspection, 2,598 shipments have been denied after finding content made as a product of forced labor. The remaining 2,464 shipments were inspected and cleared to be safely allowed into America (UFLPA Statistics, 2022). The importance of these statistics to the research conducted in this paper lies in the 2,598 shipments that were denied.

Of the 2,598 shipments that were denied, 942 contained electronics, 744 contained industrial and/or manufacturing materials, and 577 contained apparel, footwear, or textiles (UFLPA Statistics, 2022). These three categories of shipments are the most common shipments found to be created through forced labor. However, five smaller categories are still noteworthy mentions; 151 shipments contained pharmaceuticals, health, and chemicals, 78 contained agriculture or prepared products, 48 contained machinery, 39 contained consumer products and mass merchandising, 33 contained automotive and aerospace-related products, and 32 contained base metals (UFLPA Statistics, 2022). The total value of these denied shipments adds up to \$560,898,399. According to the current statistics and information gathered by the CBP, the UFLPA seems to be effective



Uyghur Forced Labor: The Role We Play

in restricting products created through forced labor; however, this is not entirely the case.

To understand the flaws of this current preventative strategy, we must inspect the instructions of the CBP. The CBP has a whole section dedicated to the rules and regulations behind internet purchases. The most important portion of these rules can be found under the “Postal Service, Couriers, and Freight” section, “if the item is less than \$2,500 in value, and is not subject to a quota or is not a restricted or prohibited item, a CBP official will usually prepare the paperwork for importing it, assess the proper duty, and release it for delivery... Packages whose declared value is under \$800 will generally be cleared without any additional paperwork prepared by CBP” (Internet Purchases, U.S. Customs and Border Protection, n.d.). This rule establishes the biggest loophole allowing forced labor goods to enter the United States. The quote establishes that goods under \$2,500 are briefly inspected, while anything under \$800 is not inspected at all. This rule implies that merchandise under \$800, privately shipped to individuals making purchases online, is exempt from UFLPA regulations. There is no means of inspecting such merchandise and it would require an immeasurable amount of labor to inspect each delivery. CBP states that we must be aware of purchases and regulations on our own, for it is out of their control. When we make purchases online through foreign entities, we are subject to becoming the importer of that good.

This loophole allows for Chinese platforms, such as AliExpress, Shopify, Shein, and Temu, to bypass UFLPA regulations and deliver merchandise produced through forced labor into America (Prasso, 2023). According to Sheridan Prasso on Bloomberg, Temu launched in the U.S. app stores in September 2022. Within a month the app became the most downloaded app on Apple Inc.’s U.S. App Store. Temu is a Chinese e-commerce platform that sells a wide variety of merchandise at a fraction of the price

of American stores. The monetary difference created an incentive to use Temu alongside or alternatively to companies such as Amazon. However, according to countless financial analyses done on Temu, the products have been linked to forced labor in Xinjiang. The reality of the situation is that products within America are expensive. The vast majority of Americans jump at the opportunity to obtain products for cheaper regardless of the product’s origin. This reality has created a simple, yet major loophole within the FLETF’s strategy to prohibit goods created by forced labor under UFLPA. These China-based e-commerce websites use this internet purchase loophole to bypass regulations and gain profit off of forced labor within China.

This raises questions regarding the effectiveness of UFLPA. While it cannot be denied that the UFLPA has managed to prevent \$561 million worth of merchandise from entering America, are export regulations and economic sanctions truly going to solve the issue at hand?

Discussion

Now that I have prefaced and established the information needed to create logical arguments towards solutions, I will be discussing the need for change or improvement of UFLPA to better achieve its projected goals. I will do this by highlighting needs and potential solutions toward abolishing the forced labor of Uyghur people. I will discuss three potential solutions for ending Xinjiang internment camps and Uyghur forced labor. The first will be a human rights-focused direct approach. The second and third will both be indirect approaches focused on economic and policy-based solutions respectively. The first builds off the idea of putting the need for humanitarian criticism first, creating a central opinion towards Chinese atrocities and condemning nations that support the violations. The second and third approaches both intend to combat human rights violations in China indirectly, by eliminating the economic



Hunter

benefit of forced labor, elaborating and adding onto the current UFLPA strategies. The second approach considers regulating and cracking down on the e-commerce market. The third approach discusses the benefit of policy restrictions towards offshore outsourcing of labor.

First Approach: Humanitarian Criticism

The first approach discusses our lack of success in statement 2 of UFLPA. Statement 2 states that the United States government will do everything in its power to lead the international community in ending forced labor practices. As a strategy to accomplish statement 2, statement 4 describes the U.S. government's focus on actively working to prevent, publicly denounce, and end human trafficking. In this regard, we have been entirely unsuccessful in ending the forced labor practices on the Uyghur people. This approach discusses an added focus on the fourth statement, utilizing our ability to publicly denounce other countries who support Xinjiang internment camps. By utilizing our ability to publicly denounce other countries, the U.S. government can forcibly gain the support needed to make change.

In October 2022, we saw a failed attempt by the U.N. Human Rights Council to debate the Uyghur treatment in China. Out of the 47 countries present in this vote, 19 voted against. 17 countries voted for the debate to occur and 11 abstained. The United States was among the countries that voted for the debate to occur (Forge, 2022). The defeat caused a setback stopping a debate from occurring to criticize the forced labor on Uyghurs. Among the countries who voted against were Muslim-majority countries such as Indonesia, Somalia, Pakistan, UAE, and Qatar. Countries that abstained include India, Malaysia, and Ukraine. I estimate the decision of this debate heavily affected our ability to help Uyghurs in internment camps and abolish such behaviors. If the United States truly wishes to do everything in its power, it

must stand strong and scrutinize those working against the importance of human rights.

As the largest economy in the world, America holds a lot of geopolitical power. Even without sanctions or restrictions, America can gain a strong following in decision-making using its extensive alliances. Are these alliances only important for maintaining our well-being? Could we also use the alliances to put pressure on those who may vote against or abstain from voting to discuss these important issues? If we truly want to solve the humanitarian crisis in China, and we truly are concerned for those going through forced labor, then the United States needs to put its foot down and make those around it do the same. The first step after facing defeat at such an integral vote should have been to critique the countries who stand to deny the atrocities in Xinjiang. More opportunities will likely come in the future, where such decisions need to be made. The only risk to publicly denouncing those who vote against the need to discuss the human rights crisis in Xinjiang is losing potential or existing alliances. So what? Why must we care about losing alliances with people who do not care about the well-being of people? On a smaller scale, why must we care about losing a friend who goes against the morals that define us? If the United States does not protect its definition and goals, there will only be uncertainties and power struggles in its future. The concern for losing geopolitical power is understandable, however, if our only intention is to maintain and become the strongest power in the world, it is only a matter of time before that power is ripped from beneath us. Therefore, it is increasingly important for the United States to make a stand for human rights and criticize other countries who do not do the same. The existence of contradictory and untrustworthy governments only ends in doom.

While in D.C., I realized the consensus of legislators is obvious, they are scared. They fear nothing more than to lose in the geopolitical power struggle against China. The fear of losing



power will create human rights issues we cannot solve; however, it is that very fear that creates an uninfluential and weakened government. The United States needs people prepared to stick to their beliefs and cast away contradictions for the benefit of their position.

Second Approach: Restricting E-Commerce

When discussing the loopholes of CBP, I established the bypassing of UFLPA regulations using E-commerce websites. With the growing influence of the internet and the ability to shop online, guidelines must be set in place to ensure ethical conduct. The main focus of UFLPA, as highlighted in Statement 1, states the focus to strengthen the prohibition against the importation of goods made with forced labor. While the current strategy to inspect shipments is effective, more can be done. The current strategy is capable of regulating larger-scale exports; however, it is entirely ineffective towards smaller-scale, individual-consumer purchases. The existence of e-commerce websites such as AliExpress, Shien, Shopify, and Temu allows the risk of sketchy business practices. Consumers will unknowingly purchase products that may be counterfeit, produced through forced labor, or dangerous. For the sake of this paper, we will focus on the fact that such products are produced through forced labor.

The main selling point of the products on these platforms is the cheap pricing. People frequent such platforms due to the ease of access and cost of goods. However, the reason these goods cost so little is because they are sourced from forced labor. In late 2022, the website Temu, gained a large consumer base after people realized the products they purchased were delivered to their houses. The danger of human nature is that such a platform's popularity spread like wildfire. These websites often disregard important information such as where the products were created. Bypassing many business regulations within America, such as requiring the descriptions of manufacturers and products. My second

approach connects the existence of e-commerce websites with the importance of forced labor in tyrant countries.

Regardless of UFLPA regulations, Xinjiang products made through forced labor can be sold in America. If the ability to sell such products exists, there will forever be a reason to maintain forced labor in China. To eliminate the humanitarian crisis indirectly, we must eliminate that reason. For an economic restriction to solve such a devastating human rights violation, the restriction must cover every basis. Currently, the FLETF is not covering every basis necessary to potentially solve the human rights issue. Therefore, in addition to maintaining the regulations of UFLPA, we must create additive measures. One of those measures to potentially decrease the necessity of forced labor in Xinjiang would be to create strict guidelines and responsibilities for e-commerce websites. The best-case scenario would be to eliminate the use of e-commerce websites within the United States. However, this is likely impossible, therefore we must target a more plausible solution. That being, to mandate the products sold on e-commerce sites.

We can start to create restrictions by setting monetary restrictions on e-commerce transactions that are traveling through or into America. These transactions may require clear evidence of the transaction logs, developing studio/factory, and dealer information. Without a clear establishment of these three pieces of information, merchandise should be prohibited from being sold on e-commerce websites within America. If we can make the process of selling goods on e-commerce websites more difficult, we should be able to weaken platforms used to sell suspicious merchandise. Inherently diminishing the amount of goods produced through forced labor that enter America.

In Washington D.C. I encountered the importance of multilayered policies and plans rather than a simple sanction. Human rights



Hunter

advocates and legislators alike voiced their concern for the ineffectiveness of sanctions at fully solving a problem. Often lacking the correct audience or level of depth needed to solve the humanitarian issue. By adding additional measures such as these to our current export regulations, the United States can further minimize the amount of forced labor goods entering the country.

Third Approach: Limiting Offshore Outsourcing

Building off of the concerns regarding statement 1 of UFLPA, discussed in the Second Approach: Restricting E-Commerce, my third approach discusses the importance of maintaining a national job market and strengthening the economy to eliminate e-commerce. Similarly to the last approach, I will recommend this policy in addition to the current UFLPA regulations and more. The main factor in American usage of e-commerce is the cheaper prices. However, if the American economy was less inflated and monetary struggles were less prevalent, the need for relying on the cheaper prices of e-commerce goods would become irrelevant. If there is no need to purchase such goods, the need for forced labor to develop those goods would disappear. Inherently eliminating the need for Uyghur forced labor in the Xinjiang market.

Two significant changes could occur if we eliminate offshore outsourcing of American labor. As previously stated, many American jobs are outsourced to China due to the cheap labor. This is possible due to the lack of international regulations for American companies regarding labor. This clear double standard regarding the abuse of forced labor not only removes job opportunities for Americans but also lowers the company's need to maintain competitive salaries for jobs. Many manufacturing jobs within America struggle with the existence of cheaper labor in China. If we can eliminate American companies from being able to pay cheaper salaries for offshore workers, we can

eliminate the need to outsource work. If we don't outsource labor, we can increase job opportunities within America and increase worker wages. The increased amount of jobs and wages will discontinue the need to rely on cheaper products from e-commerce companies that rely only upon forced labor in Xinjiang. Thus, further eliminating the need for forced labor in Xinjiang. As I've mentioned many times before, an economic sanction could solve the humanitarian crisis if we can cover every basis and ensure that the need for forced labor becomes irrelevant.

During my research in Washington D.C. I saw the ideals and intentions of many influential legislators. The common statement surrounded the idea that a populous will not move if not motivated economically. A foreign policy will not be passed simply on the need for ethical change. Therefore, we must create such economic incentives to destabilize the usage of forced labor while further advocating the abolishment of such abuses.

Conclusion

As discussed throughout my paper, the atrocities towards the Uyghur population must not be overlooked. Within China there lies an evident humanitarian crisis and U.S. foreign policy is not doing enough to solve or criticize this issue. I suggest these three policy recommendations in addition to UFLPA to better achieve the goals outlined in the UFLPA statements while also furthering the fight against Uyghur forced labor. Keeping in mind the difficulty of applying such policies, I wish to leave you, the reader, with a simple choice that will inherently help those suffering from forced labor in China. Stop purchasing from Chinese e-commerce websites like Temu, AliExpress, and Shein. Within America, if we can boycott these companies, we could eliminate the profit China is gaining from forced labor sources. We are currently researching and experiencing the dangers of purchasing from these companies



Uyghur Forced Labor: The Role We Play

with the existence of invasive bugs and creatures being found in shipments. Not only can we help the fight against forced labor by not purchasing from these companies, but we can also protect ourselves from the risk of exposing ourselves to health hazards through shipments.

References

Bureau of International Labor Affairs. (n.d.). Against their will: The situation in Xinjiang. *DOL*. <https://www.dol.gov/agencies/ilab/against-their-will-the-situation-in-xinjiang>

Britannica, T. Editors of Encyclopaedia (2023, November 26). Ürümqi. *Encyclopedia Britannica*. <https://www.britannica.com/place/Urumqi>

China: Companies should resist Boycott Threats. *Human Rights Watch*. (2021, August 26). <https://www.hrw.org/news/2021/03/27/china-companies-should-resist-boycott-threats>

Congressional Research Service. (2023, October 25). Section 307 and imports produced by forced labor - *CRS reports*. <https://crsreports.congress.gov/product/pdf/IF/IF11360>

Convention on the Prevention and Punishment of the Crime of Genocide, *United Nations*, New York, as available on https://www.un.org/en/genocideprevention/documents/atrocities-crimes/Doc.1_Convention%20on%20the%20Prevention%20and%20Punishment.pdf

Evidence. *Uyghur Tribunal*. (2022, September 20). <https://uyghurtribunal.com/statements/>

Flacks, M & Songy, M. (2022). The Uyghur Forced Labor Prevention Act goes into effect. *CSIS*. <https://www.csis.org/analysis/uyghur-forced-labor-prevention-act-goes-effect>

Forge, Emma. "U.N. Body Rejects Debate on China's Treatment of Uyghur Muslims in Blow to West | Reuters." U.N. Body Rejects Debate on China's Treatment of Uyghur Muslims in Blow to West, *Reuters*, 6 Oct. 2022, www.reuters.com/world/china/un-body-rejects-historic-debate-chinas-human-rights-record-2022-10-06/.

Government of Canada. (2022, April 6). Government of Canada. *GAC*. https://www.international.gc.ca/transparency-transparence/study_forced_labour-etude_travail_force.aspx?lang=eng

Hammer, Alexander. "The Size & composition of Usmanufacturing Offshoring in China." *USITC Executive Briefings on Trade, Office of Economics*, June 2017, www.usitc.gov/publications/332/executive_briefings/sizecompositionebot.pdf.

HURIGHTS OSAKA. (2023). Japanese immigration law in 2023: Changes and issues:Japanese Immigration Law in 2023: *Changes and Issues* <https://www.hurights.or.jp/archives/focus/section3/2023/09/japanese-immigration-law-in-2023-changes-and-issues.html#:~:text=A%20new%20provision%20in%20the,%22overstayed%22%20their%20visa>).

Hoshur, S. (2022, November 14). Low pay, long hours for Uyghurs in Chinese-owned plant in Xinjiang. *Radio Free Asia*. <https://www.rfa.org/english/news/uyghur/qinghua-energy-09012022134727.html>

Internet purchases. U.S. *Customs and Border Protection*. (n.d.). <https://www.cbp.gov/trade/basic-import-export/internet-purchases>

Jardine, B. (2022, March 24). The Arab world is complicit in China's crackdown on uighurs. *Time*. <https://time.com/6160282/arab-world-complicit-china-repression-uighurs/>

Kashgarian, A. (2023, January 6). VOA interview: Uyghur Emigre describes life in China's Xinjiang in 2022. *Voice of America*. <https://www.voanews.com/a/voa-interview-uyghur-emigre-describes-life-in-china-s-xinjiang-in-2022-/6906747.html#:~:text=Over%2011%20million%20Uyghurs%20live,population%2C%20live%20in%20the%20region>.

List of goods produced by child labor or Forced Labor. *DOL*. (2022, September 28). https://www.dol.gov/agencies/ilab/reports/child-labor/list-of-goods-print?items_per_page=10&combine=china&field_exp_exploitation_type_target_id_1=All&tid=All&field_exp_good_target_id=All&order=name&sort=asc

Lotha, G. (2023, July 3). Uyghur. *Encyclopædia Britannica*. <https://www.britannica.com/topic/Uyghur>



Hunter

- Maizland, L. (2022, September 22). China's repression of Uyghurs in Xinjiang. *Council on Foreign Relations*. <https://cfr.org/backgrounder/china-xinjiang-uyghurs-muslims-repression-genocide-human-rights>
- Morocco: Detained Uyghur must not be transferred to China. *Amnesty International*. (2023, July 20). <https://www.amnesty.org/en/latest/news/2021/09/morocco-detained-uyghur-must-not-be-transferred-to-china/>
- Moscow Times. (2023, August 17). Russian revenue from forced prison labor doubles in value. *FreedomUnited.org*. <https://www.freedomunited.org/news/russian-prison-labor-revenue-doubles/>
- Peralta, K. (2014, December 11). Outsourcing to China cost U.S. 3.2 million jobs since 2001. <https://www.usnews.com/news/blogs/databmine/2014/12/11/outsourcing-to-china-cost-us-32-million-jobs-since-2001>
- Prasso, S. (2023, June 13). Temu sells products in US linked to forced labor in China's Uyghur region. *Bloomberg.com*. <https://www.bloomberg.com/news/articles/2023-06-13/temu-sells-products-in-us-linked-to-forced-labor-in-china-s-uyghur-region#xj4y7vzkg>
- Roth, K. (2022, June 20). Beyond russia: The real threat to human rights is from China. *Human Rights Watch*. <https://www.hrw.org/news/2022/06/20/beyond-russia-real-threat-human-rights-china>
- Radio Free Asia, Uyghur students in Egypt detained, sent back to China, 7 July 2017, available at: <https://www.refworld.org/docid/5971a88ea.html> [accessed 12 December 2023]
- SCHÖTTLI, U. (2023, April 4). An Asian demographic decline deepens in Three nations. *GIS Reports*. <https://www.gisreportsonline.com/r/asian-demographic-decline/>
- Textor, C. (2023, June 15). China: Population of Xinjiang 2022. *Statista*. <https://www.statista.com/statistics/1391718/china-population-of-xinjiang-autonomous-region/#:~:text=Population%20Western%20China>
- The Select Committee on the Chinese Communist Party (2022) <https://selectcommitteeontheccp.house.gov/sites/evo-subsites/selectcommitteeontheccp.house.gov/files/evo-media-document/uyghur-genocide-pdf.pdf>
- UFLPA Pub. L., 117th Congress, 117-78
- UN, United Nations, UN Treaties, Treaties." United Nations, United Nations, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mt_dsg_no=IV-1&chapter=4#EndDec. Accessed 19 Feb. 2024.
- U.S. Department of State. (2021, July 1). Forced labor in China's Xinjiang region - United States Department of State. U.S. *Department of State*. <https://www.state.gov/forced-labor-in-chinas-xinjiang-region/>
- "Uyghur Forced Labor Prevention Act Statistics." U.S. *Customs and Border Protection*, www.cbp.gov/newsroom/stats/trade/uyghur-forced-labor-prevention-act-statistics. Accessed 30 Apr. 2024.
- Uyghurs tell of China-led intimidation campaign abroad. *Amnesty International*. (2022, October 6). <https://www.amnesty.org/en/latest/research/2020/02/china-uyghurs-abroad-living-in-fear/>
- Wolfgang Fengler, H. K., Pipa, A. F., Mendelson, S. E., Ahmadou Aly Mbaye, A. N., Amar Bhattacharya, H. K., & Kharas, H. (2023, April 14). China and India: The future of the global consumer market. *Brookings*. <https://www.brookings.edu/articles/china-and-india-the-future-of-the-global-consumer-market/>



THE VALUE OF QUANTUM

Steven Suarez

ABSTRACT: This research paper, intended to be an introduction to the subject, discusses the field of quantum computing, describing its historical evolution and its properties that separate it from normal (classical) computing. While being able to potentially exponentially increase the speed of many computational tasks, practical quantum computing faces many challenges. Chief among these are the issues of coherence and error correction. Quantum systems are inherently unpredictable and susceptible to environmental interference, posing difficulties in maintaining the stability of quantum states (coherence). Furthermore, error correction in quantum computing remains an unresolved challenge, especially in the context of scalable solutions. This paper discusses these challenges in the context of today's cutting-edge quantum technology, including Google's Sycamore quantum processor. This exemplifies the current state of quantum computing while underscoring the current efforts being made to make today's computer processors practical.

Introduction

A quantum computer is a computer that uses **quantum mechanics** in order to make calculations. Unlike typical computers (hereafter referred to as “classical” computers), quantum computers do not use binary bits—sometimes referred to as **classical bits** in the context of the quantum computing field—to represent and manipulate data. Quantum computers instead use what is known as quantum bits, or **qubits** [6].

When a classical computer needs to make a computation, it does so by manipulating the states of the billions of **transistors** on its **central processing unit chip**, or CPU. A transistor is essentially a light switch inside a computer's CPU chip that can be in either an “on” state or “off” state. The computer can then read these real-world states as a binary value of either 0 (off) or 1 (on) and can execute commands based on them using the computational power of the CPU.

In contrast, a qubit also exists on a quantum computer's processor, except it can exist in many more states than just 0 or 1. The **wave-particle**

duality theory of quantum physics states that many subatomic particles can be considered as both waves and particles; they neither fit the criteria as being fully a wave nor fully a particle [1]. A qubit, represented in the real world as a subatomic particle on a quantum processor, exhibits a similar property; it exists in many more states than a classical bit can, and thus, cannot be represented as a conventional bit [6].

Due to this property, quantum computers can make calculations at a much faster rate than classical computers. If properly developed and released to the public, quantum computers could have many massive, unprecedented effects on the way we use computers. In fact, a properly developed advanced quantum computer could easily solve some of the most difficult problems in computational science. This report will delve into the history of quantum computers, how they work on a technical level, and the impacts quantum computing technology may have in the future using real quantum hardware developed by Google as a case study.



History

In 1959, the concept of the quantum computer was first theorized by famous American physicist Richard Feynman [7]. He saw the phenomenon of **Moore's Law** - the observation that the computer chips tend to double in density approximately every two years [9] and theorized that if transistor sizes ever reached atomic scales, computer scientists could take advantage of the laws of quantum physics to build more powerful computers. He thought that quantum researchers could utilize a phenomenon known as **quantum superposition**: the idea that a quantum particle can be in multiple states at once. In the same way that a photon can be considered both a particle and a wave, scientists could possibly manufacture a computer that could process bit input as both a 0 and a 1 at the same time. Later on, researchers also believed that the efficiency of quantum computers could be improved due to a phenomenon known as **quantum entanglement**. Quantum entanglement prevents particles under certain conditions from acting independently. This means that, for example, changing the spin of an electron could automatically change the spin of another electron that it is entangled with, no matter how far apart in space those two electrons are [1]. A quantum computer could take advantage of this property by using it to process multiple qubits of data at a time, amplifying the efficiency of its processor. This is similar to how a classical computer typically groups its bit data into bytes to better improve its efficiency when making calculations.

In 1998, the concept of a quantum computer was realized for the first time. Researchers from MIT and Berkeley developed one of the first quantum computers: a rudimentary, 2-qubit system that relied on oscillating magnetic fields to operate. [5]. This computer, while unable to make any meaningful calculations, was the first physical proof-of-concept of decades of scientific theory about the use of quantum physics applied to computer processing.

Quantum Hardware

Quantum computers, like classical computers, are based on groups of information that are processed by a computer's central processing unit [11]. Whether quantum or classical, almost everything a modern computer does comes down to information in either its short term or long-term storage, which is ultimately stored as bit information. The main difference between a quantum computer and a classical computer is the fundamental way in which these bits function.

Components of a Qubit

The qubit, like the classical bit, is the most basic aspect of the quantum computer's hardware. In a classical computer, the bit is stored in the computer's memory as a stored charge in memory cells built from electrical transistors. In contrast, qubits are stored as physical photons or electrons on a silicon chip, often at extremely cold temperatures [11]. Photons and electrons are small enough particles for the laws of quantum mechanics to apply, so when one is in superposition, a scientist can direct the processor to manipulate its spin using magnets and radio waves to produce different quantum states.

Quantum Computing Efficiency

The main reason quantum computers will be so efficient is due to two laws of quantum mechanics, already described above: superposition and entanglement. When a qubit is in superposition, it is in a special state where it can be considered as both a 0 and a 1 at the same time, and therefore, it is a bit that can be processed as two bits at once. If one bit in a classical computer can perform one calculation, then one qubit in a quantum computer can perform two. Therefore, when a qubit is entangled with another qubit, it can perform 2^2 (or four) calculations. When three qubits are entangled, they can perform 2^3 (or eight) calculations. Four entangled qubits can perform 2^4 calculations, and so on [11].



In contrast, two classical bits can perform only two calculations. Three classical bits can perform only three calculations, four can only perform four, and so on. Thus, it is easy to see how quantum computing systems are theoretically able to outperform classical computers by many orders of magnitude. Of course, the speed of some classical computer processing can be improved by clever hardware and operating system design choices, but none of those designs change the fundamental truth that one classical bit can only ever be processed as one bit.

Challenges in Quantum Computing

The field of quantum computing is still highly experimental and likely won't be available for widespread commercial or academic use in the near future. There are many reasons for why this is so, but it comes down to two main problems, described in detail below: lack of coherence and lack of error correction.

Coherence

Coherence is the ability for the quantum computer to maintain its state long enough to make a meaningful calculation [11]. Quantum particles are inherently unpredictable and very sensitive to the environment around them. Even stray specks of light can cause interference within a quantum computer system. Therefore, it is very difficult for scientists to maintain control over them long enough to make meaningful calculations. When a quantum computer loses coherence, the electrons in its processor lose superposition and start to behave more according to the laws of classical physics [11]. Many of today's quantum computers do not have coherence times long enough to make very many calculations. This is why the first quantum computer was not able to make any useful calculations; it was only able to maintain coherence for a few nanoseconds before its qubits lost their state of superposition [11].

Error Correction

In both quantum and classical computing, error correction is the ability for the computer to ensure the reliability of the data that it receives across communication lines, such as emails and file downloads through the Internet. Classical computers utilize error detection and correction using various schemes to make sure the data it receives is reliable [3]. Quantum computers, on the other hand, are especially prone to errors, as the particles that make up a quantum processor are highly unpredictable. Thus, even when making internal calculations, quantum processors will need to have error correction schemes in order to make sure their calculations are correct [3]. This issue has scaling problems as well, since as the number of qubits in a processor increases, the number of errors made during calculations increases as well. So, it is therefore important to build an error correction scheme that can scale up with bigger quantum computers. However, no scalable quantum error correction schemes exist yet. Several proposals have been made but none have been proven to be scalable at the level that is needed for a truly practical quantum computer [11].

Case Study: Google's Quantum Processor

Introduced in 2018, Sycamore is the name of Google's newest experimental quantum processing unit, or QPU. A QPU fulfills many of the same tasks as a classical computer's central processing unit by carrying out the complex calculations and information processing tasks essential for various computational operations. However, Sycamore of course, distinguishes itself by making its calculations using quantum mechanics.

It has many experimental features that other quantum systems developed by competing companies currently do not, and so, makes an excellent case study for this research paper. Exploring the attributes of Sycamore provides insight to some of the most cutting-edge technology within the quantum field and the limits of the



Suarez

current capabilities of quantum computing. It also is a great showcase of the current problems the field is facing and what quantum researchers are doing to solve them.

Sycamore

The advancement of quantum computing has advanced significantly since the first quantum computer in 1998. Sycamore, with its 53 qubits, is at the forefront of Google's current quantum computing research. It is the company's latest foray into the field and runs on Weber, its quantum computer [8]. Like with all current quantum processors, lack of coherence time is an issue with Sycamore. However, its system is able to remain coherent for a long enough time to make complex, real-world calculations. For example, in 2022, it simulated traversable wormhole dynamics [8], an advanced topic in theoretical physics.

Google's current objective with this processor is to implement an effective quantum error correction algorithm. The way they are attempting to implement this error correction is by a process that groups some of the existing qubits on the system together as one "logical qubit." When the qubits in the system are grouped this way, the error rate goes down. Recently, Google announced that when they applied this algorithm to the Sycamore processor, the error rate actually decreased when applied to a greater number of qubits [8]. This is an exciting early indicator of how the scalability of quantum computing could be viable.

Quantum Supremacy

In 2019, Google claimed that the Sycamore processor had completed a task in 200 seconds that would take a state-of-the-art classical supercomputer 10,000 years to finish [10]. Thus, Google claimed the Sycamore processor had achieved **quantum supremacy**. Quantum supremacy, also known as quantum advantage, is the goal of having a quantum computer that can

make calculations that no classical computer could make in a reasonable amount of time [4].

However, IBM, a company that also pioneers quantum computing research, dismissed Google's claim of quantum supremacy, stating that their calculations would only take about 2.5 days on the fastest supercomputer hardware at the time [10]. In response to IBM's critique, Google researchers argued that the classical supercomputer's estimated simulation time provided by IBM was based on specific assumptions and optimizations that may not accurately represent a practical scenario [10]. The disagreement between the two corporations was never concretely resolved, but the very fact that what exactly constitutes "quantum supremacy" is still debated within the field shows how new it is. It also underscores our ever-evolving understanding of quantum computers and how they may be used as tools to aid human progress in the future.

Quantum Computing as a Social Good

There are currently many barriers to making quantum computing practical, even for specialized scientific uses. However, if it were ever made practical for mass production and home use, it has the potential to revolutionize the way we use computers. A practical quantum computer would not only be able to greatly enhance the computing tasks we all do at home every day, but would also lead to critical advancement in the fields of chemical engineering, biological engineering, cybersecurity, and of course, artificial intelligence [2]. It could lead us to make better, more accurate models of viruses and disease pathogens, deepening our understanding of them and ultimately speeding up the time it takes to develop vaccines to protect people from getting sick. It would mean stronger cybersecurity measures being implemented on our country's critical infrastructure, better protecting ourselves against hackers and cybercriminals. Cancer biopsies could be evaluated much quicker if the biological material is fed through



quantum systems, diagnosing people much faster and potentially saving lives.

Even though the technology sounds lofty and far-off, or even something out of science fiction, quantum computing research is an incredible investment in the future of humanity. Every field from manufacturing to space travel stands to benefit from a world where quantum computing is freely available to all. Given how revolutionary it will be, it stands to reason that it is something that everyone should benefit from in order to make a better world possible

Glossary of Terms

Central Processing Unit: Often abbreviated as CPU. It is the primary component of a classical computer and is responsible for carrying out many of the basic computational tasks a computer needs to function, such as arithmetic logic operation and data storage-related tasks.

Classical Bit: The most basic unit of information that a classical computer can process, determined by the states of a computer's transistor. Read by the computer as either a 0 or 1 and used in conjunction with millions of other bits to execute instructions.

Classical Computer: A traditional computer that processes information according to the classical laws of physics, as opposed to quantum physics. Its main processor contains transistors that can be read as either 0 or 1.

Coherence: The ability of a quantum computing system to maintain a synchronized quantum state over a given period of time, often due to interference within its immediate environment. When a quantum processor loses coherence, its qubits lose their state of superposition, and the processor is no longer able to process information on a quantum level.

Error Correction: A computer's process of detecting and rectifying errors during data transmission or storage. Since quantum computers are much more prone to errors, figuring out

schemes to efficiently correct errors in quantum computers without introducing more of them is an ongoing challenge in the field.

Moore's Law: An observation by Gordon Moore, co-founder of the technology corporation Intel. In 1965, he predicted that due to technological advancements in the field, the number of transistors on an average computer's processing unit would approximately double every two years. This observation has remained generally true in the decades since he made this prediction.

Transistor: A microscopic semiconductor device that exists on the processing units of all modern classical computers, functioning as an electronic switch that can represent the binary bits 0 and 1. Modern computers contain tens of millions of these transistors in order to make complex calculations.

Qubit: Also known as quantum bit, it is the most basic unit of information that a quantum computer can process. Unlike classical bits, qubits do not exist in a strictly binary state, and therefore, they can be read by the computer as many different states and not just as a 0 or 1.

Quantum Entanglement: Also referred to as simply entanglement, it is a phenomenon in which two or more quantum particles in superposition can influence each other, no matter how far apart they are. This property of quantum particles is what makes quantum computing on large scales feasible.

Quantum Mechanics: Also referred to as simply quantum physics. It is the branch of physics that describes the special behavior of matter and energy at the smallest scales, typically at the level of subatomic particles. Distinct from classical physics, which describes the behavior of matter and energy at larger scales.

Quantum Processing Unit: Often abbreviated as QPU. Similar to a classical computer's CPU, it is the primary component of a quantum computer responsible for carrying out many of its



Suarez

basic computational tasks. A QPU is required to manipulate its quantum bits to make these computations.

Quantum Superposition: Also referred to as simply superposition, it is a state of a quantum particle wherein it can be said to be in multiple states simultaneously until it is observed by a third party.

Quantum Supremacy: Also referred to as quantum advantage, it is a term in the quantum computing field which refers to a point in which a given quantum computer can perform a specific computational task more efficiently than the fastest classical computer currently available.

Wave-particle Duality: The concept in quantum physics that a subatomic particle can exhibit both wave-like and particle-like properties under different circumstances. This observation is the basis for many concepts in the field of quantum physics.

References

- [1] Ananthaswamy, Anil. "Particle, Wave, Both or Neither? The Experiment That Challenges All We Know about Reality." *Nature News*, *Nature Publishing Group*, 13 June 2023, www.nature.com/articles/d41586-023-01938-6. Accessed 26 Dec. 2023.
- [2] Bova, F., Goldfarb, A., and Melko, R.. "Quantum Computing Is Coming. What Can It Do?". *Harvard Business Review*, 2021, <https://hbr.org/2021/07/quantum-computing-is-coming-what-can-it-do>. Accessed 7 Mar 2023.
- [3] Cai, W., Ma, Y., Wang, W., Zou, C. and Sun, L. "Bosonic Quantum Error Correction Codes In Superconducting Quantum Circuits". *Fundamental Research*, vol 1, no. 1, 2021, pp. 50-67. Elsevier BV, doi:10.1016/j.fmre.2020.12.006. Accessed 7 Mar 2023.
- [4] Choi, Charles Q. "How Many Qubits Are Needed for Quantum Supremacy?" *IEEE Spectrum*, *IEEE Spectrum*, 24 June 2021, <https://spectrum.ieee.org/qubit-supremacy>.
- [5] Gershenfeld, Neil, and Kubinec, Mark. "Experimental Implementation of Fast Quantum Searching." *Physical Review Letters*, vol. 80, no. 15, 1998, pp. 3408-3411.
- [6] IBM. "What Is Quantum Computing?" IBM. www.ibm.com/topics/quantum-computing. Accessed 26 Dec 2023.
- [7] Press, Gil. "27 Milestones In The History Of Quantum Computing." *Forbes*, *Forbes Magazine*, 18 May 2021, www.forbes.com/sites/gilpress/2021/05/18/27-milestones-in-the-history-of-quantum-computing/?sh=654be4817b23. Accessed 26 Dec. 2023.
- [8] Quantumai.Google, 2023, <https://quantumai.google/hardware/datasheet/weber.pdf>. Accessed 7 Mar 2023.
- [9] Roser, Max. "What Is Moore's Law?" *Our World in Data*, 28 Mar. 2023, ourworldindata.org/moores-law. Accessed 26 Dec. 2023.
- [10] Roush, Wade. "The Google-IBM 'Quantum Supremacy' Feud." *MIT Technology Review*, 13 July 2020, www.technologyreview.com/2020/02/26/905777/google-ibm-quantum-supremacy-computing-feud. Accessed 26 Dec. 2023.
- [11] Shea, Shannon Brescher. "Creating The Heart Of A Quantum Computer: Developing Qubits". *Energy.Gov*, 2023, <https://www.energy.gov/creating-heart-quantum-computer-developing-qubits>. Accessed 7 Mar 2023.



THE LINKAGE BETWEEN CLIMATE CHANGE AND APPLE (*MALUS SPP.*) FRUIT PHENOPHASES IN THE CONTINENTAL UNITED STATES

Faith Lambert and Mara Juarez-Velazquez

*ABSTRACT: Apples constitute a large portion of the United States' horticulture industry, even more so in the Pacific Northwest and Atlantic Northeast regions. The fruiting phenophase of the apple (*Malus spp.*) can be affected by many temperature-dependent variables, including sun and heat exposure, pollinator emergence, and fungal severity and presence. However, while there is plenty of research on how the apple fruiting season can be affected, there is very little stated about the trend in the fruiting phenophase length over the previous decades. Therefore, we used data from the National Phenology Network to answer if and how the apple fruit phenophase length has been affected by increasing seasonal spring maximum temperatures over the last 15 years in the U.S.*

*Keywords: phenology, climate change, apples, *Malus spp.*, fruit phenophase, temperature-dependent influences, Spring seasonal maximum temperatures, Pacific Northwest, Southwestern U.S., Central U.S., Southeastern U.S., Northeastern U.S.*

Introduction

Phenology is the study of the seasonal changes and life-cycles of living things. In the case of plant phenology, the study of seasonal changes and phenophase start and end dates is important for many industries, up to and including agriculture and environmental preservation (Piao et al., 2019). Climate change can directly and indirectly affect plant phenology in numerous ways. Climatic factors are important for determining phenological stages of several fruit tree species, including apples (*Malus spp.*), during pre- and post-blooming periods. A fruit tree's environment can modify the fruit quality and productivity (Adnane et al., 2019). In the case of fruit crop production, the fruiting season phenophase may be shortened, lengthened, delayed, or advanced by one or multiple factors. Such factors include water availability, dry season length, seasonal temperatures (minimums and maximums), daily sun exposure, and the presence of fungal

diseases and crop pests (Houston et al., 2018). However, while there is plenty of research on how the apple fruiting season can be affected, there is very little stated about the trend in the fruiting phenophase length over the previous decades. The purpose of this study is to measure the effect of seasonal temperature maximums on apple fruiting in the United States from the year 2009 onward.

Predicting when the dormancy period ends is important for growers; global warming could affect the suitability for some cultivars to survive or reproduce in any given location (Funes et al., 2015). Moreover, because profitable apple tree growth is dependent on the surrounding environment, more frequent extreme weather conditions in regions like Appalachian orchards are raising concerns amongst the agricultural and scientific communities (Veteto and Carlson, 2014). In addition to this, areas like the Himalayan regions of India believe that rising temperatures as a result of climate change are



responsible for the decline in fruit size and overall quality (Basannagari et al., 2013). During the growing season, intense solar radiation and high temperatures produce problems with growth and fruit quality, reducing sustainability and profitability (Morales-Quintana et al., 2020).

In recent decades, apple (*Malus spp.*) fruit production has gone under threat from insufficient winter chill hours, sunburn, and low-quality yield in many regions around the world, including the Pacific Northwest (Houston et al., 2018). For a plant that is mainly suited to a cool climate within the late spring to early fall months, an increase in temperature could cause damage to the fruit and interrupt important phenophases (Lee et al., 2023). For example, sunburn symptoms in apples are directly caused by any increases in temperature and the amount of sunlight exposure during the growth season. There are three different types of sunburn associated with apple fruit, including sunburn necrosis, sunburn browning, and photooxidative sunburn. Orchards with severe cases of this visible browning on the skin can be forced to discard every fruit with major imperfections (Racsko et al., 2012). There is also an increasing

risk of apple tree frost damage that is likely caused by climate change; this risk affects crop production due to the climatic sensitivity of apple trees and fruits. Apple trees are especially vulnerable to sudden frost days during their blossom period, which can lead to crop yield reduction (Pfleiderer et al., 2019).

Furthermore, the internal clock of apple trees that triggers blossom depends on various factors, such as the temperature history during winter and spring and the change in day length (Pfleiderer et al., 2019). Pollinator mismatch is one phenomenon that displays the indirect effects of climate change on fruit crop production. For instance, the spring emergence and flights of wild bees (*Bombus*, *Andrena*, and *Osmia spp.*) in England have been gradually shifting out-of-sync with peak apple (*Malus domestica*) flower bloom dates over the last few decades due to climate change (Wyver et al., 2023). The pollinator-plant mismatch phenomena has also been reported in the Pacific Northwest, as the end of bee hibernation and agricultural crop flowering dates are temperature dependent, but not quite as dependent on one another (Houston et al., 2018). Yet, in Norway and some other

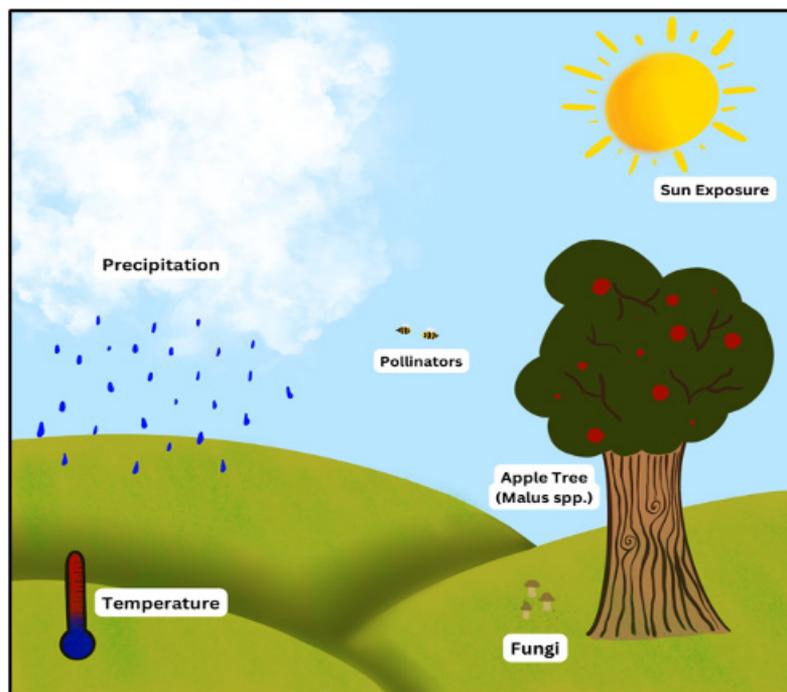


Figure 1: Environmental and climatic factors that affect apple fruit development and quality: sun exposure, precipitation, pollinators, fungi and pests, and temperature. Developed and created by F. Lambert and M. Juarez-Velazquez.



The Linkage Between Climate Change and Apple Fruit Phenophases

regions, climate change has had a positive effect by helping increase the amount of land that meets the heat requirement for apple growing by over 10% (Vuković et al., 2023).

The Literature Gap

Although apple fruit production plays a pivotal role in the agricultural industry around the world, there is very little scholarly literature on recent trends in the fruit phenophase length. Instead, most of the recent and current research focuses on the final product (the harvested apple) and how future cultivars may overcome the emerging growth and quality issues. As seen in a study conducted in Israel, the common “Golden Delicious” apple (*Malus domestica* Borkh.) responds to high environmental temperatures—also referred to as “heat stress”—by increasing the expression of expansin genes, which control the size (but not the number) of apple cells produced during early fruit development (Flaishman et al., 2015). Another factor caused by heat stress is a fungus called bitter rot; (Martin et al. 2021) identified the causal link between higher environmental temperatures and a larger presence of the fungus in apple fruit. Fungus monitoring can help with climate change in the growing process of apple trees, to be replaced for improvements and accessibility for agriculture (Čirjak et al., 2022).

To clarify, there is no doubt that this form of research is important for the future of the global apple industry. Such research includes investigations of the correlation between initiation and formation in *Malus spp.* and bloom time by identifying the floral development rates and stages before the life cycle of apple tree stops (Goeckeritz et al., 2023). However, studies like these fail to observe any meaningful trends in the *Malus* **fruiting** phenophase length and its relation to the changing climate and global warming. In order to resolve said gap in the literature, this report aims to shorten it by assessing the observational data and data visualizations provided by the United States

of America National Phenology Network (USA-NPN) database. While the NPN data will inherently be limited by its source (citizen observers) and region (the United States), it will still provide useful information for analysis and conclusions of broader, global trends.

In summary, the literature explains how global warming directly and indirectly affects apple (*Malus spp.*) fruiting through the consequences of sunburn, heat stress, growing insufficient chill hours, promoting larger fungal and pest populations, introducing crop-pollinator mismatch, and changing the amount of arable land in regions around the world. Therefore, this article will add to the narrative, guided by the question: **“What – if any – is the relationship between maximum spring seasonal temperatures and the onset day of the fruiting phenophase of all apple varieties (*Malus spp.*) grown in the United States?”**

Methods and Materials

Data Summary

The data for this study were collected from the United States of America National Phenology Network (USA-NPN) via two subsequent sources: Nature’s Notebook and the National Ecological Observatory Network (NEON). The data provided by the *Nature’s Notebook* program are collected by citizen observers, who can range from university students to non-academics to legitimate phenology experts. Data collected from “certified observers” (participants who completed the *Nature’s Notebook* orientation and training program) are deemed the most reliable. The data provided by the NEON are collected and shared by experts in the field(s) of phenology and/or ecology (USA-NPN, 2023).

In order to gather the required data for analysis, this study utilized the NPN Phenology Observation Portal. The data were downloaded after setting the following parameters: “status and intensity” data, 2009-2023, one of five



Lambert and Juarez-Velazquez

U.S. regions chosen (see: **Figure 2**), *Malus spp.* (apples), “fruits,” no partner groups, *Nature’s Notebook* and NEON 2013-Present. The “Output Fields” page was also utilized: “Species category,” “Phenophase category,” and “Phenophase name” were selected under

the “Optional Fields” tab; “Tmax Spring” was selected under the “Climate Data Fields” tab. The latter was most important, as the climate data relates most to answering the proposed research question.



Figure 2: A political map of the U.S. detailing how the states (excluding Alaska and Hawaii) were divided into the five regions (Pacific Northwest (PNW), Southwest (SW), Central, Southeast (SE), and Northeast (NE)).

Because the NPN data were downloaded five times, each varying by region of focus, the data produced varying entry totals. The Pacific Northwest data contained 546 observations to download. The Southwest data contained approximately 2,500 observations to download. The Central U.S. data contained approximately 2,000 observations to download. The Southeast data contained 132 observations to download. The Northeast data contained approximately 10,700 observations to download. Added together, the NPN provided roughly 15,900 apple fruit phenophase observations over the last 15 years in the U.S. to download. However, the total number of data points used was considerably fewer than the amount downloaded, especially once unnecessary data points were filtered out (see: Analytical Approaches).

Analytical Approaches

For a detailed instruction of the data filtration and assortment, see the Appendix. A scatter plot and regression analysis were used in order to answer the proposed question, which asks about a hypothetical— and possibly causal— relationship between two variables: spring maximum temperatures and apple fruit onset days. A trendline, its equation, and related R-squared value were calculated via Microsoft Excel programming and included on each of the generated graphs. The slope of the line of best fit for each graph was used to evaluate how much the apple fruit onset day changes with rising spring maximum temperatures; i.e. a positive slope equates to later onset and a negative slope equates to earlier onset. The R-squared values



The Linkage Between Climate Change and Apple Fruit Phenophases

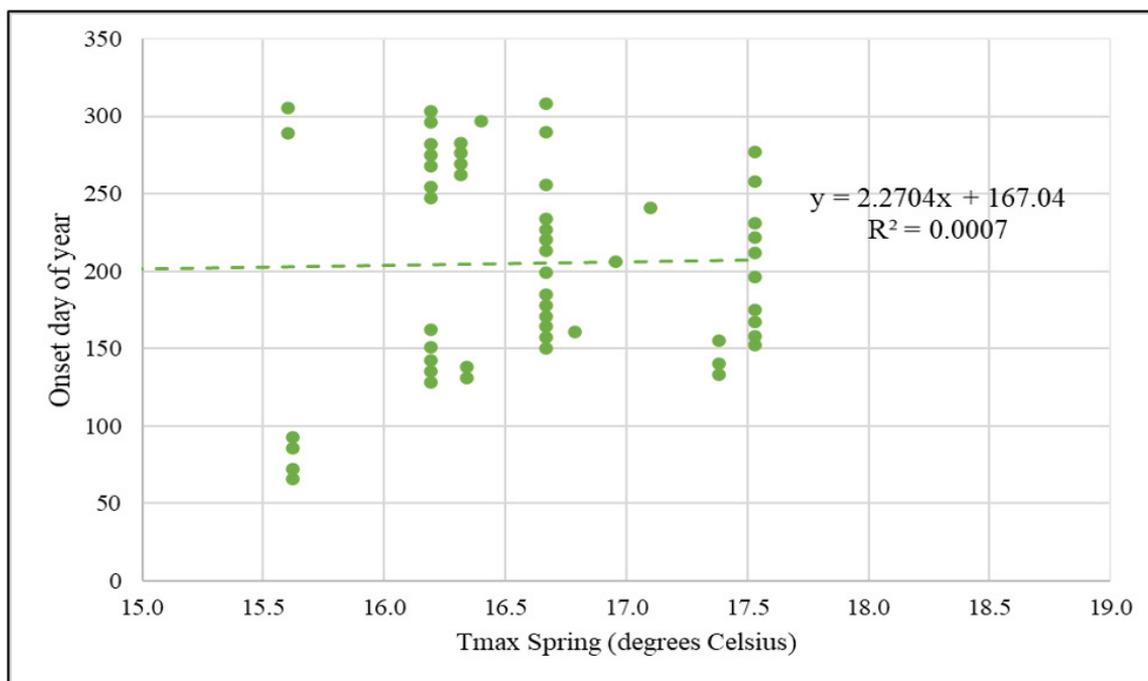
were utilized to evaluate how much of the onset day variation is actually due to spring maximum temperatures. Most importantly, the R-squared values allowed for limitation claims during results interpretation.

Results

Pacific Northwest (PNW)

In the U.S. Pacific Northwest (PNW) over the last 15 years, for every 1° Celsius increase in maximum spring temperature, the apple fruit phenophase onset day happened approximately two days later (Figure 3). This claim is based on the slope of the linear trendline for the PNW data, which shows a small positive correlation between regional T` spring and fruit onset day of year. However, it is worth noting that the R-squared value for the line of best fit is .0007;

this value means that the spring maximum temperatures explain 0.07% of the apple fruit onset day variation. Obviously, this R-squared value is extremely poor, suggesting that the relationship between the regional Tmax spring and apple fruit onset day is not linear (Figure 3). This non-linear relationship can also be easily observed by the three densely vertical groupings of data points at around temperatures 16.25, 16.75, and 17.5 degrees Celsius (Figure 3). These vertical groupings of the data also suggest that the relationship is not only non-linear, but may also not exist at all in the Pacific Northwest region. Alternatively, the vertical lines in the data could possibly be due to different varieties of apple fruit forming at the same temperature threshold but on different days, which are indistinguishable when all are recorded under “*Malus spp.*” in the NPN.





Southwestern U.S.

Figure 4 shows the correlation between the maximum spring temperatures and the onset day of the year in the Southwest region of the United States over the last 15 years. The trendline formed represents a negative slope of around 10, meaning that for every one-degree Celsius increase in maximum spring temperature, the apple fruit phenophase onset day occurred approximately 10 days earlier. It's worth noting that while there is a negative correlation between regional Tmax spring and fruit onset day of the year, the R2 value of the

trendline is only 0.0888. This indicates that just 8.88% of the variation in the apple fruit onset day can be explained by spring maximum temperatures. Additionally, there are clusters of vertical groupings between temperatures of 22 to 23 degrees Celsius, indicating a lack of correlation. The vertical lines in the data could also highlight different varieties of apple fruit forming at the same temperature threshold at different times in the year. Because this NPN limitation makes the individual varieties of apple fruit indistinguishable, the correlation between fruit onset and spring temperatures remains unclear.

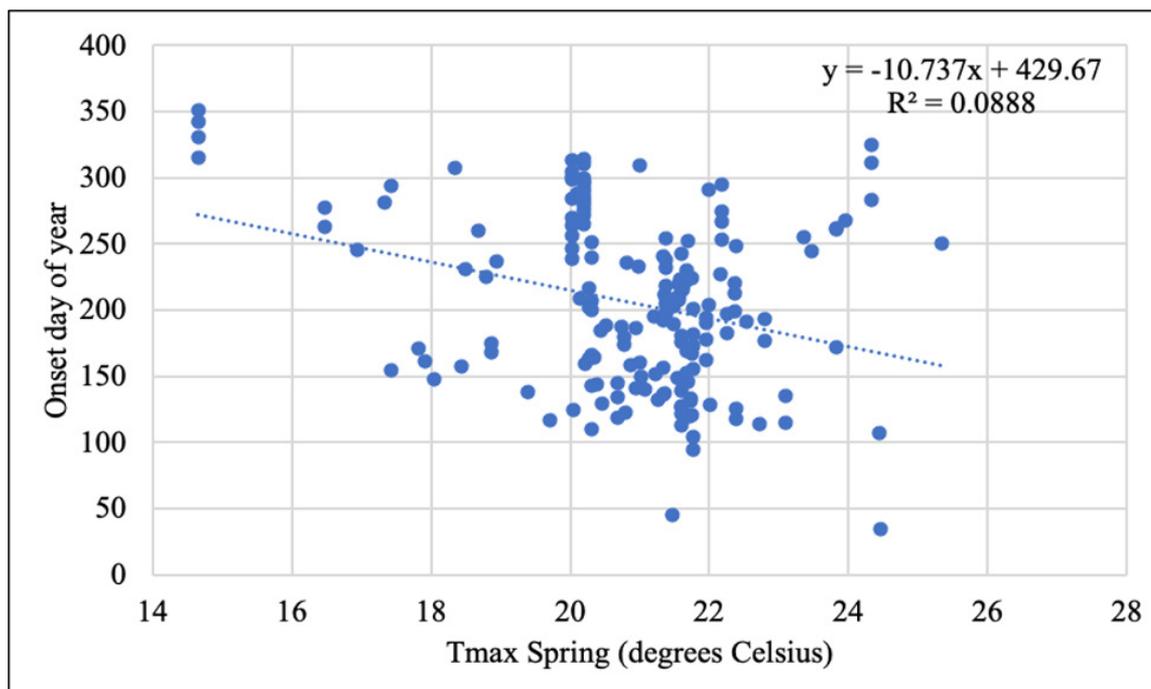


Figure 4: A scatter plot with regression analysis for spring temperature effects on *Malus* spp. fruit onset in the Southwestern U.S. over the last 15 years. The scatter plot trendline is linearly negative, with a relatively steep slope.

Central U.S.

Figure 5 depicts the correlation between the maximum Spring temperatures and the onset day of the year over the last 15 years in the central region of the United States. The

trendline formed has a positive slope of about 17 (Figure 5). This means that for every 1° Celsius increase in maximum spring temperature, the apple fruit phenophase onset day happened approximately 17 days later. While there is a positive correlation between regional Tmax



The Linkage Between Climate Change and Apple Fruit Phenophases

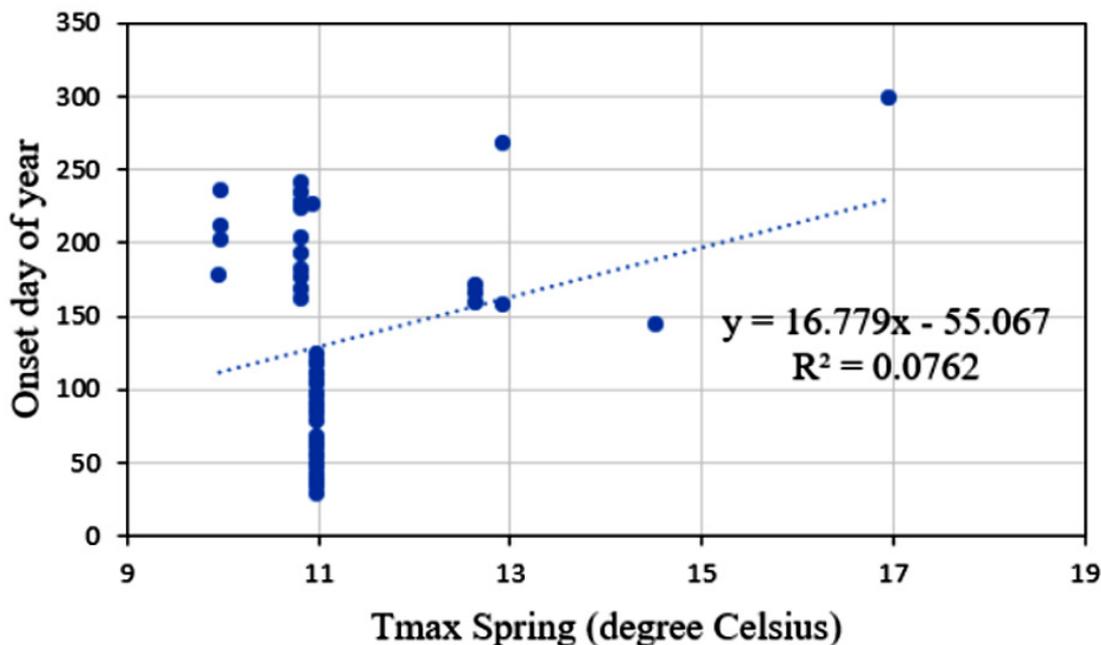


Figure 5: A scatter plot with regression analysis for spring temperature effects on *Malus* spp. fruit onset in the Central U.S. over the last 15 years. The scatter plot trendline is linearly positive, with a steep slope.

spring and fruit onset day of year, it is important to acknowledge that the R^2 value of the trendline is 0.0762 (Figure 5). This means that the spring maximum temperatures explain only 7.62% of the apple fruit onset day variation. Furthermore, much of the data is clustered in vertical groupings between temperatures 9 and 11 degrees Celsius, which indicates a lack of correlation (Figure 5). Alternatively, the vertical lines in the data could represent different varieties of apple fruit forming on different days at the same temperature threshold, which are indistinguishable in the NPN.

Southeastern U.S.

In the Southeast over the last 15 years, for every one degree Celsius increase in Spring temperature, apple phenophase happened 9 days earlier (Figure 6). The trendline above represents a negative slope nine between the regional Tmax Spring and fruit onset day of the year. The R^2 value for this trendline is

0.1195, which means the correlation between apple fruiting and spring maximum temperature translates to 11.95%. The relationship between temperature and fruit onset day is barely linear; observations can be made by the two groups between 20 and 21 Celsius and 23 and 24 Celsius, indicating the lack of correlation (Figure 6).

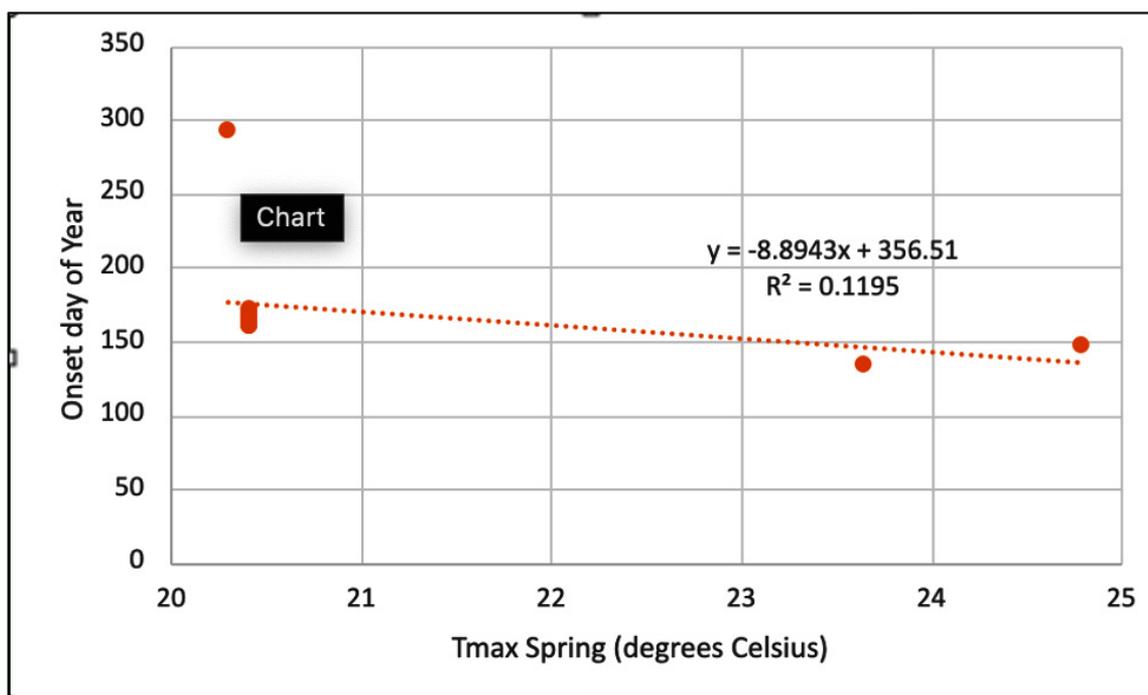


Figure 6: A scatter plot with regression analysis for spring temperature effects on *Malus spp.* fruit onset in the Southeastern U.S. over the last 15 years. The scatter plot trendline is linearly negative, with a somewhat steep slope.

Northeastern U.S.

Over the last 15 years in the Northeast there has been a correlation between the fruiting onset day of year and Tmax spring temperature (degrees celsius). The negative trendline implies that the apple tree phenophase onset day had occurred approximately 16 days earlier in the Northeast. The R2 value is 0.0409, which translates to 4.09% of the apple onset data being explained by temperature. This also means that the variation is caused by other factors than temperature. Non-linear data can be seen between 12-16 - , showing the lack of correlation between the onset day of year and spring maximum temperatures (Figure 7). Alternatively, the clustering in the data could be due to different apple varieties requiring the same temperature threshold but emerging on different days, which is indistinguishable when all are recorded under “*Malus spp.*” in the NPN.

Results Summary

Based on the lines of best fit for each region, changes in the apple fruit phenophase onset differ widely across the U.S. for the last 15 years. Although the lines of best fit are limited and cannot allow for broad or definitive claims, they still provide a somewhat helpful insight into which regions appear to have experienced the greatest changes (Table 1). Specifically, apples grown in the Central and Northeastern U.S. regions display the greatest sensitivity to temperature, with the former trending positively and the later trending negatively. Additionally, looking at the R-squared values, the Southeast appears to have the “best” trendline; that is, the trendline explains that 11.95% of the onset day variation is due to temperature. Contrastly, the PNW data has the “worst” trendline, with only 0.07% of the onset day variation due to temperature (Table 1).



The Linkage Between Climate Change and Apple Fruit Phenophases

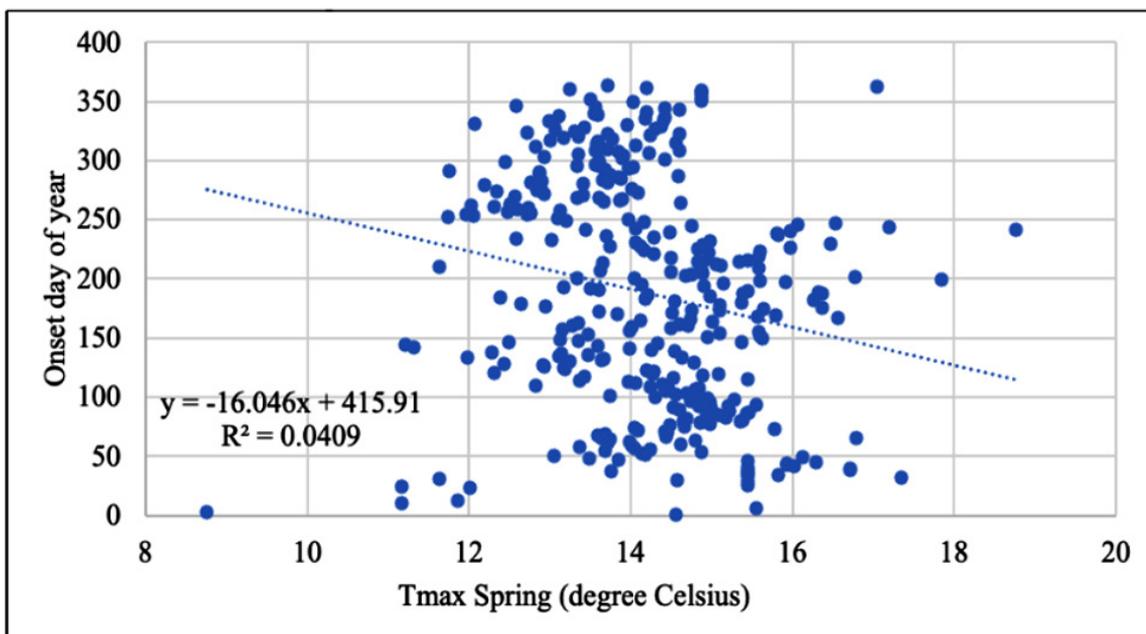


Figure 7: A scatter plot with regression analysis for spring temperature effects on *Malus spp.* fruit onset in the Northeastern U.S. over the last 15 years. The scatter plot trendline is linearly negative, with a steep slope.

Table 1: Summary of “Results” (trendline equations, slope analysis, and R-squared values).

U.S. Region	Linear trendline equation	Trendline slope meaning: for every 1°C increase in Tmax spring, the annual apple fruit onset happens...	R-squared (% data variation explained by trendline)
PNW	$y = 2.2704x + 167.04$	~2 days later	0.0007 (0.07%)
SW	$y = -10.737x + 429.67$	~11 days earlier	0.0888 (8.88%)
Central	$y = 16.779x - 55.067$	~17 days later	0.0762 (7.62%)
SE	$y = -8.8943x + 356.51$	~9 days earlier	0.1195 (11.95%)
NE	$y = -16.046x + 415.91$	~16 days earlier	0.0409 (4.09%)

Discussion

As stated previously, the research question we set out to answer was, “What– if any– is the relationship between maximum spring seasonal temperatures and the onset day of the fruiting

phenophase of all apple varieties (*Malus spp.*) grown in the United States?” Based on the data we collected and analyzed from the NPN, our proposed answer is: there is no significant or causal relationship between apple (*Malus spp.*) fruit onset day and spring maximum



temperatures over the last 15 years in any region of the continental United States. Although the data from some regions— like the Central and Northeastern U.S. – displayed a steep change in fruit onset day with increasing spring temperatures, the regression analyses of these datasets suggested that the spring temperatures were very unlikely to explain the onset day variation. Because these poor correlations were observed in all regions, we are inclined to state there is no relationship between apple fruit onset day and any trends in spring maximum temperatures over the last 15 years. More importantly, the phenological data we collected were for *Malus spp.*, which encompasses all varieties of apple fruit. Alternatively, if we had chosen *Malus domestica* (common “Golden Delicious” apple) or some other variety, we may have observed clear trends in fruit onset day based on temperature. Because of this limitation in the NPN options, our data collection exhibits all trends in apple varieties, which amounts to no overall trends.

Now, with our own research conducted, the highlighted gap in the *Malus spp.* research literature is understandable but still unfortunate. Most of the *Malus spp.* fruit research we gathered reported temperature-adjacent factors that can affect apple fruit growth (i.e. sun exposure, pollinator emergence, pests, and/or fungi presence) (Čirjak et al., 2022; Houston et al., 2018; Martin et al., 2021; Morales-Quintana et al., 2020; Racsco et al., 2012; Wyver et al., 2023). There were very few results that found a direct relation between environmental temperature itself and the *Malus spp.* fruiting process. As climate change continues to affect global temperatures and the Earth’s biosphere, it is important to consistently study *Malus spp.* fruit because, while there may be no causal relationship now, temperature could become a major factor in the fruiting phenophase. As we have learned from the NPN *Nature’s Notebook* (2023), it is just as important to report a “no” as it is to report a “yes” to a phenophase because it can help narrow when that switch happened;

the same is true for climate factors related to a plant’s phenophase.

Acknowledgements

“Data were provided by the USA National Phenology Network and the many participants who contribute to its Nature’s Notebook program. The National Ecological Observatory Network is a program sponsored by the National Science Foundation and operated under a cooperative agreement by Battelle. This material is based in part upon work supported by the National Science Foundation through the NEON Program.”

We did not use AI for writing or image generation anywhere throughout this report.

We would also like to acknowledge and give thanks to our professor, Dr. Caleb Trujillo, Ph.D., for his feedback, lectures, and overall assistance with our report.

References

- Adnane, E. Y., El, J. N., Mohamed, B., El, Y. L., Sanâa, C., Rachid, B., Chaoui, M., & Aziz, A. (2020). Potential vulnerability of Moroccan apple orchard to climate change-induced phenological perturbations: effects on yields and fruit quality. *International Journal of Biometeorology*, 64(3), 377-387. <https://doi.org/10.1007/s00484-019-01821-y>
- Basannagari, B., Kala, C.P. (2013). Climate change and apple farming in Indian Himalayas: A study of local perceptions and responses. *PLoS ONE* 8(10): e77976. <https://doi.org/10.1371/journal.pone.0077976>
- Čirjak, D., Miklečić, I., Lemić, D., Kos, T., & Pajač Živković, I. (2022). Automatic Pest Monitoring Systems in Apple Production under Changing Climatic Conditions. *Horticulturae*, 8(6), 520. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/horticulturae8060520>



The Linkage Between Climate Change and Apple Fruit Phenophases

- Flaishman, M. A., Peles, Y., Dahan, Y., Milo-Cochavi, S., Frieman, A., & Naor, A. (2015). Differential response of cell-cycle and cell-expansion regulators to heat stress in apple (*Malus domestica*) fruitlets. *Plant Science*, 233, 82–94. <https://doi.org/10.1016%2Fj.plantsci.2015.01.005>
- Funes, I., Aranda, X., Biel, C., Carbó, J., Camps, F., Molina, A.J., de Herralde, F., Grau, B., Savé, R. (2016). Future climate change impacts on apple flowering date in a Mediterranean subbasin. *Agricultural Water Management*, 164(1), 19-27. <https://doi.org/10.1016/j.agwat.2015.06.013>.
- Goeckeritz, C. Z., Gottschalk, C., van Nocker, S., & Hollender, C. A. (2023). *Malus* Species with diverse bloom times exhibit variable rates of floral development. *Journal of the American Society for Horticultural Science*, 148(2), 64-73. Retrieved Oct 18, 2023, from <https://doi.org/10.21273/JASHS05236-22>
- Houston, L., Capalbo, S., Seavert, C., Dalton, M., Bryla, D., & Sagili, R. (2018). Specialty fruit production in the Pacific Northwest: adaptation strategies for a changing climate. *Climatic Change*, 146(1-2), 159–171. <https://doi.org/10.1007%2Fs10584-017-1951-y>
- Lee, I. B., Jung, D. H., Kang, S. B., Hong, S. S., Yi, P. H., Jeong, S. T., & Park, J. M. (2023). Changes in growth, fruit quality, and leaf characteristics of apple tree (*Malus domestica* Borkh. ‘fuji’) grown under elevated CO₂ and temperature conditions. *Korean Journal of Horticultural Science and Technology*, 41(2), 113–124. <https://doi.org/10.7235/hort.20230012>
- Martin, P. L., Krawczyk, T., Khodadadi, F., Aćimović, S. G., & Peter, K. A. (2021). Bitter Rot of Apple in the Mid-Atlantic United States: Causal Species and Evaluation of the Impacts of Regional Weather Patterns and Cultivar Susceptibility. *Phytopathology*, 111(6), 966–981. <https://doi.org/10.1094%2FFPHYTO-09-20-0432-R>
- Morales-Quintana, L., Waite, J. M., Kalcsits, L., Torres, C. A., & Ramos, P. (2020). Sun injury on apple fruit: Physiological, biochemical and molecular advances, and future challenges. *Scientia Horticulturae*, 260. <https://doi.org/10.1016%2Fj.scienta.2019.108866>
- NEON (National Ecological Observatory Network). (2023). Plant phenology observations, DP1.10055.001. 2009-2023. Data set accessed November 7th-9th, 2023 via the *USA National Phenology Network* at <http://doi.org/10.5066/F78S4N1V>
- Piao, S., Liu, Q., Chen, A., Janssens, I. A., Fu, Y., Dai, J., Liu, L., Lian, X., Shen, M., & Zhu, X. (2019). Plant phenology and global climate change: Current progresses and challenges. *Global Change Biology*, 25(6), 1922–1940. <https://doi.org/10.1111%2Fgcb.14619>
- Pfleiderer, P., Menke, I. & Schleussner, C.F. (2019). Increasing risks of apple tree frost damage under climate change. *Climatic Change* 157, 515–525. <https://doi-org.offcampus.lib.washington.edu/10.1007/s10584-019-02570-y>
- Racsko, J., & Schrader, L. E. (2012). Sunburn of Apple Fruit: Historical Background, recent advances and future perspectives. *Critical Reviews in Plant Sciences*, 31(6), 455–504. <https://doi.org/10.1080/07352689.2012.696453>
- USA National Phenology Network. (2023). Plant and Animal Phenology Data. Data type: Status and Intensity. 2009-2023. *USA-NPN*, Tucson, Arizona, USA. Data set accessed November 7th-9th, 2023 at <http://doi.org/10.5066/F78S4N1V>
- Veteto, J. R., & Carlson, S. B. (2014). Climate Change and Apple Diversity: Local Perceptions from Appalachian North Carolina. *Journal of Ethnobiology*, 34(3), 359–382. <https://doi.org/10.2993%2F0278-0771-34.3.359>
- Vuković Vimić, A., Vujadinović Mandić, M., Fotirić Akšić, M., Vukićević, K., & Meland, M. (2023). Climate potential for apple growing in Norway—part 1: Zoning of areas with heat conditions favorable for apple growing under observed climate change. *Atmosphere*, 14(6), 993. <https://doi.org/10.3390/atmos14060993>



Lambert and Juarez-Velazquez

Wyver, C., Potts, S. G., Edwards, R., Edwards, M., & Senapathi, D. (2023). Climate driven shifts in the synchrony of apple (*Malus x domestica* Borkh) flowering and pollinating bee flight phenology. *Agricultural and Forest Meteorology*, 329. <https://doi.org/10.1016%2Fj.agrformet.2022.109281>



THE CORRELATION BETWEEN SPRINGTIME TEMPERATURES AND FLOWERING PATTERNS OF THE BLACK CHERRY (*PRUNUS SEROTINA*) IN THE UNITED STATES

Gursimar Tonk, Anwesha Naidu, & Xuantao (Rico) Zhang

*ABSTRACT: This research paper addresses the impact of changes in temperature during the spring season on the flowering of the black cherry tree (*Prunus Serotina*) in the United States. Utilizing data from the National Phenology Network (NPN), specifically employing the Overall Max Temperature vs. Onset Day of the Year; Seasonal Max Method, and Accumulated Growth Degree Days (AGDD) Method, we aimed to predict the phenological impacts on flowering onset dates. Among the three methods applied, Figure 2, derived from the Seasonal Max Method, yielded the most reliable data. Our analysis revealed a noteworthy negative correlation between the onset day of black cherry trees and maximum temperature. By comparing the spring season to the rest of the year, we observed an increase in maximum temperature, leading to an earlier onset of flowering dates, as indicated by the R^2 values. Our findings demonstrate a consistent negative correlation between temperature and the flowering of the black cherry tree. As temperatures rise, the black cherry tree exhibits an earlier onset of flowering, providing valuable insights into the phenological response of this species to changing environmental conditions.*

Introduction

The black cherry tree, scientifically identified as *Prunus Serotina*, stands out as one of the prevalent cherry species in the United States, particularly thriving in the eastern region despite its non-native status. Like all living organisms, the *Prunus Serotina* undergoes the phenomenon of phenology, a study examining how organisms transition through various seasonal stages. Plant phenology, encompassing the recurring sequence of plant developmental stages, holds significance for both plant functionality and the provision of ecosystem services, influencing biophysical and biogeochemical interactions with the climate system (Piao, 2019). Within this broader framework, the *Prunus Serotina* exhibits distinctive shifts and changes, shaped by its adaptability to different seasons. Temperature, a key environmental factor,

significantly influences these phenological variations. The black cherry, like other plants, relies on temperature cues, thereby contributing to our comprehension and modeling of responses to warming trends and their ecological implications. This paper delves into the specific phenological stage of flowering, a critical aspect in the reproductive cycle of this plant.

The flowering stage represents a pivotal phase in the phenological cycle of plants sensitive to temperature variations. As stated by Jagadish et al. (2016), rising temperatures and associated climate change factors significantly impact plant fitness and events linked to its flowering phase. Investigating the influence of these environmental factors on specific flowering events, such as the time of day of anthesis and flowering duration (from germination to flowering), is imperative for understanding plant and crop adaptations to a changing climate. The



Prunus Serotina typically undergoes blooming in spring. Early spring warmth induces earlier blooming, whereas colder temperatures can result in delayed flowering (Primack, 2007). Recent decades have witnessed substantial temperature variations attributed to climate change, eliciting diverse responses from plants and impacting their phenological cycles.

A comprehensive study, encompassing 134 trees in the northeastern United States, including the black cherry tree (*Prunus Serotina*), modeled potential climate change impacts. Results underscore the likelihood of substantial transformations in northeastern U.S. forests, with certain species possibly gaining habitat while others, notably the black cherry, face a decline in suitable surroundings. One of these factors that affected the surroundings of these cherries was temperature. Understanding the intricate relationship between temperature and climate is crucial. Research discerning the preferences of black cherry subspecies in specific climatic conditions correlates climate parameters with 17 morphological characteristics, revealing climate change's potential impact on black cherry distribution (Guzmán & Fresnedo-Ramírez, 2018). These findings underscore the role of climate factors, particularly temperature and humidity, in shaping black cherry morphology.

These factors prompt a fundamental question: *How can we expect the changes in temperature during the spring season to affect the flowering of the black cherry tree (Prunus Serotina) in the United States?* This research paper aims to investigate the potential correlation between spring season temperatures and the flowering response of the black cherry tree. Our working hypothesis suggests that with increasing temperatures, there is a trend of earlier flowering of the black cherry tree across the United States during the spring. Multiple attempts to address this question have involved a thorough analysis of data from the National Phenology Network (NPN).

Materials And Methods

The data for this study was collected from the National Phenology Network (NPN), a platform that records the timing of life cycle events in plant and animal species across the United States. The focus of this study is on the full flowering and open flowers phenology of the black cherry trees (*Prunus Serotina*). The NPN provides a reliable dataset with a nationwide scope. It offers a valuable resource for investigating the impact of temperature changes during the spring season on the flowering behavior of black cherry trees.

The dataset was selected to concentrate on black cherry tree phenology within the United States. This species was chosen due to our own interests, its ecological significance, and its widespread distribution across different regions of the country. The purpose of this selection is to understand how changes in spring temperatures may influence the flowering pattern of black cherry trees. The choice of the NPN dataset is motivated by its extensive coverage and long-term records of phenological events, enabling a comprehensive analysis of black cherry tree flowering patterns over time. The NPN dataset offers standardized and consistent observations, making it well-suited for studying the impact of temperature changes on the timing of flowering events in the context of climate variability.

Three Models Related To The Temperature-Dependent Variable

Overall Max Temperature Vs. Onset Day Of The Year Method

Our objective was to assess the association between temperature and the flowering phenology phase using a linear regression model. The graph's approximation follows a linear function, $y = ax + b$, where 'y' denotes the onset days of the year, 'x' represents the observed maximum temperature, 'a' signifies the correlation coefficient, and 'b' represents the model constant. Under the hypothesis of a linear relationship, the R-square test is employed



Temperatures and Flowering Patterns of the Black Cherry

to establish the proportion of variance in the dependent variable that can be explained by the independent variable.

Season Max Temperature Method

In alignment with the previous method, we used individual seasonal maximum temperatures as independent variables for constructing our linear regression model. Consequently, we derived four sets of data, each corresponding to a specific season, resulting in the establishment of four regression lines. The application of the R-square test is important because the degree of fit between the data and the respective regression models provides insights into the model's explanatory power.

Accumulated Growing Degree Days (Agdd) Method

Accumulated Growing Degree Days (AGDD) is a concept used in phenology to quantify the accumulated heat units that have occurred over a period of time, typically measured from the

beginning of the growing season or a specific starting point. Growing Degree Days are a way to estimate the heat energy available for plant growth and development. The idea behind Growing Degree Days is to calculate the daily difference between the average temperature and a base temperature, below which plant growth is limited. The formula for a single day is:

$$\text{Growing Degree Days (GDD)} = \max\left(0, \left(\frac{T_{\max} + T_{\min}}{2} - T_{\text{base}}\right)\right)$$

Where T_{\max} is the maximum daily temperature, T_{\min} the minimum daily temperature, and T_{base} the base temperature. The maximum function is used to ensure that negative values—which would indicate temperatures below the base temperature and are not conducive to plant growth—are treated as zero. The ADGG over a period of time is obtained by summing the daily Growing Degree Days from the beginning of the growing season. The accumulated value provides a measure of the cumulative heat exposure that the plants have experienced.

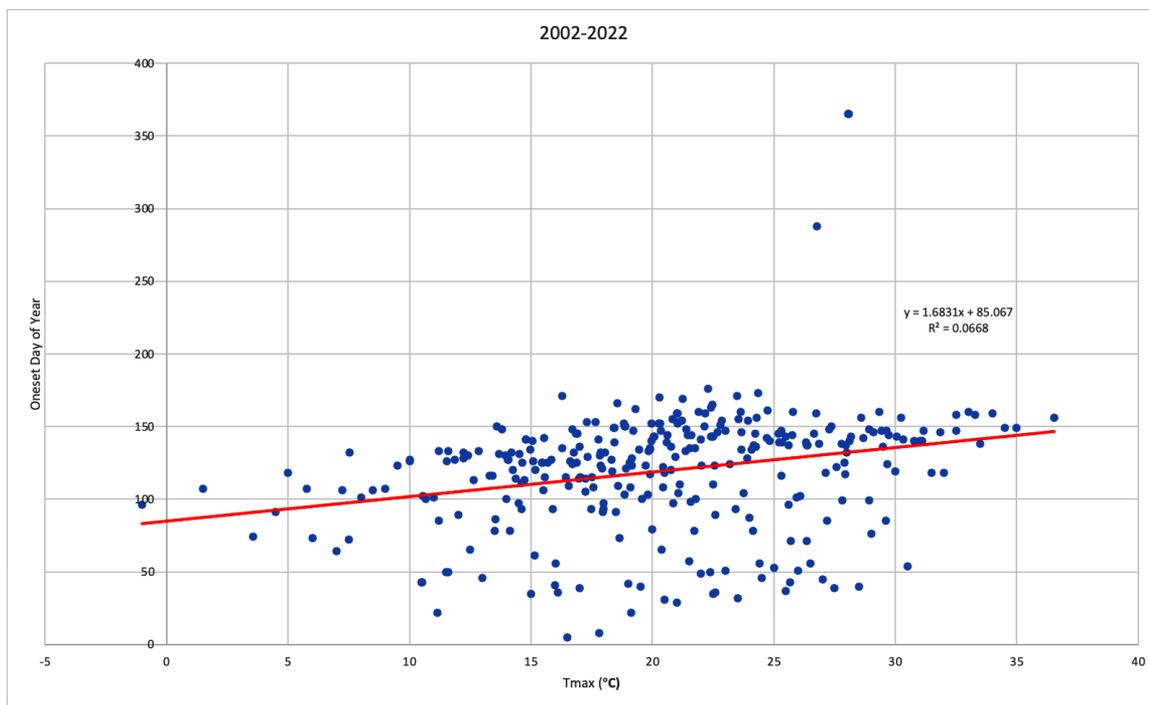


Figure 1. Linear regression graph of Overall Max Temperature and onset day of black cherry trees. The points in the graph are widely scattered, and numerous outliers are visible. Despite obtaining a positive slope value of 1.6831, statistical data fails to support its use as evidence.



Using this approach, we will set AGDD as the independent variable and build another linear regression model. The R-square test is also provided as evidence to show the results.

Data And Results

The Overall Max Temperature method has failed to provide reliable evidence to support our hypothesis that the overall max temperature is positively correlated to the onset day of black cherry trees. The linear regression analysis conducted on the collected data yielded an R² value of 0.0668 (fig. 1). This obtained R² value indicates a very low level of explained variance in the model. In other words, only approximately 6.68% of the variability in the flowering behavior of black cherry trees could be accounted for by the changes in temperature.

For the Season Max Temperature method, we collected data on maximum temperatures for four distinct seasons and generated a scatter plot to examine their relationship with the onset day of black cherry trees. Focusing on

spring temperatures, we decided to compare the findings with the other three seasons: summer, fall, and winter. The results revealed a pattern across all seasons: a negative correlation between the onset day of black cherry trees and the max temperature. This implies that as the max temperature increases, the onset day tends to occur earlier. The strength of these correlations is quantified by the R² values.

For spring, the R² value of 0.2406 (fig. 2) suggests a moderate level of correlation. Similar negative correlations are observed in the other three seasons. Summer shows an R² value of 0.1862, fall exhibits a higher correlation with an R² value of 0.3295, and winter shows a correlation with an R² value of 0.1831.

All four regression lines show a negative slope which means that the maximum temperature is negatively correlated to the onset day. As the maximum temperature increases, the black cherry trees tend to have less onset days for all seasons.

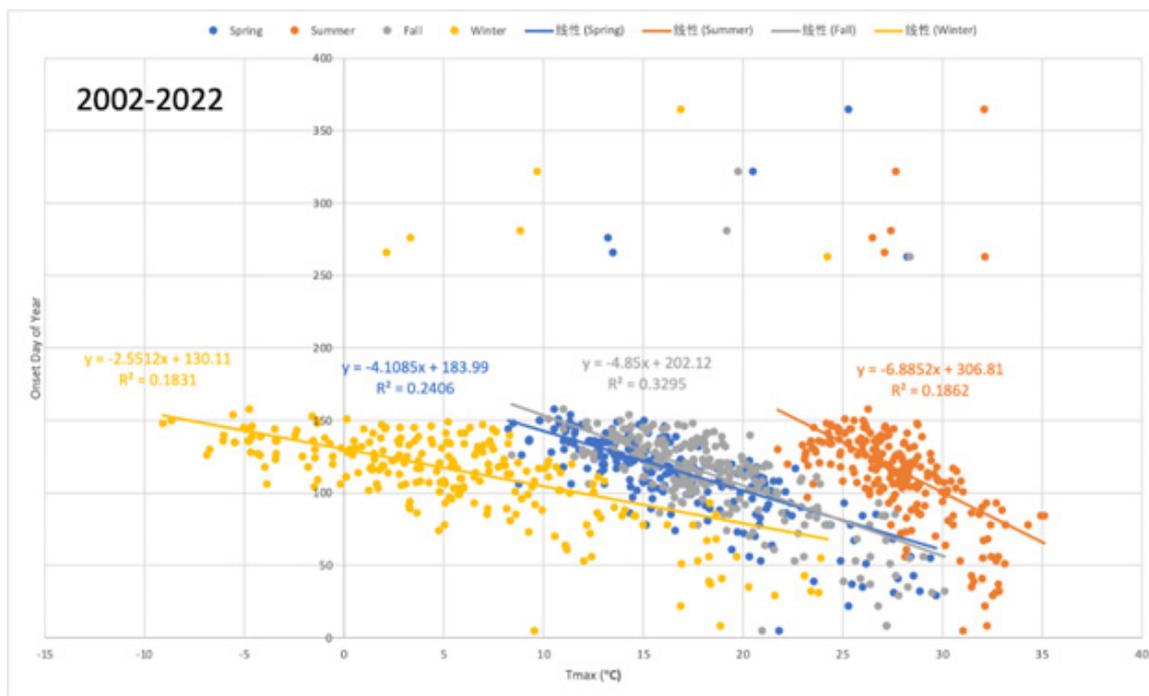


Figure 2. Seasonal Variation in Onset Day of Black Cherry Trees Relative to Maximum Temperature



Temperatures and Flowering Patterns of the Black Cherry

	Slope	R ²
Spring	-4.1085	0.2406
Summer	-6.8852	0.1862
Fall	-4.8500	0.3295
Winter	-2.5512	0.1831

Table 1. Summary of Statistical Data in Figure 2

In the context of our research topic of the impact of temperature on the onset day of black cherry trees, we used Accumulated Growing Degree Days (AGDD) as another approach. This model allows us to explore the cumulative effect of temperature on the timing of flowering events in black cherry trees. The regression analysis shows a significant positive correlation between AGDD and the onset day, with an R² value of 0.3948 (fig. 3). This result indicates that the accumulation of heat is associated with a later onset day for black cherry trees. The

positive correlation aligns with our expectations, considering that warmer conditions, indicated by higher AGDD, tend to delay the onset of flowering in cherry trees. However, we found that the results obtained from this perspective are deceptive. Therefore, we intend to approach it from another angle to support our hypothesis. As shown in Figures 4 and 5, we exchanged the positions of AGDD and Onset Day of Year and conducted statistical analysis on AGDD. We found that the regression curve still shows a positive correlation, with most points

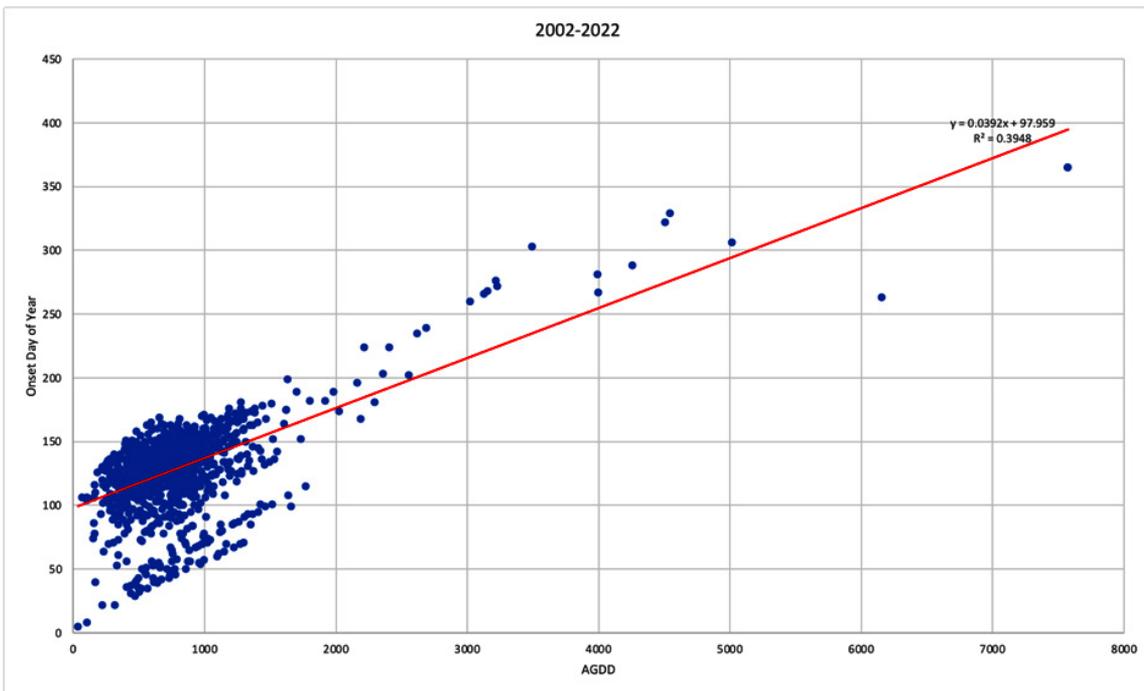


Figure 3. Influence of Accumulated Growing Degree Days on the Onset Day of Black Cherry Trees

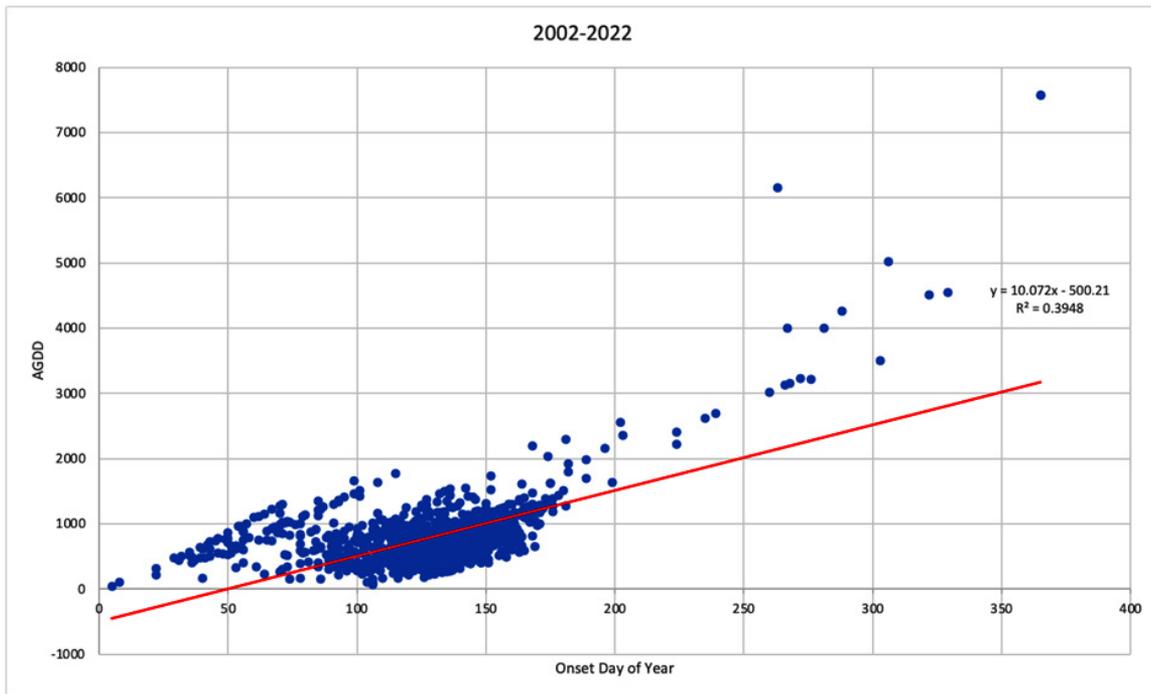


Figure 4. Correlation of Accumulated Growing Degree Days and the Onset Day of Black Cherry Trees

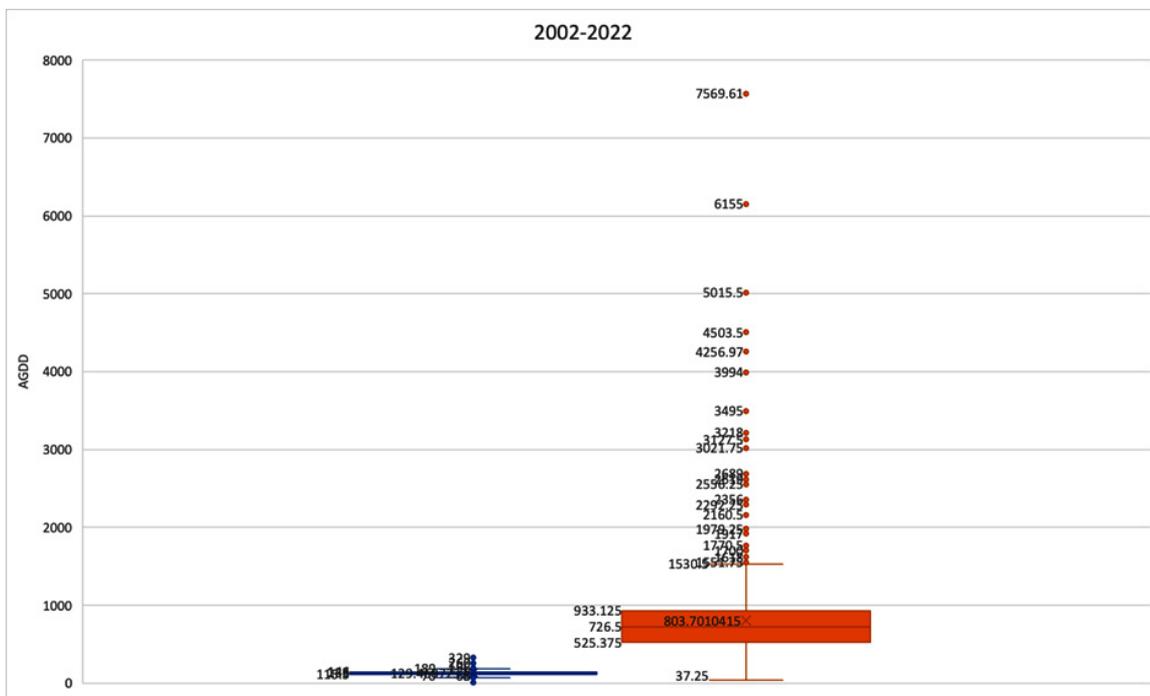


Figure 5. Statistical Analysis of the Correlation of Accumulated Growing Degree Days and the Onset Day of Black Cherry Trees



Temperatures and Flowering Patterns of the Black Cherry

concentrated in the period from March to May. This result confirms the necessity of focusing on the spring season.

Discussion and Conclusion

Two potential explanations for the conflict of the results from the AGDD method and seasonal max temperature method (**fig. 3**) seem to be:

1. Time lag in Phenological Responses:

The impact of temperature on the phenological events may have a time lag. While seasonal maximum temperatures provide an immediate snapshot of the weather conditions, AGDD reflects the cumulative heat over a more extended period. The onset day may respond differently to short-term temperature ups and downs (seasonal max temperatures) compared to the gradual accumulation of heat over time (AGDD).

2. Interaction with Other Environmental Factors:

Flowering is influenced by a complex interaction of environmental factors. AGDD could capture accumulated heat but may not be able to account for other influential variables such as soil moisture and precipitation.

Nevertheless, **Figure 3** failed to validate our hypothesis. Despite obtaining a relatively high R^2 value of 0.3928, this outcome was expected given that the AGDD value is inherently time dependent. As time accumulates, AGDD is bound to increase, and consequently, a positive association with the Onset Day of the Year is expected. In light of this, we opted to reevaluate the AGDD factor from an alternative perspective.

While examining **Figure 4**, a pattern emerged with the majority of data points clustering in the 90-160 AGDD range. This clustering indicates that the flowering phenophase occurs during March to May, encompassing the spring

season. The median AGDD value, calculated as 726.5 (**fig. 5**), implies that black cherry trees experience an approximate cumulative temperature exposure during spring. This finding underlines the significance of focusing on phenological data during the spring season, aligning with the direction of our research.

Reflecting on our research question: How can we expect the changes in temperature during the spring season to affect the flowering of the black cherry tree (*Prunus Serotina*) in the United States? Our findings suggest a discernible correlation between rising temperatures and earlier flowering events during the spring season. Our results indicate that an increase in temperature corresponds to a notable advancement in the timing of flowering dates, pointing towards a meaningful relationship between these variables. For our data, we analyzed three graphs:

- 3.1 (**fig. 1**) Linear Regression Graph of Overall Max Temperature and Onset Day of Black Cherry Trees
- 3.2 (**fig. 2**) Seasonal Variation in Onset Day of Black Cherry Trees Relative to Maximum Temperature
- 3.3 (**fig. 3**) Influence of Accumulated Growing Degree Days on the Onset Day of Black Cherry Trees
- 3.4 (**fig. 4**) Correlation of Accumulated Growing Degree Days and the Onset Day of Black Cherry Trees
- 3.5 (**fig. 5**) Statistical Analysis of the Correlation of Accumulated Growing Degree Days and the Onset Day of Black Cherry Trees

Figure 1 is not statistically reliable. We tested the relationship between temperature and flowering phenology phase by using a linear regression model, and from there we used the R-square test to determine the proportion of variance in the dependent variable. Our results showed that the Overall Max Temperature



method failed to provide reliable evidence to support our hypothesis. The obtained R^2 value indicated a low level of explained variance in the model; 6.68% of the variability of the flowering behavior was accounted for by changes in temperature, consequently making the data statistically unreliable. When looking at the graph you can see a positive slope but it fails to be used as supportive evidence.

Figure 2 is the most reliable evidence that was found. The data compared seasonal variation in onset day of black cherry trees relative to maximum temperature. In this data, max temperature observed in separate seasons was used to build a linear regression model. Thus, this resulted in four data sets and regression lines. Due to the focus of spring, there was a comparison established between all the seasons. The results reveal a pattern, a negative correlation between the onset day of black cherry trees and the max temperature. This implied that as the max temperature increased, the onset day tended to occur earlier. This was also shown by the R^2 values.

After looking and comparing all the different graphs, we were able to conclude that there is a good correlation between the changes of temperature in the spring season with the flowering dates of the *Prunus Serotina* in the United States. This was able to stand well without our hypothesis that higher temperatures led to earlier bloom dates, which was what was discovered from the data and graphical analysis from the NPN. The results we found demonstrate that there is a negative correlation found between temperature and flowering of the black cherry tree. As the temperature increases, the black cherry tree tends to have an earlier onset of flowering dates.

Research Implications: Framing The Phenology Of Black Cherry Trees Within A Global Context

Studying the intricacies between seasonal temperatures and the phenology of plants and

animals holds profound real-world implications. Our research underscores the critical importance of understanding these relationships, as we hope our work not only calls for policy changes but also inspires future research that addresses the pressing environmental challenges facing our planet.

Policy: Our investigation into the effects of changing spring temperatures on the flowering patterns of black cherry trees is not just confined to botanical curiosity; rather, it serves as a call for policy transformation. The desire for the preservation and protection of our environment rightfully urges informed decision-making, and our research provides a reason as to why. By examining connections between temperature variations and the phenology of key species, we hope to compel policymakers to develop targeted strategies for mitigating the adverse effects of climate change on all ecosystems within the United State's geographical landscape. Initiatives issued from our findings can span sustainable land management practices, biodiversity conservation, and greenhouse gas reduction. Through the lens of black cherry tree, we hope that our research advocates for policies that protect both significant abiotic and biotic factors, guarding not only the individual species but contributing to the broader preservation of entire ecosystems.

Future Research: In addition to inspiring policy changes, we hope that our paper inspires further investigation on understanding the relationship between the phenology of living species and climate change, offering solutions for pressing global challenges. In the industries of farming management, horticulture, and agriculture, the conclusions drawn from our study, coupled with subsequent research on phenological phases and environmental preservation, can revolutionize industrial practices. Farmers and agricultural stakeholders can stand to benefit significantly from a deeper understanding of how temperature fluctuations influence the phenology of their crops and farm



Temperatures and Flowering Patterns of the Black Cherry

animals. This knowledge can inform precise timing for agricultural activities such as planting and harvesting, optimizing productivity in the face of changing climate conditions.

Why you should care: With climate change altering our ecosystems, the survival of countless species, including the black cherry tree, hangs in the balance. Our research has revealed a crucial insight: as the temperature increases, the black cherry tree tends to have an earlier onset of flowering dates. Supporting evidence from a research study indicates that the potential for more extreme temperature events will ultimately impact plant productivity, and there are limited adaptation strategies for plants to cope with temperature extremes at sensitive developmental stages and warmer temperatures (Hatfield, 2015). Our study is not only an academic pursuit, but it also urges for policy change and further investigation on the topic, guiding humanity towards a sustainable coexistence with the natural world. Ultimately, the increasing climate change, the decreased productivity of plants, and other pressing environmental issues affect us directly and indirectly. These issues threaten our physical health and mental well-being, the food we consume, the clean water that is available for us to drink, the air we breathe, and the weather we experience. Given the pervasive nature of these challenges, every single person should care and express their active involvement in fostering sustainable practices, advocating for environmental policies, and contributing to the collective efforts aimed at securing a healthier and more resilient future for our planet.

Limitations And Acknowledgments

Some limitations that we faced included time limitations, knowledge limitations, and data limitations. Though we had over eight weeks to conduct our research, there was still a lot of room for improvement because of conflicts with how much data we could find using our data tools and how much knowledge we could find

particularly for the background areas for this paper. It is important to recognize that there has not been a lot of research done on the specifics of temperature in relation to *Prunus Serotina* and that finding and digging for research that would have been easier to accomplish if there was more time.

However, given that there were limitations, we would like to acknowledge NPN, National Phenology Network, along with the Professor of this class, Caleb Trujillo, for giving us the opportunity to complete this research and guiding us throughout. We would also like to thank the Scientific Methods and Practice Class along with University of Washington Bothell for providing us access to the library's resources to allow us to find more background knowledge in this paper.

Glossary

Phenology: The study of cyclic and seasonal natural phenomena, especially in relation to climate and plant and animal life.

***Prunus Serotina* (Black Cherry Tree):** A species of cherry native to eastern North America, known for its distinctive bark and fruit. It is valued for its timber.

Onset Day: The day on which a specific phenological event, such as flowering, begins within a given year. In this study, onset day refers to the initiation of flowering in black cherry trees.

Linear Regression: A statistical method used to model the relationship between two or more variables by fitting a linear equation to observed data.

R-squared (R²) Value: A statistical measure that represents the proportion of variance in the dependent variable (e.g., onset day of flowering) that is explained by the independent variable(s) (e.g., temperature). A higher R² value indicates a stronger relationship between the variables.



Accumulated Growing Degree Days (AGDD):

A measure of accumulated heat units above a certain base temperature threshold, used to estimate the progress of plant growth and development. AGDD is calculated by summing the daily differences between the average temperature and the base temperature over a specific period, typically from the beginning of the growing season.

Slope: The steepness or incline of a line on a graph, representing the rate of change of the dependent variable (e.g., onset day) with respect to the independent variable (e.g., temperature). Positive slope indicates a positive correlation, while negative slope indicates a negative correlation between the variables.

Regression Analysis: A statistical technique used to determine the relationship between a dependent variable and one or more independent variables, often used to predict the value of the dependent variable based on the values of the independent variables. In this study, regression analysis is used to assess the relationship between temperature and black cherry tree phenology.

Correlation: A statistical measure that indicates the degree to which two variables are related or associated with each other. Positive correlation indicates that as one variable increases, the other variable also tends to increase, while negative correlation indicates that as one variable increases, the other variable tends to decrease.

Farm Management: Making and implementing of the decisions involved in organizing and operating a farm for maximum production and profit.

Works Cited

Dahlman, R. L. A. L. (2023). Climate change: Global temperature. *NOAA Climate.gov*. <https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature>

Hatfield, J. L., & Prueger, J. H. (2015). Temperature extremes: Effect on plant growth and development. *Weather and Climate Extremes*, 10(Part A), 4–10. <https://doi.org/10.1016/j.wace.2015.08.001>

Hsu, H. W., Yun, K., & Kim, S. H. Differential Effects of Winter and Spring Warming on Flowering Phenology of Cherry Trees Across a Latitudinal Gradient. Available at SSRN 3989444.

Husch, B. (1954). The Regeneration of *Prunus Serotina* in Northwestern Pennsylvania Following Cutting. *Ecology*, 35(1), 11–17. <https://doi.org/10.2307/1931397>

Iverson, L., Prasad, A. & Matthews, S. Modeling potential climate change impacts on the trees of the northeastern United States. *Mitig Adapt Strateg Glob Change* 13, 487–516 (2008). <https://doi.org/10.1007/s11027-007-9129-y>

Jagadish, S. V. K., Bahuguna, R. N., Djanaguiraman, M., Gamuyao, R., Prasad, P. V. V., & Craufurd, P. Q. (2016, June 9). Implications of high temperature and elevated CO2 on flowering time in plants. *Frontiers*. <https://www.frontiersin.org/articles/10.3389/fpls.2016.00913/full>

Primack, R. B., Higuchi, H., & Miller-Rushing, A. J. (2009). The impact of climate change on cherry trees and other species in Japan. *Biological Conservation*, 142(9), 1943-1949.

Primack, R., & Higuchi, H. (2007). Climate Change and Cherry Tree Blossom Festivals in Japan. *Arnoldia*, 65(2), 14–22. https://www.jstor.org/stable/42955403?searchText=cherry+trees+phenology&searchUri=%2Faction%2FdoBasicSearch%3FQuery%3Dcherry%2Btrees%2Bphenology&ab_segments=0%2Fbasic_search_gsv%2Fcontrol&refreqid=fastly-efault%3A07069b662fd476784136aa5482838287

Ritchie, J. C. (1986). Climate Change and Vegetation Response. *Vegetatio*, 67(2), 65–74. https://www.jstor.org/stable/20146307?searchText=Climate+Change+and+Cherry+Tree&searchUri=%2Faction%2FdoBasicSearch%3FQuery%3DClimate%2BChange%2Band%2BCherry%2BTree&ab_segments=0%2Fbasic_search_gsv%2Fcontrol&refreqid=fastly-default%3A4d88abd3ded355981acbb7d45d6608be



THE 1890S-1900S: HOW THE TURN OF THE CENTURY INFLUENCED THE BIRTH OF MOVIES

Phillip Gruenemay

ABSTRACT: Like all works of art, silent films (as in those made between the 1890s and the advent of sound in 1927) were influenced by the sociohistorical events of their time during their production. Given that most films were produced initially as entertainment, they can also act as windows into the times they were created in – whether intentionally so or not. This is especially true given the volatile times that occurred when a new art form – movies – was born, causing a deeper impression to be made within that art form that isn't seen at first glance. This paper, therefore, covers how aspects of the Second Industrial Age and the Progressive Era influenced some of the earliest films of the silent era: Employees at the Lumière Factory (1895), The Great Train Robbery (1903) and The Kleptomaniac (1905). The paper first goes over these sociohistorical events to highlight the issues that were occurring at the time of each profiled film's production. Then, it incorporates background information about each film's production as well as visual analysis of these films to contextualize each film and show the influence made by these concurrent sociohistorical events. As movies stand as cultural landmarks since their invention over a century ago, recognizing their origins remains critical to understanding their evolution to what we have today. Connecting the finished product with the sociohistorical times they were produced remains critical to truly understand these cultural origins.

Movies have been one of the cultural mainstays in the United States since their invention in the 1890s. What has kept them around since their beginning in the silent era has been the audience's response to a given film and the outside experiences they bring to what they see on screen. Like all works of art, movies have been either explicitly or implicitly influenced by the world outside of their creation. The matter, then, is how movies of the very early silent period were influenced by the world around them. In this paper, I look at three silent films of the early period between the mid-1890s and 1905 – Louis and Auguste Lumière's Employees at the Lumière Factory (1895) and Ewin S. Porter's The Great Train Robbery and The Kleptomaniac (1903 and 1905, respectively) – and see how changes in labor during the Second Industrial Revolution, the death of the American Frontier, and the widening class divide has influenced the films themselves.

Seen as one of the first films, the Lumière brothers' Employees at the Lumière Factory shows just that – “workers leaving the Lumières' Lyon factory [which produced photographic plates and paper] at dinnertime, consisting of some eight hundred photographs and lasting one minute” (Kobel 1). Given that photography had only existed a few decades prior, the relative speed to arrive at photos being run in quick succession to create the illusion of movement was a technological breakthrough of its time. The birth of motion pictures coincided with the rise of urbanization in the U.S. during the latter half of the 19th Century as people left rural agricultural areas primarily for manufacturing jobs in the cities (Jaycox 6). A trend that kickstarted the First Industrial Revolution in England during the 1790s had moved across the Atlantic almost a century later. By 1890, “35 percent of the total U.S. population was classified as urban,” not solely for seeking out manufacturing jobs,



Gruenemay

but for the “conveniences...and marvels of an urban lifestyle” such as streetlights and streetcars (Jaycox 6). In no small part because of this economic migration, between 1880 and 1890 the number of cities with at least one million inhabitants went from just New York City to also include Philadelphia and Chicago, showing how cities with large populations were starting to grow westward, away from the East Coast (Jaycox 6, 587). By contrast, the city that housed the Lumière factory, Lyon, had a population of 459,009 by 1901 (De Oliveira 81). For comparison’s sake, seven other U.S. cities had roughly the same population by 1890: Boston and Baltimore on the East Coast; Buffalo in western New York; Cleveland, Cincinnati, and St. Louis in the Midwest; and San Francisco on the West Coast – with Pittsburgh and New Orleans coming in near the quarter-million mark (Jaycox 6, 587). The workforce leaving the Lumière factory in 1895 was part of a good-sized city within Europe, but even then, could not match the massive leap in population that arose from the Second Industrial Revolution in cities across the U.S. at the same time.

As this rise in urban populations was happening, the centuries-long standard of having skilled workers run urban economies was disrupted by the arrival of unskilled workers. Skilled workers historically devoted their working lives to learning a skill (such as woodworking, textile weaving, or pottery) from start to finish, usually apprenticed under a more experienced person in their trade and earned more in their lifetime. Unskilled workers, on the other hand, usually had no training, participated in only a single task within a skill, and earned less in their lifetime. The unskilled worker during this time had to endure many hardships while being employed, including “low wages, long hours (the twelve-hour day was not uncommon), harsh conditions, abusive managers, and high accident rates on the job” (Calhoun 44). One major difference between U.S. manufacturing factories and the Lumière brothers’ factory was the concept of worker’s

compensation. Between the years of 1888 and 1908, a study found that “an estimated 35,000 workers were killed and 536,000 were injured” on the job in the U.S. (Jaycox 337). As workers transitioned from being one-stop shops to cogs in the proverbial machine, there was a divide in how to care for wounded workers or the families of workers who died on the job. As Britain and “other industrialized European nations,” such as France, had undergone Industrialization many decades before the U.S., they had already devised “workmen’s compensation” programs that allowed “automatic payments for workers injured or killed on the job” (Jaycox 337). In the U.S. during this period between 1888 and 1908, programs like this “did not exist,” and therefore, “America’s accident rate was far higher than that of industrialized nations in Europe” such as France (Jaycox 337). The lack of a metaphorical safety net in the U.S. at this time made working in factories a dubious highwire act to perform day in and day out.

This is not even considering a freefall in the U.S. economy during this period. The film was first shown in France as the U.S. was in the middle of a “major economic depression...from 1893 to 1897,” in which “unemployment rose to over 16 percent” (Calhoun 42). If the film looked at American workers in 1895 leaving a similar factory, there’s a good chance it might capture them leaving their workplace for the last time. Regardless of times being good or bad, the loss of a job for an urban worker “could mean being deprived of the means to survive” due to the lack of unemployment insurance from the state government or other related charitable causes and the swift business climate of the era leading to quick company bankruptcies or failures (Calhoun 42). The titular Employees at the Lumière Factory are then examples of industrial capitalism working at full steam ahead, with no visible worries on the workers’ faces, in contrast to American workers who faced the brunt of these issues.



Turn of the Century Influenced Movies

The forming structures of “capitalist industrialization” during this time allowed for the standard of living to increase for some workers – but was split with inequities, such as those “between skilled and unskilled laborers, men and women, whites and nonwhites, and native-born and most immigrant workers” (Calhoun 42-44). The surprising thing when seeing *Employees at the Lumière Factory* through modern eyes is the ratio of more women than men who leave the factory doors at the end of the day. This should not be so, as women had been instrumental in being the primary source of early factory work producing textiles in northern England during the First Industrial Revolution. This was similarly echoed in the U.S., with women working for wages at least since the Lowell, Massachusetts textile mill days of the 1810s-1840s. By the end of the century “women played a growing role in the...labor force” at large (Calhoun 45). From 1870 to 1910 the percentage of working women rose from 14% to 20%, mostly working in “textile and garment production” as well as “light manufacturing,” such as the photographic plates and paper produced at the Lumière factory (Calhoun 45). The expansion from textiles to other kinds of production allowed women of the time to find more opportunities to make money. For example, by the end of the 19th Century, more and more women started working to earn wages before marriage to have an economic buffer after marriage (Calhoun 45). The film’s energy of workers leaving for the day is indicative of the hustle and bustle to help provide for the family at home. There’s a good chance that some of the female workers on screen followed this practice of starting work before marriage to set themselves up for domestic lives after marriage.

What is not commonly known is that the Lumière brothers made “at least three versions of the film,” with the first showing a single horse pulling a carriage out of the factory at the end, the second having two horses with a carriage, and the third and definitive version

having no horse-drawn carriages (Srinivasan). One of the workers seen in the third version of *Employees at the Lumière Factory* is a young boy on a bicycle. This is one of the only examples in any of the three versions to show a working practice absent from the Western working world of today – child labor. Before the 1880s, child labor was seen as another source of income for the children worker’s families and as an opportunity to put themselves on the right moral track to avoid “sins like idleness” (Jaycox 148). According to the 1890 U.S. Census, “more than one out of every six children between the ages of 10 and 15” were found to be employed, a number that grew by the 1900 Census to amount to “1,750,000 employed children 15 or younger” (Jaycox 148). Again, if the Lumière brothers happened to film an American factory around the same time, it’s more than likely that a good number of child workers would’ve been on screen leaving their place of work. Even considering this, it’s important to note that observers at the time as well as many historians today, believe that the number of child workers was “extremely conservative” since “many child workers were not counted” in the U.S. Census for one reason or another (Jaycox 148). That makes it likely that the average workforce at an average factory between 1890 and 1900 had almost as many child workers working there as adult workers, making *Employees at the Lumière Factory* only slightly representative of how many children worked during this period. Incidentally, that boy on the bicycle, whose name was Francis Doublier, later worked for the Lumière brothers as one of their cameramen (“Lumière’s First Picture Shows”).

The first version of *Employees at the Lumière Factory* has the brightest light saturation of the three. This is due to the Lumière brothers filming their workers at lunch hour, versus the other two “after the Sunday mass to simulate” a lunch break (Srinivasan). Here we see one of the first examples of reshooting a given take – or recapturing what the director wants to transpire on screen because of a perceived mistake on



Gruenemay

a previous attempt. One possible reason for the shooting times for the latter two versions of *Employees at the Lumière Factory* to be at the end of the day instead of at the workers' lunch break is that "the Lumières didn't like the quality of" the first version due to the sun exposure on the film (Srinivasan). In other words, the resulting film was too washed out to see everything clearly.

The Lumière brothers' focus on making it look like their employees are leaving at their lunch break versus at the end of the working day recalls the long working hours that most factory workers had at the end of the 19th Century. As mentioned previously, 12-hour workdays for many manufacturing jobs at this time were not just uncommon, but more seen as below average. The idea of workers breaking in the middle of the workday to go to the bathroom, let alone eating lunch, was not a high priority, to say the least. It wasn't until the first decade of the 20th Century that labor unions were able to bring about a reduced working day for male workers in the U.S. (Jaycox 255). Women workers would get a reduced workday as well, thanks to the 1908 Supreme Court decision *Muller v. Oregon* (Jaycox 338). This was done in a rather backhanded way, however, as Muller declared the reason for this was that women did not have the physical stamina to work as long as men could. By contrast, history does not know if the Lumière brothers ended up paying the workers for their on-screen work (especially for the latter two versions, as France at this time was officially still a Catholic nation) because "there was no law in effect in France limiting the working hours" of employees (Srinivasan). Regardless, workers getting shorter workdays helped increase workplace morale, which in turn increased productivity.

The film at the end of the day establishes in fixed moving images what had been transpiring on both sides of the Atlantic for many decades at that point: "fixed schedules, sequential units, and disciplinary spaces that were crucial

to the nineteenth-century industrial mode of production" (Stubblefield). This, as author Thomas Stubblefield points out, is carried out by the Lumière brothers with their "workers leaving the factory" (Stubblefield). Instead of the image of workers entering their place of work for another long, grueling day, we see the workers happy that their shift is over, and that the cycle of capitalism has, for the moment, ended. The Lumière brothers show in this film that "there is a singular space dedicated to labour and that one can actually leave it" (Stubblefield). The joy that was on film may have been manufactured to look that way, however. The latter two versions have more gussied-up clothing and a more fanciful spring in their step, due to their Sunday shoot day (Srinivasan). The workers, knowing that the shoot was oncoming, "seem wiser to the presence of the camera, more professional, so to speak" (Srinivasan). They also decided that "the factory gates should close before the camera ran out of film" in the third and final version to have a definite ending with the closing doors acting like theatrical curtains instead of the first two starting "in media res," which is Latin for "in the midst of things" (Srinivasan). With the absence of either one or two horse-drawn carriages leaving the factory, the third and final version seems like a complete and finished result, with the film being "more harmonious, less chaotic, the flow of workers out of the gates more streamlined...[and] the play of chance in this definitive version is minimal" (Srinivasan).

Almost 10 years after the first screening of *Employees at the Lumière Factory*, another impactful film was released – Edwin S. Porter's *The Great Train Robbery*. Like *Employees at the Lumière Factory*, *The Great Train Robbery*'s subject matter is self-explanatory: a group of bandits stick up and rob a train out West, only to flee the scene and end up shot dead by nearby locals. The plot has been a part of the Western film canon ever since, one that is seen as archetypical of the Old West in its prime. Looking back so many years later, it's tempting to think *The Great Train Robbery* acts



Turn of the Century Influenced Movies

as a record of that Wild Wild West heyday, but by the time of the film's release, this was not true. The U.S. Census Superintendent released a bulletin in 1890 in conjunction with that year's census regarding the part of the country known as the 'frontier.' Historically this has stretched from directly east of the original 13 colonies to the Pacific Coast, constituting land that had 'four inhabitants or fewer per square mile,' but culturally speaking, the frontier constituted land west of the Mississippi River – with future states like Colorado, Oklahoma, Texas, and Wyoming being the best examples. The Superintendent mentioned in the bulletin that “up to and including 1880 the country had a frontier of settlement,” but because of things like more and more settlements appearing in “the unsettled area” the frontier “can not, therefore, any longer have a place in the census reports” as its own designated category – a far cry from the heyday of the Old West most associate with *The Great Train Robbery* (Turner 82).

Some saw this bulletin as changing the trajectory of American growth. Frederick Jackson Turner, a historian from the University of Wisconsin – an area that, decades prior, would have been considered frontier land itself – wrote an essay three years after the bulletin was issued titled “The Frontier as the Source of American Democracy.” In it, Turner compared both Columbus's arrival to North America and the ancient Greeks' sailing across the Mediterranean Sea to the Manifest Destiny that the United States had been undergoing since the post-revolutionary days (Turner 82). Turner further emphasized these comparisons when he wrote “movement [westward] had been [America's] dominant fact” (Turner 82). Turner had singled out the bulletin for quelling the United States' hunger for constant westward expansion. “But never again will such gifts of free land offer themselves,” he writes, “and now....the frontier has gone, and with its going has closed the first period of American history” (Turner 82-83). In other words, the death of the frontier was the death of the ‘anything goes’

mentality of the Old West found in things like *The Great Train Robbery*.

Turner's essay did not consider multiple aspects of Western growth such as big businesses present in frontier lands – including lumber, agriculture, and mining; railroad expansion bringing in government subsidies; and preexisting Indigenous and Hispanic peoples (Jaycox 3-4). Despite this, the sentiment of the ‘completely free frontier’ disappearing, and with it went any chance for opportunity or the American Dream that arose from Turner's thoughts, soon came to be known as the highly influential “Turner Thesis or [the] Frontier Thesis” (Jaycox 3). The Turner Thesis wrapped itself in the United States' “national identity” and argued that those now living in the frontier had no legitimate means to create any original or independent wealth for themselves (Jaycox 3). This sense of hopelessness would merge with a trend that had been spreading for a generation or so – the wealth gap.

During the heyday of the Wild Wild West, “between the Civil War and 1890,” the incredible amount of industrialization and growth back east led to “rapid, dramatic, and unprecedented economic growth” for the GDP (Jaycox 9). Especially during concurrent times of economic hardship for most Americans at the time, this created an opportunity for business leaders to build on their prodigious profits. Because so few business taxes existed at this time and zero taxes were collected on earned income, large business owners were able to amass even more enormous amounts of personal wealth that created “an increasingly obvious gap between the rich and the poor” (Jaycox 9). Historically, it used to be considered bad form to be so open with your money during previous periods of tremendous growth in the U.S., with the affluent publicly concealing the total amount of their opulence. Times were about to change, however. As the 19th Century ended, the wealthiest of these families broke tradition by flaunting symbols of their wealth, such as “opulent city mansions and



Gruenemay

country estates, private yachts and private train cars,” publicly, even allowing such displays to be covered in the press, read by the common folk (Jaycox 9). These ritzy private trains are exactly the sort of trains that had been prime targets for bandits, like the one seen in *The Great Train Robbery*.

Another aspect of this wealth gap during this time was the rise of the ‘Social Darwinism’ theory. Charles Darwin’s *The Origin of Species* was published in 1859, so within the subsequent 40 years the theory of evolution “inspired social theorists to devise parallel interpretations of humanity and society” (Jaycox 123). With such rapid changes in how people lived and worked, it makes sense to want to understand why, and marrying such a popular theory of scientific change with an explanation became the result. A popular subset of those preaching Social Darwinism was misinterpreting the related concept of “survival of the fittest” as “a justification for the ruthless accumulation of wealth by individuals” (Jaycox 123). The thinking behind this new interpretation was that of equating financial success with evolutionary success. People who had more money were seen as carving out the path for humanity’s future, while people with less money were seen as eventually withering away and dying off as other species who cannot adapt to their surroundings do. This hoarding of wealth by some of the richest families, justified through Social Darwinism, helped contribute to the growing class divide that led to countless strikes and revolts for a sense of survival amongst the working class and the poor (Jaycox 9-10).

This wealth gap was not limited to urban areas. In part due to the mass migration away from rural areas to the cities and prices for agricultural goods falling due to the recession between 1893 and 1897; “many farmers also failed to share in the general prosperity” of the times and “were increasing financial distress” (Jaycox 9). This led to different ways for farmers to survive the Depression years.

Some turned to gather in alliances, either to lobby state legislators for help or to educate themselves out of their situations (Hicks 2, 130, 178). Others aimed to create the same change but from inside the political system itself. Some like-minded farmers came together to create the Populist Party, which in part aimed to quell land speculation in the frontier, regulate the railroad industry in their backyards, and reform the financial system regarding credit and currency stability (Durden 1-3). The Populist Party took off like a rocket and helped create a movement against the wealth gap’s exponential growth. This movement led to events like the Coxey’s Army march in the spring of 1894 from Ohio to Washington, D.C., which lobbied for public works projects on the scale of the eventual New Deal (Aybar 151-152).

The 1896 election ended up being the crucible for the Populist movement in the countryside. Populist nominee William Jennings Bryan’s stirring ‘Cross of Gold’ speech that advocated for rejecting the gold standard in favor of “free silver” – or easier access to money and lower interest rates – led to his dual nomination for president by both the Populist and the Democratic parties (Durden 1, 85, 87). It’s not a stretch to imagine some Populist supporters liking this outcome as it doubled Bryan’s chance to become president and enforce the ‘free silver’ that he called for. The election did not go the Populists’ way, as Bryan’s dual nomination helped split the votes to make financially well-backed Republican nominee William McKinley, the winner (Durden 121, 125). If the election itself was the Populists’ crucible, the result was its breaking point. Feeling helpless after the election, many farmers had no place to turn after the collapse of the Populist party (Hicks 404). This led many to forgo farming in place of what was available to them – easy money by living a life of crime in the Wild Wild West.

The McKinley years saw the anguish that had led some farmers to criminality in the Wild Wild West, combined with the right person being in



Turn of the Century Influenced Movies

the right place at the right time. As Thomas Edison had been developing his movie studio out in New Jersey (affectionately dubbed the “Black Maria”), he had made what would turn out to be a consequential hire – the eventual director of *The Great Train Robbery*, Edwin S. Porter (Kobel 8). Porter was originally employed – in early 1901 – as “a projectionist and engineer” to “improve the technical facilities” at the newly opened studio located on “East Twenty-first Street in New York” (Kobel 19). Over time, Porter was promoted by Edison to become the “chief cameraman” (what we would call nowadays the director) and eventually the “head of studio production” (Kobel 19). The next couple of years saw Porter evolve from films that consisted of one shot to films that told stories over multiple shots – such as the four-shot *Execution of Czolgosz with Panorama of Auburn Prison* (1901), which showed real footage of the space McKinley’s assassin had been kept in, mixed with studio re-enactments of the execution itself (Kobel 20). This finally culminated with the December 4, 1903, release of the 12-minute *The Great Train Robbery* (Kobel 20). Becoming the “most famous American film of the early period,” *The Great Train Robbery* saw Porter’s growth as a cameraman to cover 14 different shots that were distinct from each other, building off earlier films of his, such as *Execution of Czolgosz with Panorama of Auburn Prison* and 1902’s *Life of an American Fireman* (Kobel 20).

The Great Train Robbery had by no means an original screenplay. Porter, in an uncredited writing job, had many elements that influenced the film’s story. The title and the general framework for the story were adapted from the 1896 play of the same name by Scott Marble (Musser 256). Despite its stage roots, *The Great Train Robbery* comes off on screen as having “nothing stagey about it” because of its on-location sets (Kobel 20). Various live entertainments that purport to showcase elements of the Wild Wild West were popular attractions nationwide (Musser 256). *The Great Train Robbery*’s success created

the presumption over time that it was the first Western film, but that isn’t the case. Some figures like Buffalo Bill and Annie Oakley were popular enough to warrant films of their own, with three films from 1894 – *Annie Oakley*, *Buffalo Dance*, and *Bucking Bronco* – all coming from Buffalo Bill’s *Wild West Show* (Kobel 65). Edison Studios itself released *Cripple Creek Bar-Room Scene* in 1899, which “suggests the West at least in costumes” (Kobel 65). Finally, “newspaper accounts of train holdups” such as ones perpetrated by Butch Cassidy and his Wild Bunch, served as ripped-from-the-headlines examples of the story Porter was trying to tell (Musser 256). All these disparate elements came together to help “audience understanding by providing a necessary frame of reference” (Musser 256).

The amalgamation of sources used to create *The Great Train Robbery* alone was not enough to make it an iconic film. Porter’s direction and command of craft were needed to bring it home. Film techniques such as panning the camera (or moving it on a horizontal axis) and double exposure were utilized by Porter to “advance the narrative” within the film (Kobel 20). It was “the first film to use editing to alternate between two separate but concurrent lines of actions,” also known as crosscutting (Jaycox 220). The film also utilized multiple camera positions, both interior and exterior settings, location shooting, and established the shot as the building block for movies going forwards.

The iconic shot of actor Justus D. Barnes looking directly into the camera and shooting his revolver “at the audience in medium shot” suggests a couple of things (Kobel 22). The shot itself has no bearing on the story itself, with “the Edison catalog” itself saying that the shot could be placed “at the beginning or the end” of the film (Kobel 22). When placed at the beginning, the shot foreshadows the type of violence that is found in the film; while having the shot at the end – which is how most surviving prints have it – acts as an additional thrill for the audience.



Gruenemay

Breaking the fourth wall in this manner had not been seen since the train coming towards the camera in the Lumière brothers' 1895 film *Arrival of a Train at la Ciotat*, and likely, a good amount of audience members who saw *The Great Train Robbery* hadn't seen *Arrival of a Train at la Ciotat*.

All these reasons allowed *The Great Train Robbery* to be “a huge hit and continued to play for years,” with its total box office being reported by *Moving Picture World* as two million dollars (Kobel 22). Clearly, domestic audiences “continue to demand multishot story films in the wake of *The Great Train Robbery*” (Kobel 23). The success of *The Great Train Robbery* allows “films that tell fictional stories [to] quickly increase in number” (Jaycox 220). The film's release was part of the transition for movie distribution to move away from ‘unofficial’ venues, such as vaudeville houses or churches, to more official “movie storefronts,” with locations “before the turn of the century in New York and New Orleans” as well as “in Chicago and Los Angeles in 1902” (Jaycox 270). Despite *The Great Train Robbery*'s massive success, Porter's journey to becoming “the most important of early American filmmakers” was not over yet – he had other stories to tell (Kobel 19-20).

While *The Great Train Robbery* cemented Porter's place in film history, his filmography did not end in 1903. Porter “continued to direct films for Edison until 1909” and crossed many genres along the way (Kobel 22). One genre that he focused on after his massive success with *The Great Train Robbery* was “socially conscious dramas” like 1905's little-known *The Kleptomaniac* (Kobel 22). The film shifts from rural to urban settings to cover two separate women in then-contemporary New York City, who are caught stealing and are sent to the same courthouse – “one who steals a loaf of bread for her hungry child [and] the other a rich woman who shoplifts [from] Macy's” (Kobel 22). Porter, who again both wrote and directed, shines a

spotlight on “the unequal justice [that is] meted out to” both women, with the poor woman being convicted and sent to jail, whereas the rich woman “goes scot-free” (Kobel 22). The idea of class divides played a part in the success of *The Great Train Robbery*, but its application towards women instead of men, the notion of working women in the rising phenomenon that is the department store, and the types of audiences that went to see *The Kleptomaniac* tie into what makes the film so biting in Porter's filmography.

The visual contrasts between the settings and circumstances for both characters tie back into the wealth gap of the time. The Edison Films catalog for *The Kleptomaniac* in July of 1906 details the scenario for the film and describes the character of the rich woman (played by Aline Boyd) as “a handsome and richly gowned lady...with coachman and footman in full livery” (Musser 297). Her costume provides some symbolism; the rich woman's black dress indicates her wickedness that will entail. She lives in “a beautiful residence in a fashionable residential section of New York City,” which suggests that “all the surroundings indicate wealth and fashion” (Musser 297). Again, with the very affluent by this time more than willing to parade around their affluence in any and every form imaginable, the trappings of luxury would not appear to be too shocking to the average audience in 1905. The rich woman is seen going to “a well-known department store at Herald Square, New York City” (Musser 297). Since 1902, this location has been the flagship store for Macy's department store, knowledge that would have been well known to people – especially New Yorkers – of the time. British-American film historian William Everson talks about the shoplifting scene itself, with “the interior shot of the department store [being] so ‘busy,’ with so many identically dressed women bustling around in a protracted long shot, that the audience is given no guidance at all” (Musser 297). This confusion would have likely been a directorial choice by Porter, to visually highlight the ease of wealthy people's ability to



Turn of the Century Influenced Movies

rob right out in the open and not get caught. The rich woman is caught, however, by the Macy's detectives – one male and one female (played by Phineas Nairs and Jane Stewart, respectively) – and the next scene shows that “a carriage drives up to the door” of the police station with a leisurely pace that without context would look like nothing had happened (Musser 297, 298). What Porter implies visually moments ago is now seen in plain sight: the very rich play by a different set of rules compared to everyone else.

However, the poor woman (played by Ann Egleston) is seen living in “a scantily furnished room” with two young daughters, the film clearly showing their “poverty and hunger plainly in evidence” (Musser 297, 298). While the symbolism of the rich woman's black dress is foreshadowed to the audience, the wardrobe of the poor woman is more subtle. Instead of wearing all white or substantially brighter colors, Porter chose to have the poor woman dress in a dark outfit but with a brighter head shawl. This is the only indication of the film signaling the poor woman's good nature, and the result is a more realistic wardrobe for the times in any case. After her oldest daughter is unsuccessful in bringing in any food off the streets from kind strangers, the poor woman is seen leaving the house in desperation for any relief from family-wide hunger (Musser 299). With many in the first-run audiences of *The Kleptomaniac* experiencing the economic hardship from a decade prior, it would not be difficult at all to place those audience members in the poor woman's shoes and accept the pathos radiating from the screen. After she has been caught taking a loaf of bread from an unattended basket outside of a bakery, the poor woman is taken by police into a patrol wagon that “is being rapidly driven up the streets” to the police station (Musser 299). Porter utilizes the crosscutting that was so effective in *The Great Train Robbery* again in *The Kleptomaniac*, having the poor woman's arrival at the police station cut right after the rich woman arrives there to set up the contrast of their treatment under the law. The

speed at which the two women arrive at the police station is another indicator of how the law views the women – favorably and unfavorably, respectively. The court scene seems almost comical, with the accused criminals lined up in a row in the courthouse, coming one at a time in front of the judge (played by W.S. Rising), who decides on the spot who is guilty and who is innocent rather quickly (Musser 297). The next two events are the culmination of Porter's intentions throughout *The Kleptomaniac*. The poor woman appears first amongst the two women, who “pleads for mercy” as “her little daughter rushes to her side and falls on her knees” in front of the judge (Musser 299). The judge, who is “deaf to all entreaties,” sentences her mother to jail and both mom and daughter cry as the poor woman is sent away off-screen to her unjust fate (Musser 299). The speed of their dismissal echoes the speed at which the poor woman arrives at the police station and the speed of the judge dismissing other convicted people – just another destitute in the continuous cycle of people off the street running afoul of the law. The rich woman, unlike the poor woman, is seen with both “her husband [and] a lawyer” and gets away with her seemingly small crime as the Macy's security lady has her testimony go unheard by the judge as the rich woman “falls weeping into her husband's arms” (Musser 299). The characters of the rich husband and their lawyer are symbolically seen here as pillars – at home and legally – of the rich woman's life, as a place to return to at the end of the day and to keep her out of trouble, which given the title is likely to be often.

The Edison Films catalog labels the character of the rich woman twice – as the aforementioned titular, “*Kleptomaniac*” and as “Mrs. Banker” (Musser 297). It would have been one thing for Porter to ascribe thievery to the rich woman but giving her the title of *Kleptomaniac* suggests a medical reason for her actions to protect the high-class image she would have publicly destroyed otherwise. Had this second affiliation been mentioned in the film itself,



Gruenemay

however, it would have directly tied the rich woman to the “banking community” that had by this point been specifically and “frequently attacked by the Progressive movement” that saw it as reducing members of the middle and working classes [such as the poor woman and her family] to impoverishment” (Musser 301). Porter also intentionally labels the poor woman as ‘The Thief’ to show how the law saw her – dehumanized (Musser 297). The lack of given names to any of the characters in *The Kleptomaniac* leads the film to act as a parable of injustice rather than a specific case of favoritism under the law.

The circumstances of each main character’s reason for being in front of the judge do, however, create intricacies that comment on their respective position in life. The rich woman’s theft is “clearly premeditated,” as she has “no motivation for shoplifting other than for the thrill,” swiping some “nonessential baubles” that she could clearly afford (Musser 301). The poor woman, on the other hand, is “overwhelmed by temptation” as she looks for any sustenance that is “left outside and unattended” (Musser 301). These distinctions are not without difference – both characters did steal – as it is their underlying circumstances in their everyday lives that provide the context for what they stole, where they stole them from, and why they stole at all. Professor Charles Musser at the University of Yale adds to this with how the judge acts in the courtroom – as he reasons (without sound for the audience) that the rich woman had “no reason to do this” and because the act was a “stupid little thing,” she, therefore, “shouldn’t have to pay the price;” whereas the poor woman, who is seen as nothing more than a thief by the judge, decides that “she needs to be disciplined and...made an example of” (“Edison”).

Like *The Great Train Robbery*’s pulling from the headlines to help create its story, Porter draws upon inspirations around him to create *The Kleptomaniac*. The idea that the justice

system works differently for two different groups – those with money and those without – doesn’t just run through the plot of the movie. The ending of *The Kleptomaniac* is a tableau of Lady Justice (played by Helen Courtney), with her scales having “a bag of gold” on one side and “a loaf of bread” on the other – with the scales being tipped “in favor of the gold” and her blindfold “disclosing one eye” (Musser 297, 300). This image of Lady Justice favoring the rich at the expense of the poor was not unique to *The Kleptomaniac*, as it was “frequently [used to have] criticized and visualized the inequities [that] lacked understanding for the poor,” such as a “political cartoon” on the cover of *New York World* in June of 1896 (Musser 301). The touch of having Lady Justice carry a loaf of bread does make the tableau tie into the story of *The Kleptomaniac* nicely, however, and makes an image common to the times unique for the film. Whatever the case, Patrick Loughney from the Library of Congress commends *The Kleptomaniac* for this type of social commentary, as he mentioned: “how [at this time] cinema began to be self-aware as a mode for bringing social problems to a wider audience as well as making a form of entertainment” (“Edison”).

The idea of the department store was a relatively new one for audiences of *The Kleptomaniac*, as they had been gaining traction within the past decade or so as they “offered a new kind of shopping – many different kinds of items under one roof” (Jaycox 28). Department stores such as “Macy’s in New York and Marshall Field’s in Chicago” were seen as urban counterparts to the rural marketplace, where shoppers – mostly women – would take time to browse around and chat with other shoppers about their day (Jaycox 28). These stores were seen differently, however, by working women in these cities, more as “a new kind of employment” where the job of “salesladies” became “more desirable than other kinds of available work” such as textile weaving (Jaycox 28). That’s not to say these new salesladies worked without problems, as they “worked for very low pay,”



Turn of the Century Influenced Movies

endured “12-to-18-hour days with no stools to sit on behind the counters, six-day workweeks,” and did not have the benefit of having vacations (Jaycox 28). It might not be a stretch, perhaps, to potentially see the salesladies in Macy’s within the film as not too far removed from the character of the poor woman herself. Not only did the rich woman steal from the store that employs these women, metaphorically taking food out of their and their families’ mouths, but the poor lady might as well have gotten a lighter sentence from the judge had she been employed at a high-class establishment such as Macy’s.

The dynamic of class in *The Kleptomaniac* was also reflected in the types of people who went to see movies in public in the first place. *The Kleptomaniac* was released in February 1905, right before the movie theater as we would know it would be created on June 19, 1905, by “entrepreneurs John P. Harris and Harry Davis” in “McKeesport, Pennsylvania” (Jaycox 270). This was accomplished by Harris and Davis by refurbishing “a former opera house to create a theater solely for showing motion pictures” (Jaycox 270). What seemed like a gamble at the time paid off – big time, as people flocked to their movie house in droves. This experiment’s success caused movie houses to “explode exponentially throughout the United States” (Jaycox 270). The expansion of these movie houses, called “nickelodeons” by Harris and Davis because of their tickets costing a nickel (inflation on a nickel from 1905 would make it worth \$1.74 in 2024), allowed them to build an audience in “working-class neighborhoods or low-rent streets” (Jaycox 270). The cheap entertainment was the manna for working-class audiences who could not see a theater-style show or visit expensive museums after a hard day at work. Film historian Eileen Bowser concurs, writing that “motion pictures have never had such a devoted and enthusiastic audience since these early years...People went night after night, or from one show to another” (Jaycox 270). This new devoted fanbase became a melting pot of people who were connected by

one common thing: wanting to be entertained. This even spread to recent immigrant audiences, as they “did not even need to understand English because all [of the] movies were silent” (Jaycox 270). There truly was no barrier to entry on who could see a movie at a nickelodeon.

This contrasts with the upper and middle-class audience for films. They did not share the regularity of movie viewing like the working classes, and they certainly wouldn’t be caught dead at a nickelodeon, preferring to view them “in respectable settings like vaudeville houses, lecture or music halls, town halls, or church auditoriums” (Jaycox 270). Films shown at these places were not usually scripted, instead being “films like documentaries [like the films by the Lumière brothers, called ‘actualities’ at the time] and travelogues” that were seen by these audiences as being “considered wholesome, educational entertainment” (Jaycox 270). This made two aspects of this type of movie-going experience of note for these audiences: the atmosphere where the movies were shown and the content of the movies themselves – the second aspect an important sticking point regarding movies’ impacts on American culture forevermore. The vaudeville houses would include movies as part of a variety show filled with singing, dancing, and comedy routines; and “usually charged a quarter (or with inflation \$8.71 in 2024)” (Jaycox 270). To illustrate the difference in pricing, nickelodeon ticket-buyers versus upper-class movie ticket prices in 1905 would be comparable between movie ticket prices in 1973 (at \$1.76 with inflation) versus movie ticket prices in 2016 (or \$8.94 with inflation) – a 5-time multiplier, but in the same year. This dynamic would certainly be reflected in the characters of *The Kleptomaniac*. The poor woman would be the exact audience for a film like this – working-class, living in a city, only needing to come across a nickel to see a show, and interested in the subject matter of the film as it reflected her own life back at her. The rich woman, on the other hand, would not even bother seeing the film in the first place, most



Gruenemay

likely partaking in an actuality or travelogue in a vaudeville house – certainly not a nickelodeon. These two crossed paths in court, but they would never cross paths in a movie house.

As they have evolved, movie theaters have always reflected our shared reality back at us in the balconies and cheap seats. This fact about movies has not changed, and will never change, as long as movies keep being made. This, then, allows us to look back at the early period of silent movies and see how the world around them influenced what they made and how they made them. Looking back at works by masters such as the Lumière brothers and Ewin S. Porter allows all of us to see how urban laborers, failed frontier farmers, and the wealth gap seen through the prism of urban women lived, worked, and loved back then – and how these connections are everlasting.

References

- Aybar, Gustavo Adolfo. “Coxey’s Army.” *Encyclopedia of Populism in America: A Historical Encyclopedia*, vol. 1, ABC-CLIO, 2014, pp. 151–152. *Gale Ebooks*, https://link.gale.com/apps/doc/CX6589000068/GVRL?u=wash_main&sid=bookmark-GVRL&xid=1fba2a9d. Accessed 18 Dec. 2023.
- Calhoun, Charles W. *The Gilded Age: Essays on the Origins of Modern America*. 3rd ed., Scholarly Resources Inc., 2000, pp. 42-44, 45.
- De Oliveira, Patrick Luiz Sullivan. “Imagining An Old City in Nineteenth-Century France: Urban Renovation, Civil Society, And the Making of Vieux Lyon”. *Journal Of Urban History*, vol 45, no. 1, 2017, p. 81. SAGE Publications, <https://doi.org/10.1177/0096144216689090>. Accessed 17 Oct 2022.
- Durden, Robert F. “The Crisis for Populism.” *The Climax of Populism: The Election of 1896*, 2nd ed., *University of Kentucky Press*, Lexington, KY, 2014, pp. 1–3.
- Durden, Robert F. “The Campaign: First Phase.” *The Climax of Populism: The Election of 1896*, 2nd ed., *University of Kentucky Press*, Lexington, KY, 2014, p. 85.
- Durden, Robert F. “The Campaign: Final Phase.” *The Climax of Populism: The Election of 1896*, 2nd ed., *University of Kentucky Press*, Lexington, KY, 2014, pp. 87, 121, 125.
- “Edison: The Invention of the Movies: Discussing The Kleptomaniac.”, Kino Lorber, 2005. Alexander Street, <https://video.alexanderstreet.com/watch/edison-the-invention-of-the-movies-discussing-the-kleptomaniac>.
- Hicks, John D. *The Populist Revolt - A History of the Farmers’ Alliance and the People’s Party*. 1st ed., *University of Minnesota Press*, 1931, pp. 2, 130, 178, 404.
- Jaycox, Faith. *Eyewitness History - The Progressive Era*. 1st ed., Facts On File, Inc., 2005, pp. 3-4, 5-6, 9-10, 28, 93, 123, 148, 220, 255, 270, 337, 338, 587.
- Kobel, Peter. *Silent Movies - The Birth of Film and The Triumph of Movie Culture*. 1st ed., *Little Brown & Co.*, 2007, pp. 1, 8, 19-20, 21, 22, 23, 65.
- Lumière, Louis, Director. Lumière, Auguste, Producer. *Employees Leaving the Lumière Factory*. Lumière, 1895.
- “Lumière’s First Picture Shows.”, directed by Anonymous, produced by David Shepard, *Turner Classic Movies, and Film Preservation Associates.*, Flicker Alley, 2015. Alexander Street, <https://video.alexanderstreet.com/watch/lumiere-s-first-picture-shows>.
- Musser, Charles. *Before The Nickelodeon: Edwin S. Porter and The Edison Manufacturing Company*. *University Of California Press*, 1991, p. 256, 296-301. <http://ark.cdlib.org/ark:/13030/ft3q2nb2gw/>.
- Turner, Frederick Jackson. “The Frontier as the Source of American Democracy”. *Major Problems in The Gilded Age and The Progressive Era*, Leon Fink, 2nd ed., *D.C. Heath And Company*, Lexington, Massachusetts, 1993, pp. 82-83.



Turn of the Century Influenced Movies

Porter, Edwin S., Director. *The Great Train Robbery*.
Edison Studios, 1903.

Porter, Edwin S., Director. *The Kleptomaniac*.
Edison Studios, 1905.

Srinivasan, Srikanth. "Workers Leaving the Factory:
How Louis Lumiere's 1895 Film Bound Labour
and Cinema Together for Eternity". *Firstpost*,
2021, [https://www.firstpost.com/art-and-culture/
workers-leaving-the-factory-how-louis-
lumieres-1895-film-bound-labour-and-cinema-
together-for-eternity-9573741.html](https://www.firstpost.com/art-and-culture/workers-leaving-the-factory-how-louis-lumieres-1895-film-bound-labour-and-cinema-together-for-eternity-9573741.html). Accessed
12 Oct. 2022.

Stubblefield, Thomas. "Database Labour: Supply
Chains, Logistics, And Flow". *Labor In a Single
Shot - Critical Perspectives on Antje Ehmann
and Harun Farocki's Global Video Project*,
Roy Grundmann et al., 1st ed., *Amsterdam
University Press*, Amsterdam, The Netherlands,
2022, pp. 329-330, [https://doi.org/10.2307/j.
ctv23985xr.15](https://doi.org/10.2307/j.ctv23985xr.15). Accessed 12 Oct 2022.





SEXUAL & REPRODUCTIVE HEALTH: APPROACHES TO LITERACY INTERVENTIONS FOR CHILDREN & ADOLESCENT YOUTH

Ayla Badr, Hyojeong Kim, & Ryan Van Vuitton

ABSTRACT: In this paper, the researchers attempt to explore the multifaceted influences on sexual health tendencies in adolescent populations. A global emphasis is placed on this population to corroborate the interconnected nature of sexual health education. The researchers investigate sexually influenced decisions, statistical patterns such as the prevalence of unintended pregnancies amongst adolescents, and the factorial dissection of the social-ecological model. A program, named “Consider Me” was designed to facilitate an interdisciplinary approach to implementing sexual health education in settings of varying characteristics, including, medical and academic environments. The potential impacts of the program could result in the promotion of individual and community empowerment, the reduction of sexually transmitted diseases, and the depletion of stigmatization revolving around sexual health education. Through community-based participatory research, the effectiveness of the program can be assessed in real-time.

Introduction & Background

What influences sexual tendencies in adolescents throughout the world? Is it the media they consume? If so, what does that entail? In terms of popular culture, how has its evolution affected the developing perceptions of adolescent youth regarding sexual and reproductive health? To answer these questions, the study takes a holistic approach that goes over the interconnectedness of youth perceptions, psycho-social behaviors, virtual realities created from the media they are exposed to, and statistical data collected and analyzed from multiple peer-reviewed sources. Furthermore, the term adolescent defines ages ranging from 10 to 24 (Vamos, 2020). In an academic setting, this age range includes elementary, middle, and high school students, along with college students.

To accumulate a better understanding of health literacy and its impact, our study will focus on

children along with adolescent youth. This will provide an evolutionary perspective on sexual health education at each age and academic level. Another goal of this study is to develop an answer to the question of focus: how can sexual health literacy be effective at equipping children and adolescent youth with the cognitive and physical tools to make smarter choices?

Before doing so, consider statistical illustrations of the outcomes produced by sexually influenced decisions. These are influenced by several factors, including the level of individual sexual health literacy, perception, behavior, cognitive biases, social and natural environments, and income, among others. On a spectrum, this could mean having a minimal understanding of what a contraceptive is supposed to do or having a developed understanding of sexually transmittable diseases (STDs). In a recent study, it was reported that the annual estimated incidence of pregnancies among females aged 15-19 years



Badr, Kim, Van Vuitton

is 21 million in developing countries and 12 million in low- to middle-income countries (Manwong et al., 2022). Approximately 50% of these pregnancies were unintended (World Health Organization, 2023). Because of the lack of sexual health education and the sparsity of resources, adolescents, especially females, are not prepared for unexpected events such as pregnancies. It also has to be recognized if they are taking part in consensual sex or are being coerced into the act. In this case, their sexually influenced decision would be considered a probability; additionally, a discussion of ethics.

Strictly, what does teen pregnancy look like in the United States? In 2019, as reported by the Centers for Disease Control and Prevention (CDC), the birth rates among adolescents varied across different racial/ethnic groups (Centers for Disease Control and Prevention, 2021). Specifically, the birth rates for Hispanic teens (25.3%) and non-Hispanic Black teens (25.8%). Notably, the birth rate of American Indian/Alaska Native teens was the highest among all ethnicities, recorded at 29.2% (Centers for Disease Control and Prevention, 2021). As described earlier, several factors could be assumed here including the lack of education, the limited exposure to sexual and reproductive literacy programs, cultural influences, income, and age.

Another factor could be the transtheoretical, or 'stages of change,' model; however, this would assume that all individuals associated with these statistics are taking part in the decision-making process of consensual sex, which is never the case (Barikani et al., 2020). Lacking a sense of subjective education is the leading factor in weak decision-making skills (Barikani et al., 2020). To expand on the general idea of health literacy, exploring its effectiveness can widen individuals' knowledge of health care.

Health Literacy

As elucidated by the Centers for Disease Control and Prevention (CDC), personal

health literacy is defined as "the extent to which individuals possess the capability to locate, comprehend, and employ information and services, to make informed health-related decisions and undertake appropriate actions for both themselves" (Centers for Disease Control and Prevention, 2020). Health literacy plays a large role in keeping individuals as healthy, both physically and mentally, as possible. More specifically, health literacy helps in preventing injuries, deaths, and feelings of anxiety and depression (Barikani et al., 2020). Health literacy is crucial, as it aids an individual in comprehending their diagnosis, its severity, and the risks and benefits of their treatment plan.

An individual comprehending their diagnosis, and its severity, allows them to have a stronger awareness of future diagnoses that may be similar to their current one; by doing this, they begin to understand how to prevent these illnesses in the future. An individual analyzing the risks and benefits of their treatment plan aids them in choosing one that best fits their lifestyle (both mentally and physically) so that their treatment is as effective as possible. Health literacy could be impactful based on the fact that it can allow future generations to make decisions best fit for themselves, soon creating a society full of healthy (both mentally and physically) individuals. This is particularly crucial for marginalized communities, such as the LGBTQ+ community, people of color, and women - these groups of individuals having high literacy rates allow them to realize the power they have over their health, and soon motivate them to spread their knowledge to more individuals (marginalized communities that are within third world countries).

Sexual Health Literacy Throughout Academia

Providing sexual health education for children is a stepping stone for high-capacity decision making. Individually, the process may produce variability; however, children need a grasp of their anatomical identity. The first exposure to



this information could be from their parents. Depending on the country, this exchange could be delivered with varying degrees of passion. Illustratively, it has been asserted that, from an Islamic perspective, parents or guardians hold a pivotal role as primary agents in the learning process of Muslim children (Binti Abdullah et al., 2020). In this context, they are regarded as the “primary school” responsible for the education of a child (Binti Abdullah et al., 2020). In other words, the way sexual health literacy is delivered is dependent on the culture a child is exposed to. If there is a strong emphasis placed on the parents acting as “primary school” teachers, then the learning experience would be received differently than someone who is taught in a less engaged way.

In middle school adolescents, sexual health literacy starts to assess the overlap of social life and its influence on behavior. Social aspects of life may include the type of media one is exposed to. This could be virtual pictures, videos, or music. In more recent studies, popular music seems to have a more sexual effect on adolescent youth, especially middle school students (Manwong et al., 2022). For example, in 2022, a correlation study was conducted between electronic music and sexual tendencies in middle school students (Manwong et al., 2022). The findings of the study revealed that adolescents who expressed a preference for electronic dance music nightclubs exhibited a higher likelihood of refraining from condom use during sexual intercourse, and demonstrated increased dependence on chemical substances (Manwong et al., 2022). As adolescents age in the academic setting, more social factors begin to influence their judgment.

High school students have a more developed understanding of the virtual world. The media they are exposed to can influence their sexual attitudes and behaviors (Scull, 2022). In actuality, though, the differences that exist in sexual health literacy between middle school and high school students differ in the sense that

they are at varying age ranges. High school students are exposed to an environment that may have mature forms of sexual health programs that, in turn, can positively impact their future (Scull, 2022).

Freedom and experimentation start to define college life for adolescents being introduced to the environment. However, these perceived positives could lead to the avoidance of “doing the right thing.” In translation, this means that, although college adolescents may have a well-developed understanding of sexual and reproductive health, they may favor their rights to experiment. As indicated by researchers, sexually transmitted infections (STIs) manifest at elevated rates within the college-age population, surpassing prevalence rates across other age groups throughout their lifespan (Vamos, 2020). According to estimates from the CDC, the age group spanning 15–24 years acquires approximately half of all new STIs annually (Vamos, 2020). This supports the perception change college students undergo when entering an environment away from familial or authority figures.

Purpose Statement

The purpose of this study is to further understand sexual health literacy and its impact on young adolescents and children. The goal of this study is to successfully educate individuals to make them aware of the benefits of education and exposure to preventative measures. Therefore, examples of certain contraceptives or cognitive and physical tools may be used to help these young adolescents make better decisions. By delving deeper into the social-ecological model and acknowledging the various impacts of sexual health on children and adolescents, more people will be made aware of the issue and a safe, welcoming community will be established.



Literature Review

Social Ecological Model

To understand individuals' behavior within their environment, it is important to apply a multi-faceted approach that targets multiple factors. These being intrapersonal, interpersonal, organizational, community, and policy factors of the social-ecological model. Intrapersonal factors involve individuals' knowledge, intellect, and skills relating to the broader aspect of sexual health education. Interpersonal factors include relationships, for example, that influence adolescent decision-making skills amidst sexually driven decisions. Organizational factors imply the impact of infrastructures or resources on an adolescent. This can include public health facilities and the efficacy of its intervention programs regarding sexual health education. Community factors in this context include cultural and societal norms that condition individuals' perspectives on certain things. This can mean religious views altering one's understanding of the benefits of sexual health education. Lastly, policy factors address the legality of sexual health interventions, laws, and the accessibility of corresponding services. More emphasis is placed on each part of the social-ecological model in the proceeding sections.

Intra/Interpersonal Factors

Individual interventions focus on the personal values of someone, to then, facilitate the creational aspect of a support-based program. Intra- and interpersonal-based intervention programs directly benefit those involved, with professionals, working one-on-one with each individual. An individual intervention focused on sexual health can aid knowledge growth in all ages; especially, children and adolescents, and young adults. For example, college students are at a higher risk for accumulating STDs. This is because they are introduced to an environment that removes a sense of familial authority, ultimately, introducing them to the

experimental aspect of adulthood (Vamos et al., 2020). Additionally, women from the ages of 20-24 have higher unintended pregnancy rates; this range is indicative of college students (Vamos et al., 2020). Although sexual health literacy may be an available resource offered by their institute, college students may purposely become ignorant of its existence due to personal reasons.

A patient-centered health literacy intervention that is supplemented with an incentive can promote individual participation. In the United States, this exact study was conducted in a college university with female participants being the priority group (Vamos et al., 2020). The researchers concluded that the sexual health literacy (SHL) scores for their focus group were significantly low (Vamos et al., 2020). Based on these results as well as the brainstorming session in phase 2 of the study, the researchers developed an online edutainment program via the social media application, Facebook. The researchers stated that various methods along with tools are supplemented through the online program (Vamos et al., 2020).

The accumulated data was from one university. This means that the results cannot be generalized. The sample of students was generally smaller since some participants left the program due to personal circumstances. Although most participants were undergraduate students, there was a mixture of graduate students, mainly being Ph.D. candidates. Most of the students were heterosexual, meaning that if the participants were evenly mixed between say, homo- and heterosexual groups, taking into account the other characteristics that define their identity, then their results would accumulate unique data— although, not implying that the results are not unique, but minutely homogenous. More female participants were recruited, although this was intentional. The researchers state that bias may have been present in the study considering the research topic leans more to the personal side of the spectrum.



Organizational Factors

Organizations can either help assist or hinder individuals in receiving support from resources that enhance their quality of health. Organizations can also reduce the shame and stigma surrounding more vulnerable topics within society (more specifically, young adolescents concerning sexual health). When it comes to young Thai adolescents receiving treatment (surrounding their sexual health) they felt nervous and anxious, as they thought that the healthcare providers would view them as a “troubled adolescent” (Wiwatkamonchai et al., 2023). This just displays the fact that organizations not only provide accurate medical support but offer individuals a safe space. More specifically, young adolescents are in a period of their life in which they are just being introduced to sexual health and all the problems that can occur as a result of it. These young adolescents are willing to reach out for help, as it pertains to their sexual health, but the non-existence of sexual and reproductive health services in the area and sex being a taboo topic - prevents this. An example of this would be an adolescent’s community holding negative views of the adolescent who obtained sexual and reproductive health services - more specifically, the community strongly believes the adolescent is a troubled child and that their parents are not fulfilling their duties of taking proper care of their child (Wiwatkamonchai et al., 2023). This just portrays the fact that there are organizations that have the proper knowledge to guide these adolescents to resources that help assist with sexual health issues, but the power of shame surrounding a topic that is already so vulnerable can completely prevent this.

Community Factors

Communities often play a big role in influencing people’s thoughts and opinions based on world views. Especially for young adolescents, the school setting is the prime example of where socializing can affect one’s

health when it comes to sexual health. While many schools and communities advocate the importance of being educated on sexual health, certain restrictions can prevent students from gaining access to such resources. For example, more and more young adolescents between the ages of 10 and 19 in China are engaging in sexual behavior with little to no education on sexual health (Chen et al., 2023). This lack of knowledge is alarming as these young adolescents are not aware of the risks of engaging in unsafe sexual behavior such as sexually transmitted diseases.

The overall education regarding reproductive health among these students is at risk of worsening due to public hesitation in speaking about this topic. However, to potentially “fix” this situation, a study was completed using randomized controlled trials to reduce selection bias and hope to see an increase in the student’s knowledge about sexual health (Chen et al., 2023). The researchers of this study used a module called “You and Me” which is a “non-governmental organization that specializes in sexual education” (Chen et al., 2023). The “You and Me” module ended up being successful in helping students become more educated on sexual health.

Keeping in mind the different demographics, academics, and lifestyles of each student, they were all able to gain more knowledge about sexual health by the end of the study. In the end, the researchers were able to find out that using an effective model such as the one used in this study is effective in sharing knowledge about sexual health, especially in countries where culture makes it difficult to talk about this topic. These findings matter because they can show that sharing knowledge and educating people about a certain topic consistently can help them become more informed and work towards creating a community that is more open to discussing such topics. Towards a wider audience, the relevance would be that people—not only high school students, but also adults—



can learn more about sexual health that can keep them safe.

Policy/Cultural Factors

During major events, such as pandemics, adults who practice sexual intercourse may be negatively affected. This is because resources became limited. For example, if a law is placed in a country prohibiting its citizens from leaving their house, then their access to sexual health resources will become limited; unless an intervention plan is tested and set in place (Manwong et al., 2022). Policy interventions cause institutional change. In terms of sexual health, a policy intervention researched in Thailand, resulted in the implementation of an edutainment program that was created for a virtual audience (Manwong et al., 2022). The study was divided into two phases. Phase 1,

titled “Phase 1 quantitative phase” a total of 4654 middle school students residing in the 8th grade were recruited across 71 schools in the Eastern region of Thailand. This region is located in a rural province that is a major agricultural producer of fruits (Manwong et al., 2022).

The researchers concluded that the sexual health literacy (SHL) scores for their focus group were significantly low (Manwong et al. 2022). This prompted the creation of an edutainment program that was accessible to children in the region, as well as netizens (Manwong et al., 2022). In itself, the research was able to educate academic professionals about the importance of health literacy, further implementing a policy that regarded sexual health literacy as a requirement for adolescent youth in their community (Manwong et al., 2022). By

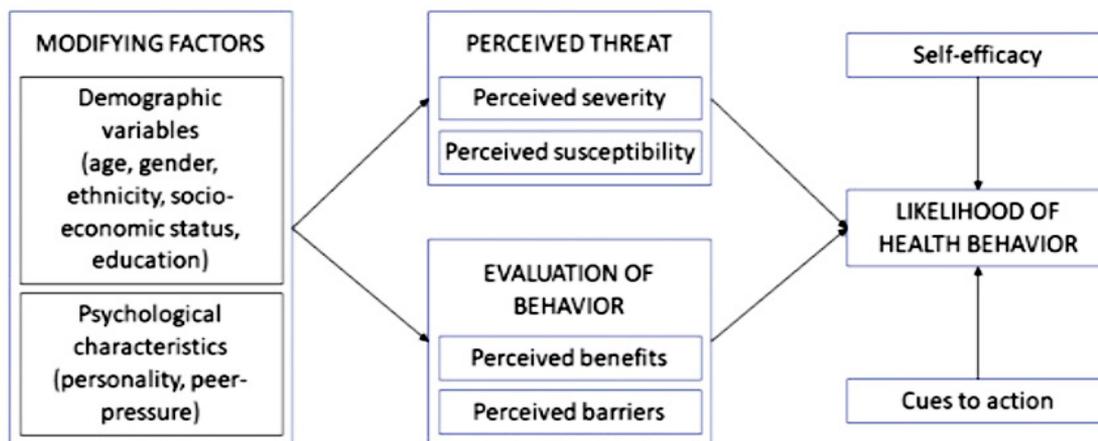


Figure 1 Health Belief Model Kerry McKellar and Elizabeth Sillence, 2020, a schematic representation of the health belief model.



implementing a policy like this, students may be able to develop their understanding of sexual health literacy at an early age, equipping them with a medical lexicon that is usable in, likewise, medical facilities.

The limitations in this intervention involved issues participants had accessing resources. These are telehealth resources that are inaccessible or non-feasible for some age ranges (Manwong et al., 2022). This could be due to physical and resource constraints such as limited access to a library or personal technological items. Access to in-person clinics, in terms of COVID-19's early effects, could be limited.

Major Contributors: A Summary

All these factors come together to slowly influence one another - more specifically, the intra/interpersonal factors are composed of professionals working one-on-one with individuals surrounding sexual health education, which in turn impacts the community factors to have less public hesitancy surrounding the topic of sex. This in turn impacts the organizational factors to access resources that support one having sexual health issues, which also impacts the policy/cultural factors to make people more prepared to have sexual health supplies - just in case the government restricts access to them. Based on all this information, the health belief model can guide sexual health issues prevention programs and promote modern and detailed information - surrounding preventing sexual health issues. Figure 1 provides a visual representation of this model.

Potential Solutions

Proposed Program

A multifaceted approach that facilitates the depth of sexual health literacy should combine education, accessibility, and destigmatization. The program, "Consider Me" includes

components that address the characteristics of an inclusive environment, further establishing its versatility. "Consider Me" could be integrated as a sexual health education curriculum in, first, academic settings - second - medical settings such as clinics, hospitals, and dental facilities, and - third - non-medical facilities. Through workshops translated into the context of its presented setting, "Consider Me" will cover the anatomical and physiological functions of humans, address contraindications of drug use in the context of sexual arousal (such as poppers, cocaine, etc.), as well as fostering a supportive environment through group discussion. Additional resources, such as pamphlets, and readings such as articles in physical or digital form, may be presented to participants.

Considerations for Implementation

To optimize paramount support for participants, implementing a community-based participatory framework may significantly impact participant attitudes toward intervention programs. Thus, equipping the intervention with factors such as cultural sensitivity, inclusive language, promoter training initiatives, and parental or guardian involvement can influence a collectivist environment.

Cultural sensitivity is crucial for program development. This includes assessing the demographic of individuals in a particular population to further analyze social discrepancies within a community. While analyzing from a collectivist perspective, it is important to cultivate awareness of individual experiences. To recognize the individual first is to widen the perspectives surrounding a successful program. If a cohort of researchers were to conduct sexual health research within a community, without their voices being the centerpiece of the study, then the program would be cultivated and implemented with subliminal undertones of biases. A professional team may have years of research about the topic at hand, ultimately, making their claims, results,



Badr, Kim, Van Vuitton

and overall experimentation reliable. However, by acknowledging community voices within the context of a professional research project, power can be placed in both directions rather than one.

The use of inclusive language is a key factor in program communication. This can be developed through a community-based lexicon in which professionals and community members explore the common terms associated with cultures, traditions, friends, descriptors, etc., within the context of members' communities. By employing language that aligns with the literacy level of all participants, the development of the program will be capable of mitigating bias from a professional perspective, and influencing the overarching theme of understanding. This approach facilitates clear communication between both parties. Furthermore, it influences the successful trajectory of the program's creation and implementation.

Equipping promoters or program leaders with equitable and informational training sessions can establish purpose and meaning for them, the program, and the participants. Refraining from training sessions that result in burnout is accomplished through promoter opinions about ways in which information could be relayed with more engagement and fulfillment. Promoter training is also an avenue that can influence the trajectory of the program's content.

In addition to community involvement, promoters can identify ways in which sexual health education can be taught to the transgender community. Put differently, how could the program be established in a way that includes all bodies within a community without diminishing or misrepresenting their identities? Therefore, adequate training contributes to the overall effectiveness and sustainability of the intervention.

Addressing familial relationships and involving parents or guardians in the program is essential for participating minors and

adolescents. To commit to the engagement of all community members, it is important to consider parental involvement as a key determiner in a child's development, as well as the type of information they are taking into consideration, in terms of sexual health education. In a hypothetical situation, sexual health education may be divided. This would be influenced by community members, including parents, and promoters.

If a parent or guardian is comfortable with allowing their child to participate in a sexual health class that corroborates multiple perspectives from various communities, including transgender, female, and male identities, then their child will be placed in consideration to their request. Contrastingly, if a parent or guardian feels as though they may not be comfortable with courses characterized by those gender categories, and would rather their child focus on their anatomies, then that request would be respected. The goal of this perspective is to facilitate the inclusion of all community members, regardless of their political and religious stance.

Review of Program Effectiveness

To effectively assess the program, a randomized controlled trial may be a plausible scientific experiment to incorporate; especially because qualitative and quantitative results are better assessed this way regarding the context surrounding the program. Conducting the experiment in school settings provides a linear flow of data. This is because student bodies primarily remain static within an academic term. Briefly, the steps of the experiment will be conducted in the following order: gathering data, randomly assigning one group with the intervention, and the other, a general sexual health education program, assessing individual progress, and collecting and dissecting data.

Participants will be gathered from two different schools. An initial analysis will be



conducted to identify disproportionate outcomes based on gender and grade level distribution. A survey will be relayed to academic bodies to facilitate its dispersion to students. It will include information about gender identity, religious affiliations, and accommodations, short answer responses about their current understanding of sexual health terms; in which, a list will be presented, and a numeric scale, spanning from 1 to 5, will be used to determine their knowledge. The survey will be presented to parents, students, and prospective promoters.

Following this, participants will be randomly assigned to either the variable group, receiving the intervention, or the control group, exposed to a general sexual health education program. The general sexual health education program will include information regarding a basic view of anatomy and physiology, puberty and development, contraception and reproductive health, sexually transmitted infections (STIs), consent and communication, healthy relationships, mental and emotional well-being, and medical literacy. This program will be delivered in a classroom, as with the intervention. However, the intervention will be community focused. Unlike the controlled group, discussions will be had by students, professionals, and community members in the variable group. Open environments would facilitate this approach. This includes, but may not be limited to, museums based on the human anatomy, interdisciplinary collaborations with other areas of study, such as music, to add a more creative approach to the curriculum, and visits to medical facilities.

To assess individual progress, surveys will be administered every two months. The program will last 6 months. These surveys will gauge individuals' development, in terms of attitude and knowledge, of the curricula.

The subsequent phase involves the collection of data, themes, statistical patterns, and the overall effectiveness of the program in

comparison to the outcomes observed in the control group. This approach aims to provide a focused evaluation regarding community-based participatory research.

Potential Impact

By naming the program "Consider Me," our main goal is to ensure that every participant's genetic makeup, intellectual ability, along other important factors that make an individual authentically them, are considered. Adolescents, adults, and seniors among others, need to be made aware of the importance of their sexual identity and orientation. As undergraduate researchers, we believe that by implementing a program like "Consider Me" in varying settings, directional achievements could be reached; both by researchers and participants. These include but are not limited to individual empowerment, stigma reduction, and preventing (sexual) health issues.

By placing the power in the hands of community members, students, and promoters, individuals may recognize the uniqueness of their bodies through the knowledge they gain from the program. This empowerment stems from the understanding of the genetic, physiological, psychological, and ecological self, stimulating self-appreciation and confidence.

Additionally, the program aims to reduce the stigma surrounding sexual health. Incorporating community voices in the research cultivation and implementation process can reduce individual stigma about research, as a profession. This inclusive approach challenges misconceptions while promoting open dialogue.

Another outcome anticipated is the reduction of sexual health issues. The program may help reduce rates of STIs, unintended pregnancies, and scenes of sexual violence. Through close collaboration with parents, teachers, professionals, and students, the program can produce successful outcomes. Furthermore, introducing the concept of sexual health



Badr, Kim, Van Vuitton

education at a young age can prepare young adults and adolescents with the proper tools to establish a sense of

Conclusion

By recognizing these achievements, we envision the fruition of the program, “Consider Me,” to be adapted into various formats. These being, asynchronous or virtual translations through Zoom, academic software such as Canvas, or experimentation with the metaverse via virtual reality equipment. Moreover, we hope this program serves as a catalyst for sexual health advocacy among community members. By creating a culture of inclusivity through informed dialogue, acceptance, and empowerment, a positive ripple effect that transcends the program’s boundaries will contribute to an enlightened and proactive approach to sexual health in diverse communities.

References

- Aunyapat Wiwatkamonchai, (2023). Youths’ Perceptions Regarding Access to Sexual and Reproductive Health Services. *Pacific Rim International Journal of Nursing Research*, 27(1), 121–137. <http://offcampus.lib.washington.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=ccm&AN=160864977&site=ehost-live>
- Barikani, A., Samani kia, M., Khoshkchali, A., & Mirzadeh, M. (2023). Relationship between health literacy level and sexual function in women in the Northwest of Iran in 2020- a cross sectional study. *BMC Women’s Health*, 23(1), 1–6. <https://doi-org.offcampus.lib.washington.edu/10.1186/s12905-023-02322-2>
- Centers for Disease Control and Prevention. (2021, November 15). About Teen Pregnancy. CDC. <https://www.cdc.gov/teenpregnancy/about/index.htm#:~:text=The%20US%20teen%20birth%20rate,decrease%20of%204%25%20from%202018.>
- Centers for Disease Control and Prevention. (2023, July 11). What is health literacy? *Centers for Disease Control and Prevention*. <https://www.cdc.gov/healthliteracy/learn/index.html>
- Chen, M., Zimmer, C., Huang, S., Tian, R., Yang, B., & Li, M. (2023). The effectiveness of an online sexuality education module in promoting sexual knowledge and attitude change: a cluster randomized controlled trial. *Health Education Research*, 38(2), 119–138. <https://doi.org/10.1093%2Fher%2Fcyad009>
- Manwong, M., Thongnopakun, S., Rodjarkpai, Y., Wattanaburanon, A., & Visanuyothin, S. (2022). Sexual health literacy and preventive behaviors among middle school students in a rural area during the COVID-19 situation: A mixed methods study. *Health Promotion Perspectives*, 12(2), 178–185. <https://doi-org.offcampus.lib.washington.edu/10.34172/hpp.2022.22>
- Mckellar, K., Sillence, E. (2020). A Schematic Representation of the Health Belief Model. ScienceDirect. <https://www.sciencedirect.com/science/article/pii/B9780128169698000023>
- Scull, T. M., Dodson, C. V., Geller, J. G., Reeder, L. C., & Stump, K. N. (2022). A Media Literacy Education Approach to High School Sexual Health Education: Immediate Effects of Media Aware on Adolescents’ Media, Sexual Health, and Communication Outcomes. *Journal of Youth & Adolescence*, 51(4), 708–723. <https://doi-org.offcampus.lib.washington.edu/10.1007/s10964-021-01567-0>
- Vamos, C. A., Thompson, E. L., Logan, R. G., Griner, S. B., Perrin, K. M., Merrell, L. K., & Daley, E. M. (2020). Exploring college students’ sexual and reproductive health literacy. *Journal of American College Health*, 68(1), 79–88. <https://doi-org.offcampus.lib.washington.edu/10.1080/07448481.2018.1515757>
- World Health Organization. (2023, June 2). Adolescent pregnancy. WHO. <https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy>



AUTISM: IS AWARENESS THE SAME IN JAPAN AND KOREA?

Shakambari Ramachandran

ABSTRACT: There have been studies on autism as well as other forms of neurodiversity in the United States, but less is known about how other countries fare with awareness of these disorders. This paper is meant to look at how much the public in other countries know about this information and how they will treat people based on their behavior. Autism is the primary focus of this research because there is more information available about this topic on a global scale. As it is a developmental function that affects behavior, the actions of affected individuals will vary. Korea and Japan were chosen for the setting of this topic, since they are known to be well-developed countries and would have a greater chance of having the resources needed for those who are neurologically diverse compared to other countries.

Keywords: Autism, Awareness, Japan, Korea, Neurodiversity

Introduction

Through my research, I have surmised that neurodiversity is a word that has many meanings, and the most important aspect is that it is about people that are different in how they think and act. It can be considered as an umbrella term for various kinds of disorders, with one such disorder being autism spectrum disorder (ASD), better known as autism. How autism is seen can differ based on the culture of the country. Behaviors that are considered autistic in the U.S. are not viewed in the same manner as they are in Japan, and such behaviors can even be considered normal within the social standards of Japanese culture (Atherton et al., 2023). That is not the case for the rest of the world. In Korea, the culture can make it more difficult for autistic people to fit in because of how different they can act from the rest of the population. When compared to the United States, there is more stigma against those with ASD in Korea (Kim et al., 2022). The reason for this difference could be because there are different levels of support people need on the autism spectrum, which affects how they adapt

to their environment. A few reasons I have identified in my research that have contributed to this issue would be lack of information about the subject, social norms in different cultures, and preconceived notions about ASD.

As a result of the factors listed above, people who are on the autism spectrum struggle to be seen, while it is already difficult for them to communicate with people (Sumiya, 2018). For people who have autism to be understood and gain assistance, more knowledge and awareness of ASD needs to be spread to the public of South Korea and Japan. Doing so would improve the treatment of those with autism in these countries and could lead to people gaining more support in managing their daily lives.

Methodology

To research this project, I wanted to narrow my focus to specific countries because of time constraints. Since there seems to be many studies done on several types of neurodiversity in many places, deciding what I wanted to make the main point was a struggle. When I first started



Ramachandran

my research, the topic that came up the most frequently regarding neurodiversity in different countries was autism, which is what prompted my interest. The next step I took to make my research more manageable was to choose a few countries instead of the whole world, so I decided on Japan and South Korea, because I knew little about their views on autism and wanted to explore that.

Unfortunately, when I decided to choose Japan and South Korea as the countries I would focus on for ASD, it created some obstacles for me in my research. A lot of the content I found would not have the information I was looking for and would not even be accessible through my computer. This caused me to take more time in finding sources. From there, I would identify sources that mentioned the cultural environment, the perspective of a person with ASD, and the public's thoughts on said information about them. Many of the sources I found were qualitative, but there were some which had quantitative data. I focused on the population of those diagnosed with ASD, as well as those of the general population, who are not likely to be familiar with said topic in order to gain information on their overall awareness of neurodiversity.

The databases I used for this research were the UW libraries, Google Scholar, and non-governmental organizations (NGO) online to see how those with ASD are supported. Most of my sources are through the UW library database. This research is meant to give an idea of what people think and feel in their respective countries regarding autism. It does not speak for other countries aside from South Korea and Japan. My goal was to analyze these sources and organize what I found in a manner that summarizes my findings.

Interdisciplinary Statement

The interdisciplinary parts of this topic are the common factors that cause a lack of awareness.

This includes not understanding what autism is, how social norms affect perception of autism, and preconceived notions about ASD. This overlaps with ideas in different subjects. All these elements require information and experience from different fields. A lack of knowledge and preconceived notions can lead to issues in education that need to be addressed, or it can lead to the issue of not having the technology needed to spread that information, issues in communication, and so on. The aspect of social norms is connected to many different fields of study, like psychology, sociology, law, culture, and more. For example, the culture of a country affects the social norms and law, which in turn affects how people think and act, also affecting the structure of the society that takes place. There are many connections between the problems caused by autism awareness, and it is the combination of these factors that makes this topic an interdisciplinary issue.

Literature Review

Research in Japan and South Korea have independently shown a difference of awareness about autism in each country. For South Korea, it was found that only 25% of the population is aware of ASD (Rim et al., 2019). As for Japan, their population's overall awareness for recognizing autism was found to be 45.8% (Koyama et al, 2009). While these results were approximated based on participant recognition of autistic traits, it can be concluded awareness in both countries can still be improved to greater lengths. According to the ION, the Institute of Neurodiversity (2023), there are over 100 countries that are a part of their organization, and Japan and Korea are not a part of this. This only continues their lack of information on such disorders as ASD. Both Japan and South Korea would need to improve awareness to alter how their social norms affect autistic people.

In Japan, the social scripts of people's interactions with others affects how they treat those who have ASD. Compared to the



United States, Japan places more emphasis on conversations that follow a standard pattern, which can make it less difficult for autistic people to follow along. The repetitive nature of Japan's social scripts creates a pattern that those with autism can use to adhere to societal norms (Atherton et al., 2023). This means that social scripts in Japan are less free flowing, allowing people with autism to converse more easily. They will blend in easier in Japan compared to the United States. Socialization can be difficult in homogeneous societies, as it makes it challenging for those with ASD to create relationships.

In South Korea, it was found that cultural tightness (an emphasis on social norms) made it harder for those who are autistic to socialize with others, especially towards those who are not autistic. The reason for this is because the population in Korea is more of a homogeneous group, which means that there will be stronger norms established than if the population was a heterogeneous group (Kim et al., 2022). A homogeneous population allows less leniency in outlying behaviors due to how similar the population is to each other. This also contributes to the Social Identity Theory, where those who follow the social norms are favored and a part of the in-group, while people with autism are pushed into the out-group (Kim et al., 2022).

For those on the autism spectrum, socialization is challenging to different degrees. Difficulty in communication creates similar negative emotions among those with autism. There is a study in Japan where students with ASD found it difficult to make friendships with others due to social and communication challenges. They experienced loneliness and anxiety when making friendships as well as distress when it came to "masking" their irregular behaviors (Sumiya et al., 2018). It was already found that there is less information known by the public about autism in Japan, but if the other students had knowledge about it, they could have interacted differently with students with ASD. More isolation could

have been avoided. Knowing more about a subject does not necessarily mean that social norms surrounding it will change. Social norms are a factor that can create difficulties for people with ASD, but changing the social norms of an entire country would be unfeasible. Altering people's perspectives at an individual level is a more possible solution.

When PEERS (Program for the Education and Enrichment of Relational Skills) was used in Japan, it was meant to help those with ASD without intellectual disabilities develop their social skills, communication, behavior, and emotional issues. There were positive results to this, and it did not come at the cost of changing an entire country's social actions. PEERS was originally U.S. based, but it was able to be adjusted to fit Japan's cultural context of what is considered normal social interactions and still be successful (Yamada et al., 2020).

While PEERS was successful in its endeavor, there are still misconceptions that cause stigmas against those with autism. People who are not autistic in South Korea were found to be less inclined to interact with those who have ASD compared to the United States (Kim et al., 2023). This public stigma against people with autism can cause them to internalize it, leading to worse mental health. Because there is less information on neurodiversity in South Korea, this affects the misconceptions surrounding autism, causing there to be more stigma (Kim et al., 2023). There are different reasons for such a stigma. Lack of knowledge about the subject is one cause, but the other is the fear of how people will view those who are autistic. It can create a cycle of misunderstandings that will only continue if there is little information spread on the subject. For example, there was a study in Korea about autism that required community engagement, but they found it challenging to collect the required population because of the misconceptions and stigma around the subject (Grinker et al., 2012). There was worry that being identified as a part of the



Ramachandran

autism spectrum would affect life opportunities, like jobs, marriage, etc. (Grinker et al., 2012). Some of these concerns could be solved if there was more education about interactions with autistic people. Many of these worries come from people already connected to those with ASD. Even those who are close to people with autism can have a difficult time understanding them. There was another study in South Korea that was meant to improve occupational therapy by making parents of autistic people learn more about how to properly interact with those on the spectrum (An, 2017). They found that parents better understood their children and were able to connect with them better than before (An, 2017). Being able to understand how to communicate with those on the autism spectrum is an important aspect of awareness when it comes to talking to different kinds of people, but this is only effective if people can be accurately diagnosed with ASD to begin with.

Counter Argument

There can be variations in how it is diagnosed in different countries. Different countries can determine autistic traits differently due to many factors, so there is no clear way to determine if a diagnosis is accurate (Horiuchi et al., 2023). When trying to detect ASD in children in Japan, it was found that there were variations in how they determined autistic traits. Some of these components are non-standardized screenings, lack of skill in organizing healthcare providers, and caregivers' interactions with patients (Horiuchi et al., 2023). If there is already a lack of ability in determining people who have autism, then it defeats the purpose of raising awareness towards public knowledge. If awareness was spread, it would be difficult for a general audience to use that knowledge if all the symptoms found vary (Huang et al., 2023).

Defense of Thesis

It is true that the possibility of a misdiagnosis will always be there, regardless of the

information given, due to the external factors that go into determining autism, but people who are autistic are already on the spectrum. That means that everyone's results will be different even if they do get correctly identified as a person with ASD because symptoms are exhibited differently. There is a wide variation on the autism spectrum, ranging from low to high support needs, and it is based on the symptoms individuals come across. To help with this, there are two main measuring scales that can be used: the Childhood Autism Rating Scale, and the Social Responsiveness Scale. The Childhood Autism Rating Scale has two versions. One is the Standard Version, and the other is the High-Functioning Version. These different versions are meant to help differentiate between distinct parts of the spectrum. The Social Responsiveness Scale is meant to help identify older people on the spectrum (Huang et al., 2023). It is because there are so many different variations of autism that awareness is important. Testing will not always be accurate, but acceptance can still be given regardless of the result found, and that can come from awareness about the subject.

Conclusion

From what can be seen, Japan and Korea could be doing better with their autism awareness. There are people who have struggled with their autism, and the people around them have struggled to understand them. The lack of awareness around autism leads to assumption-based misconceptions that stigmatize the behavior of those with ASD in different social norms. To combat this lack of awareness, the public in Japan and Korea should be educated more on autism as a subject. There are different organizations in the world that assist in spreading awareness of autism and how to interact with people on the autism spectrum. PEERS and the Institute of Neurodiversity are just a few examples, but these are operations that can be used on a global scale. Japan and Korea could use one that is on a smaller scale for



their countries as a starting point for introducing education on the subject. An instance of this is the Autism Society (2023), which is only in use in the United States. It teaches about how there is a spectrum to autism and supports the needs of people on the spectrum by connecting them with resources for employment education, healthcare, etc. Having more programs like this in Japan and Korea would be beneficial to spreading awareness to their populations, and it would help in clarifying any false information about ASD that has been spread, while simultaneously decreasing the stigma in social norms. With increased awareness, autistic people can receive more acceptance for who they are.

Bibliography

- An, S.-J. L. (2017). Parent Training Occupational Therapy Program for Parents of Children with Autism in Korea. *Occupational Therapy International*, 2017, 4741634–4741638. <https://doi.org/10.1155/2017/4741634>
- Atherton, G., Morimoto, Y., Nakashima, S., & Cross, L. (2023). Does the Study of Culture Enrich Our Understanding of Autism? A Cross-Cultural Exploration of Life on the Spectrum in Japan and the West. *Journal of Cross-Cultural Psychology*, 00220221231169945.
- Autism society creating connections for the autism community to live fully. *Autism Society*. (2024, March 22). <https://autismsociety.org/>
- Grinker, R. R., Chambers, N., Njongwe, N., Lagman, A. E., Guthrie, W., Stronach, S., Richard, B. O., Kauchali, S., Killian, B., Chhagan, M., Yucel, F., Kudumu, M., Barker-Cummings, C., Grether, J., & Wetherby, A. M. (2012). “Communities” in Community Engagement: Lessons Learned From Autism Research in South Korea and South Africa. *Autism Research*, 5(3), 201–210. <https://doi.org/10.1002/aur.1229>
- Homepage. ION *Neurodiversity*. (2023, September 12). <https://ioneurodiversity.org/>
- Horiuchi, S., Nomura, O., Curry, L., Kushima, M., Arnold, L., & Yamagata, Z. (2023). ‘Caregivers’ awareness matters’: Call for a child-centred approach to early detection of autism spectrum disorder through well-child visits in Japan. *Child: Care, Health and Development*, 49(6), 985–994. <https://doi.org/10.1111/cch.13107>
- Huang, C.-Y., Chen, K.-S., Lee, K.-Y., Lin, C.-H., & Chen, K.-L. (2023). Different autism measures targeting different severity levels in children with autism spectrum disorder. *European Archives of Psychiatry and Clinical Neuroscience*. <https://doi.org/10.1007/s00406-023-01673-z>
- Kim, S. Y., Cheon, J. E., Gillespie-Lynch, K., & Kim, Y.-H. (2022). Is autism stigma higher in South Korea than the United States? Examining cultural tightness, intergroup bias, and concerns about heredity as contributors to heightened autism stigma. *Autism*, 26(2), 460–472. <https://doi.org/10.1177/13623613211029520>
- Kim, S.Y., Gillespie-Lynch, K. Do Autistic People’s Support Needs and Non-Autistic People’s Support for the Neurodiversity Movement Contribute to Heightened Autism Stigma in South Korea vs. the US?. *J Autism Dev Disord* 53, 4199–4213 (2023). <https://doi.org/10.1007/s10803-022-05739-0>
- Koyama T, Tachimori H, Sawamura K, Koyama A, Naganuma Y, Makino H, Takeshima T. Mental health literacy of autism spectrum disorders in the Japanese general population. *Soc Psychiatry Psychiatr Epidemiol*. 2009 Aug;44(8):651-7. doi: 10.1007/s00127-008-0485-z. Epub 2008 Dec 18. PMID: 19096742.
- Kim, S. J., Park, S., Lee, Y., & Kim, C. E. (2019). Mental Health Literacy of Autism Spectrum Disorder in Korea: Recognition, Etiology, Treatment. *Psychiatry investigation*, 16(3), 213–219. <https://doi.org/10.30773/pi.2019.01.10.2>
- Sumiya, M., Igarashi, K., & Miyahara, M. (2018). Emotions surrounding friendships of adolescents with autism spectrum disorder in Japan: A qualitative interview study. *PLoS One*, 13(2), e0191538–e0191538. <https://doi.org/10.1371/journal.pone.0191538>



Ramachandran

Yamada, T., Miura, Y., Oi, M., Akatsuka, N., Tanaka, K., Tsukidate, N., Yamamoto, T., Okuno, H., Nakanishi, M., Taniike, M., Mohri, I., & Laugeson, E. A. (2020). Examining the Treatment Efficacy of PEERS in Japan: Improving Social Skills Among Adolescents with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 50(3), 976–997. <https://doi.org/10.1007/s10803-019-04325-1>



FABRICATED CUTS: IS CULTURED MEAT A MORE SUSTAINABLE MEAT ALTERNATIVE?

Emma Uderski

ABSTRACT: Cultured meat is an innovative protein alternative that is just hitting the markets in Asia and the Middle East. Produced by harvesting cells from young animals and culturing them on a scaffold, cultured meat theoretically provides a cruelty-free meat alternative that mimics the taste and texture of meat. Preliminary research suggests that cultured meat production could be more environmentally friendly than producing meat and meat alternatives and could reduce our environmental impact - notably land use and greenhouse gas emissions. However, since cultured meat is a relatively new area of study, there needs to be more definitive research in some areas, such as how energy consumption would affect environmental impact. This paper analyzes current research to explore the possibility of cultured meat as an environmentally friendly protein alternative.

Section I: What I Know, Assume, or Imagine

I chose to do my research on the risks and rewards of producing and consuming cultured meat (more commonly known as cell-based meat). With a quick Google search on this topic, I found that the terms for cultured meat have been changed several times throughout their development - it has been called healthy meat, slaughter-free meat, clean meat, synthetic meat, cell-based meat, and many other names before the industry settled on the neutral term “cultured meat.” I first heard of cultured meat in the news from a National Geographic Kids article I read in my science class in 5th grade. Since then, it has become a personal fascination of mine to find out how someone would grow meat in a lab without killing an animal. I was immediately enamored with the implications of lab-grown meat and wanted to see how it measured up to “natural” meat in terms of taste and texture, but also with the implications that a new way to produce food may have on the existing production chain. On top of this, in a health and wellness class I took in my freshman year of high school, we did a unit on nutrition.

It included a lot of information about the meat industry—we learned that the livestock industry produces a very large chunk of the world’s greenhouse gases, which in turn contributes heavily to global climate change.

Right now, most people who are environmentally conscious adopt dietary changes such as switching out animal products for plant-based alternatives, but cultured meat has the potential to offer consumers another choice. Through some baseline Google searches, I gathered that the commercial sale of cultured meat is not yet widely available, but Israel, Singapore, and the United States have already approved cultured meat to be sold to the public. Producing cultured meat on a large scale may help to mitigate some of these greenhouse gas emissions so other efforts to alleviate the effects of climate change may see some results. Climate change is one of the biggest concerns for the future, and in trying to build the best future possible for our planet, we should be considering every possibility that may ease the pressure on future generations. Finding new and innovative ways to address the negative



Uderski

environmental impacts of the meat industry is one of the most significant ways that we can do this and create hope for the future. However, I imagine that producing cultured meat may have some drawbacks - perhaps it produces a lot of waste or is very energy-intensive, which would make it unviable as an environmentally friendly alternative to traditional farmed meat. Through my research to write this paper, I hope to find out more about the environmental impacts that the production of cultured meat may have.

Section II: The Search Process and Discoveries

Part A: The Search Methodology

I started my research with the keywords “in-vitro meat,” “risks,” “rewards,” and “effects” while searching for a reference source on Gale Virtual Reference Library and Academic Search Complete. These search terms were ineffective and provided me with a lot of reference sources that were outdated or had little to no information about cultured meat. Instead, they largely focused on the effects of the meat industry in general and glossed over cultured meat as a potential solution due to most reference sources having a publishing date preceding the year 2010. I found one reference source that gave me some different terms for cultured meat and reviewed my keywords from what little I found, narrowing my search terms to “cultured meat and environmental impacts,” I also decided to search in subject databases specifically dedicated to the environmental sciences. I found that the Agricultural & Environmental Science Collection and Environment Complete were the most helpful databases for increasing my knowledge about the process of making cultured meat and the current conversation about its potential effects on the environment. After familiarizing myself with what is well-known about cultured meat and its impacts, I refined my search terms to explore areas that are not as certain and incorporated keywords like “energy use,” “land use,” and “plant-based meat

alternatives.” I found the majority of relevant information on my topic from these search terms in the specified databases — other databases yielded reference sources or articles that were not peer-reviewed. On top of that, I noticed that two specific academic journals, *Foods* and *Trends in Biotechnology*, have continued to come up in both databases independently and contain the bulk of the information I have collected in my research. Overall, I have had the most success when using the search terms “cultured meat and environmental impacts” while searching in databases that primarily focus on environmental studies.

Part B: Discoveries and New Information

Cultured meat is still a relatively new topic of study, and therefore there are not very many definitives when it comes to its impact, especially on environmental factors. One of the most significant factors to pay attention to is that the production of cultured meat requires far less land than the more traditional “farmed meat.” Nicolas Treich, an environmental economist, indicates that “[...] animal products in the form of meat, aquaculture, eggs, and dairy use about 83% of the world’s farmland and contribute about 57% of foods’ different [greenhouse gas] emissions while providing only 37% of our protein and 18% of our calories” (35). Compared to the amount of land that producing farmed meat requires, it contributes very little to the world’s collective diet. It could be argued that this use of resources is wasteful and that the vast amount of land being used for livestock production should be repurposed for something more environmentally friendly - such as producing more sustainable protein alternatives like cultured meat and various plant-based proteins. To this point, studies have found that cultured meat has been found to require significantly less land than farmed meat. Jennifer Penn, a Master of Law in international and environmental policy, states “Lab-grown meat, also known as cultured meat, provides an alternative that may address many of the



environmental harms stemming from livestock production. Cultured meat requires 99 percent less land [...]” (104). Such a large reduction in land use poses a solution to the meat industry’s inefficient use of space - if cultured meat were to rise in popularity, it becomes feasible that demand for farmed meat could reduce, which would allow much of the land that is currently being used to produce farmed meat to be used for more sustainable purposes. Since the production of cultured meat can be produced using very little land, cultured meat can free up a lot of land to be used for other purposes, thereby providing a new meat alternative that is more sustainable in the long run than farmed meat.

Another factor to consider as research is conducted is that the production of cultured meat has been shown to yield less greenhouse gases than farmed meat. Karoline Wowra, a researcher at Dechema Research Institute’s biotechnology division, states: “Based on different scenarios, [cultured meat] production was benchmarked against conventional protein products. The study revealed that [cultured meat] in a baseline scenario has a lower carbon footprint compared with dairy and cattle beef” (1207). Though Wowra’s findings are from a preliminary study and cannot account for real-world factors (like replacing or converting existing infrastructure), they still indicate that cultured meat has a reasonable potential to reduce the planet’s carbon emissions. Since cultured meat could potentially reduce greenhouse gas emissions from meat production, it addresses one of the largest sustainability concerns about the meat industry. This reduction could ease concerns about worldwide sustainability practices since the meat industry is such a huge contributor to greenhouse gas emissions worldwide. Additionally, the process of producing cultured meat can be further improved in order to make it more sustainable. A study done on the possible environmental impacts of cultured meat by Tuomisto and M. Joost Teixeira de Mattos, researchers in the life sciences at the University of Oxford and the University of Amsterdam

respectively, asserts: “As the majority of GHG emissions during the production of cultured meat are associated with the use of fuel and electricity, the emissions could be reduced by using renewable energy sources” (6121). Instead of using nonrenewable energy sources, such as natural gas or coal, the energy required to produce cultured meat could be sourced from wind, solar, water, or any other source of renewable energy - which would reduce its greenhouse gas emissions even further. Not only does this mean that cultured meat will continue to improve alongside research on renewable energy, but the production of cultured meat can also be altered to fit the infrastructure of any country, allowing those that are lacking in natural resources to become more self-sustaining. Cultured meat produces less greenhouse gas emissions than farmed meat and its emissions can be improved by utilizing a variety of renewable energy sources - which means that popularizing cultured meat could vastly reduce global carbon emissions for the vast majority of the globe, given the right infrastructure.

In addition to producing less greenhouse gas than farmed meat, cultured meat has also been shown to significantly reduce the yield of greenhouse gas emissions when compared to plant-based meat alternatives. Diana Bogueva and David McClements, researchers in alternative proteins and plant-based foods (respectively) state: “Embracing a plant-centric diet in the wealthiest nations, despite representing just 16 percent of the world’s population, has the potential to reduce greenhouse gas emissions by approximately 61 percent” (1). If most people adopted a plant-based diet, the planet’s carbon emissions could be reduced to over half of what it is today. A reduction in greenhouse gas emissions of that magnitude would be considered a monumental victory in environmental science, as fewer greenhouse gases in the atmosphere would lead the symptoms of climate change to be far less pronounced and allow climate scientists



Uderski

to focus on other solutions for climate change. However, even though plant-based proteins could reduce greenhouse gas emissions by a significant margin, cultured meat could further reduce emissions from farmed meat production and consumption. Tuomisto and Teixeira de Mattos' study on the environmental impacts of cultured meat also found that cultured meat yields 78-96% less greenhouse gas emissions than farmed meat per 1000kg produced (6117). This means that while consuming plant-based proteins over farmed meat could reduce greenhouse gas emissions by about 61 percent, prioritizing cultured meat over farmed meat may be able to lower greenhouse gas emissions by an additional 17-35 percent. Although plant-based proteins are already a huge improvement in reducing carbon emissions through the meat industry, cultured meat has the potential to further innovate in the field of meat alternatives and lower the planet's greenhouse gas emissions significantly. Decreasing greenhouse gas emissions so significantly may lead to a climate victory similar to closing the hole in the ozone layer - proving that taking action against climate change has definite positive impacts. Cultured meat yields far less greenhouse gas emissions than plant-based meat alternatives, making it a more sustainable alternative to farmed meat.

However, there is still much about cultured meat that is not certain. Researchers are still determining how energy-efficient the production of cultured meat is. While the study done by Tuomisto and Teixeira de Mattos found many beneficial things about producing cultured meat, it also found that "Energy requirements of cultured meat production are lower compared to beef, sheep, and pork, but higher compared to poultry" (6120). Since producing different kinds of cultured meat or cultured animal products requires different levels of energy, estimating whether or not producing cultured meat requires less energy than farmed meat is difficult. The amount of energy required to produce enough cultured meat for consumers may fluctuate with demand or availability of resources - if

consumers prefer a product that is particularly high in terms of energy consumption, cultured meat could potentially require much more energy than farmed meat. Additionally, the demand for certain products may fluctuate, so the energy required to produce cultured meat nationally and globally may be inconsistent and hard to predict. Not only may the energy consumption of cultured meat be hard to predict, but there may also be a high baseline energy cost to producing enough cultured meat for consumers. Robert Goodland, an environmental advisor to the World Bank Group and tropical ecologist, asserts that "Cell culture in modern laboratories is incredibly energy-intensive, [...] it requires constant control of temperature and humidity, unlike outdoor livestock production" (35). Attempting to create a synthetic meat product with all the qualities of naturally grown meat is a highly intensive process, which may require a lot of energy. If researchers were to compromise on the quality of cultured meat to minimize its energy requirements, consumers may end up with a subpar product, but if researchers prioritize the quality of cultured meat, there is a strong possibility that cultured meat production will require much more energy to produce than traditional meat or other meat alternatives. This would disqualify cultured meat as a viable eco-friendly meat alternative since producing plant-based proteins already requires less energy than farmed meat. However, there is no consensus in the research on cultured meat's energy requirements, so it is difficult to draw any quantitative conclusions. There is still much to be researched about cultured meat and how it could impact the world's infrastructure, particularly how much energy large-scale production of cultured meat would require.

Section III: Conclusions About What I Discovered

In the process of researching the environmental impacts of cultured meat, I realized how little definitive research there was on cultured meat in general. Before I did my research, I had assumed



that there would have been more research and some major developments in the field since cultured meat was proposed as a potential product. However, I found that researchers are still looking into a lot of the effects of cultured meat, such as how much energy the large-scale production of cultured meat is going to take. Even the positive effects that most people agree on (like the reduction in greenhouse gas emissions) are still only supported by preliminary research and theory. Most sources that I read, namely the study done by Tuomisto and Teixeira de Mattos and the article written by Nicolas Treich, conclude that cultured meat needs far more research for any findings to be concrete. Nonetheless, theory and preliminary studies indicate that the effects that I imagined cultured meat would have on the environment are still possibilities - it has been shown to greatly reduce greenhouse gas emissions as opposed to farmed meat, as well as current meat alternatives. I was also correct in assuming that a big concern around producing cultured meat is around how much energy it may or may not use, even though I did not predict that it would be highly debated. On top of this, an unexpected possible benefit of cultured meat is that it requires much less land than farmed meat, which is beneficial for the environment because it allows livestock farmland to be repurposed into farmland for environmentally friendly meat alternatives and/or biodiverse ecosystems. Overall, my new perspective is that there are many possible benefits to shifting our focus to cultured meat in the future, however, there is still a lot of conflicting data being reported, which does not make me confident that cultured meat is ready to be on the market. For me as a consumer to feel comfortable in purchasing cultured meat as a sustainable choice, I would need to definitively know the environmental impact that cultured meat has and not just consider the potential positives and negatives. More research needs to be done and published on this subject - particularly any research that could confirm or deny the amount of energy that

cultured meat requires to produce. However, confirming the findings of the preliminary studies that showed other possible benefits (such as reducing greenhouse gas emissions and land use) through more research would also be highly beneficial, as it would cause cultured meat to be more appealing to consumers if researchers find that the production of cultured meat does come with a high energy cost. Cultured meat needs far more research and development over a broad range of factors before it is ready to be a viable substitute for farmed meat.

Works Cited

- Bogueva, Diana, and McClements, David J. "Safety and Nutritional Risks Associated with Plant-Based Meat Alternatives." *Sustainability*, vol. 15, no. 19, 2023, N.PAG. ProQuest, doi:<https://doi.org/10.3390/su151914336>.
- Goodland, Robert. "A Fresh Look at Livestock Greenhouse Gas Emissions and Mitigation." *Impact of Meat Consumption on Health and Environmental Sustainability*, edited by Talia Raphaely and Dora Marinova, Information Science Reference, 2016, pp. 27-42. *Practice, Progress, and Proficiency in Sustainability*. Gale eBooks, link.gale.com/apps/doc/CX7424900014/GVRL?u=wash_main&sid=bookmark-GVRL&id=5431a9b7. Accessed 7 Dec. 2023.
- Penn, Jennifer. "Cultured Meat": Lab-Grown Beef and Regulating the Future Meat Market."
- UCLA Journal of Environmental Law & Policy, vol. 36, no. 1, 2018, pp. 104-126. *EBSCOhost*. doi:<https://doi.org/10.5070/L5361039902>.
- Treich, Nicolas. "Cultured Meat: Promises and Challenges." *Environmental & Resource Economics*, vol. 79, no. 1, May 2021, pp. 33-61. *EBSCOhost*. doi:<https://doi-org.offcampus.lib.washington.edu/10.1007/s10640-021-00551-3>.
- Tuomisto, Hanna L., and M. J. de Mattos. "Environmental Impacts of Cultured Meat Production." *Environmental Science & Technology*, vol. 45, no. 14, 2011, pp. 6117-6123. ProQuest, doi:<https://doi.org/10.1021/es200130u>.



Uderski

Wowra, Karoline, et al. "Estimating environmental impacts of early-stage bioprocesses." *Trends in biotechnology*, vol. 41, no. 9, 2023, pp. 1199-1212. ProQuest, doi:<https://doi.org/10.1016/j.tibtech.2023.03.011>.



ECHOES OF RESILIENCE: UNVEILING THE TAPESTRY OF SUFFERING IN PALESTINE

Hoda El Anany

ABSTRACT: The purpose of this paper is to stress the urgency for humanization of Palestinians in the current genocide occurring in Palestine. This paper will use two approaches to the current genocide: one being humanitarian and one being legal. In the first half of the paper, there will be a brief history of Palestine and Israeli relations, emphasizing the implementation of Israel within indigenous Palestinian land. Discussing this history will show that the events unfolding in Palestine are not a sudden occurrence but rather the culmination of 76 years of systematic oppression. Western media outlets refer to the Palestinian genocide as the “Israeli-Hamas War”; using the official definitions of war and genocide, this paper will argue that this is not a war, but a genocide. Specifically, this paper will prove how the atrocities occurring in Palestine are a genocide under the Geneva Conventions in detail. This paper utilizes numerous statistical insights to provide a comprehensive understanding of the living conditions Palestinians are subject to, emphasizing the need to speak up for our Palestinian brothers and sisters, as they are in grave danger.

Introduction

“Arabs, for example, are thought of as camel-riding, terroristic, hook-nosed, venal lechers whose undeserved wealth is an affront to real civilization.” (Said, 1978.) This quote from Edward Said summarizes the justification of exploitation and colonization of resources and land of the Arabs. The “real civilization” that Said was expressing, is the common colonizer justification of genocide because the indigenous people of the said land “don’t know how to take care of it.” With this belief, Arabs needed Western settlers to show them how to be civilized people. Today, the Middle East is known to be a never ending “war-stricken” zone and the people themselves are uncivilized, extremists, and terrorists. So, the events currently happening in Palestine – why should we care that those Arabs are at war?

According to the United Nations, over 30,000 people have been murdered at the hands of Israeli forces and 80% of the population has been displaced from their homes, leaving them with nothing and nowhere to go since October

7th. The civilians are being starved, forcing them to eat grass, animal feed, and weeds to survive. The 2023 – 2024 academic school year was cancelled due to the 4,327 students murdered, leaving 625,000 students out of school, 346 schools destroyed, and 236 teachers and administrators killed (Al Jazeera, 2023.) The children of Palestine have been protesting in the streets, calling for a cease-fire and food aid, holding signs addressed to the world to hear their cries for help. The tragedy of this situation is that our society has accustomed to just seeing the numbers. We don’t really process what information was just relayed. It just becomes a poorly written headline, and we move on with our lives.

The purpose of this paper is to stress just how important and powerful our individual voices are and how we all have a duty as human beings to speak up for what’s right during these devastating times. In addition to a humanitarian approach, I will take a legal and policy-based approach highlighting clear violations Israel is committing and how Israel is not above the law



El Anany

and must be held accountable for its actions. The first step to this is awareness, which is what I will provide.

Section 1: Why Should We Care About Palestine as Human Beings?

Brief Overview of the History of Palestine and Israel

While under occupation from Britain, the land of Palestine was pledged to be “a national home for the Jewish people” by the Balfour Declaration in 1917. This declaration promised Jews a land where the natives made up more than 90 percent of the population, which was just one of the many conflicting promises made by the British. Secondly, the British had already promised Arabs independence in the 1915 Hussein-McMahon correspondence, in exchange for Arab assistance in opposing the Ottoman Empire. The third contradiction was the secret Sykes-Picot Agreement of 1916 between the British and the French. In this agreement, Britain and France were to divide up the Arab territories from the former Ottoman Empire. As shown, these three policies contradict one another and caused tensions between the Arabs and the British since they never intended on holding any of their promises of an established state of Palestine. This is especially problematic as it reveals the West’s intentions and perceptions towards the Arabs. In their mind, it didn’t matter if they betrayed the Arabs; they simply didn’t deserve their land. In November of 1947, the United Nations approved a plan to divide Palestine into Jewish and Arab states, which was against the will of the indigenous Palestinian Arab population. According to the Institute of Middle East Understanding, this plan gave 56 percent of the land to the proposed Jewish state, despite the fact Jews had owned about 7 percent of the private land and made 33 percent of the population. This left 42 percent of Palestine to the indigenous people. When the British mandate was scheduled to end in May of 1948, the state of Israel was created. Backed

by U.S. President Truman, David Ben-Gurion, the head of the Jewish Agency, proclaimed the establishment of the State of Israel on May 14th, 1948.

These actions led to the Nakba, meaning “catastrophe” in Arabic, which was the mass displacement and dispossession of Palestinians during the 1948 Arab Israeli war. Nearly one million Palestinians were expelled from their homeland, deeming them refugees by the new Israeli military. Several dozen massacres were carried out by the Israeli army, killing approximately 15,000 Palestinians, which played a critical role in prompting the flight of Palestinians from their homes. Over 400 Palestinian cities and towns were systematically destroyed by the Israeli army to prevent the return of Palestinian owners (IMEU, 2023). Most Palestinians ended up as stateless refugees in the Gaza Strip, the West Bank, and neighboring Arab countries. This tragic event for the Palestinian people resulted in the loss of their homeland, the fragmentation and marginalization of their national community, and the erasure of the Palestinian identity through the means of ethnic cleansing and genocide. Though the Nakba happened 76 years ago, remaining Palestinians today still lack humanitarian rights and remain subject to hostile treatment.

Living Conditions in Palestine Prior to October 7th

It’s important to understand that the current “war” did not begin with attacks from Gaza. Over the last 76 years, Palestinians have been living in a system of apartheid, another crime against humanity under the Rome Statute of the International Criminal Court, and subject to hostile treatment and discrimination by Israeli forces. From Amnesty International, for example, 68,000 Palestinians living in the Bedouin villages are currently “unrecognized” by Israel, meaning they are cut off from the national electricity, water supply, and targeted for repeated demolitions (Amnesty International,



2022.) Residents of these villages are also cut off from the healthcare and education systems, which have coerced many into leaving their homes, thus forcible transfer. Additionally, Israel has been using administrative detention, holding a person without trial and without committing an offense, on the grounds that they plan to break the law in the future. As this practice is intended to be preventive, it has no time limit. Over the years, Israel has placed thousands of Palestinians behind bars ranging from several months to several years, without charging them or disclosing what “crime” was committed, and without proving the alleged evidence to them or their lawyers. In August of 2022 alone, Israel had been holding over 1,200 Palestinian detainees, the most in 3 decades (AP News, 2023). Following the October 7th attacks, Israel currently holds nearly 7,000 Palestinians in detention (Human Rights Watch, 2023). Children are unfortunately not safe from administrative detention as well. Israeli authorities regularly arrest Palestinian children during nighttime raids, interrogate them without their parents present, and hold them for longer periods before bringing them to a judge. A study conducted by The Association for Civil Rights in Israel in 2017 shows that authorities kept 72 percent of Palestinian children from the West Bank in custody until the end of proceedings. In comparison, only 17.9 percent of children in Israel underwent similar detention. Besides the lack of due process, Israeli authorities have mistreated and tortured Palestinian prisoners for decades. According to a study from the Human Rights Watch, “More than 1,400 complaints of torture, including painful shackling, sleep deprivation and exposure to extreme temperatures, by Shin Bet, Israel’s internal security service, have been filed with Israel’s Justice Ministry since 2001.” (Shakir, 2023). Blockades have also played a big factor in the living conditions of Palestinians. For the last 16 years, Gaza has been under a violent blockage, which severely limits travel, trade, and everyday life for over 2 million residents. With a 50 percent unemployment

rate, Gaza’s living conditions, health systems, and infrastructures have all suffered under the blockade (Abdulrahim, 2023).

Israel-Hamas “War”

Oxford Languages defines a war as “a state of armed conflict between different nations or states or different groups within a nation or state” (Oxford Languages, 2022.) How can we label something as a war when one side doesn’t have the adequate tools needed to equally engage in a war? Palestine has no land army, air force, or navy, and does not have advanced military equipment. In comparison, Israel’s Defense Forces are known to be as one of the most equipped militaries across the globe. Since 2011, Israel has rallied on its Iron Dome missile defense system, worth multi billion dollars (The Economic Times, 2023). It also has tanks, artillery, missiles, fighter planes, and warships in addition to a 2,200 strong arsenal (The Economic Times, 2023). In case this was not enough, Israel has been the largest cumulative recipient of U.S. foreign aid since its founding in 1948, totaling up to about \$300 billion in total economic and military assistance (Master, 2024). In comparison, Hamas has an inventory of light weapons, including improvised and self-made rockets, mortars, and other explosives. Hamas has approximately 40,000 fighters, but the Israeli Defense Forces has over four times the manpower at 170,000 soldiers (Ghaedi, 2023). As you can see, the state of Israel, with one of the strongest militaries in the world, overpowers Hamas’ capabilities of engaging in the war. Additionally, if this war is supposedly targeting Hamas only, why are 30,000 innocent civilians dead despite the fact Israel has one of the most sophisticated armies in the world? If this truly is an attack designated to Hamas, why is Israel bombing Syria and Lebanon? Why is the IDF targeting hospitals, schools, ambulances, refugee camps, which are official war crimes, and several other locations other than Hamas’ bases if this is anything other than a genocide?



El Anany

In comparison, genocide is defined as “the deliberate killing of a large number of people from a particular nation or ethnic group with the aim of destroying that nation or group” (Oxford Languages, 2022.) we have witnessed the murders of 30,000 Palestinians, with many thousands more under the rubble. In the coming sentences, I will provide a load of numbers, identifying the documented destructions and murders from different scopes. Then, I will explain the strategic implementations of these tragedies and how they display a case of textbook genocide. We have seen the carpet bombing of the Gaza Strip with over 40,000 tons of explosives, the destruction of 100,000 homes, and the displacement of 1.7 million Gazans (State Crime, 2024). We have witnessed the murders of hundreds of medics, 31 of Gaza’s 36 hospitals destroyed, two universities in ruins, and at least 76 journalists killed (State Crime, 2024). As of October 31st, Israeli forces have killed all members of over 600 families, removing them entirely from the Palestinian civil registry (Aljamal, 2023). The Israeli military has opened fire on several different occasions for those waiting for aid. Specifically, the Flour Massacre of February 29th resulted in 118 Palestinians killed and 750 wounded by Israel’s open fire of those waiting for aid (Al Jazeera, 2024). These numbers above are only those directly killed by Israel. Israel is also responsible for the indirect murders for those suffering from starvation, diseases, lack of medical supplies, and even hygienic products. According to a 2024 report from Euro-Med Human Rights Monitor, “... international experts predicted that the number of victims of starvation and related diseases may exceed the number of those killed directly during the Israeli genocide of Palestinians.” The UNRWA said 570,000 Gazans are classified as having food insecurity equivalent to famine levels of starvation, defined by the Integrated Food Security Phase Classification (Kekatos, 2024). The WHO has reported that the remaining hospitals in the Gaza Strip are suffering from a severe lack of fuel and basic supplies, running

at three times their capacity (WHO, 2024). Infectious diseases have been spreading at soaring rates due to lack of sanitation and hygiene. According to the WHO, there is only one shower for every 4,500 people and one toilet for every 220 (WHO, 2024.). Clean water is scarce; 97 percent of Gaza’s water is unfit for human consumption (CNN, 2023.)

I’ve thrown a lot of numbers and statistics out there, but what does this all mean, and what does it have to do with genocide? By displacing millions of civilians, it prevents Palestinians from living in their homes and forces them to flee for safety, unable to return when the war is over due to Israeli policy. The murders of journalists and medics is an especially strategic action; killing the journalists prevents the world from seeing for themselves what has been happening in Gaza and killing the medics prevents other wounded civilians from getting medical care, thus increasing the death toll at an elevated pace. The mass spread of diseases and famine are likely to kill even more Palestinians in Gaza. Gaza has become uninhabitable due to Israeli bombardment and blockade. Even if a ceasefire is granted, many Gazans will have no home to return to seeing as half of all homes in Gaza were destroyed. Citizens requiring medical attention will not be able to acquire it in Gaza due to many of the hospitals being in ruins. Children will not be able to return to school, seeing as that most of them have turned to rubble. All these factors added together conclude that this is not a target to Hamas, this is a target to the Palestinian people collectively. By destroying Gaza, Gazans will be unable to return to their homes, which is a prime example of ethnic cleansing. Israel is killing Palestinians at an accelerated rate, forcing civilians to dig mass graves for the bodies that continue to pile. If Gaza is not enough, the bombing of Rafah was well-planned and thought out to continue to get rid of as many Palestinians as possible, whether that’s through murder or displacement. Rafah, sheltering 1.7 million Palestinians, is the farthest place south Palestinians can go



before entering Egypt. Egypt's foreign minister, Sameh Shoukry, warned that any Israeli ground invasion on Rafah would have "disastrous consequences", saying Israel intends to eventually force the Palestinians out of their land. Israel's Prime Minister Netanyahu warns that a Rafah assault "will happen", indicating thousands of people will end up dying or being forced to flee into Egypt, thus getting rid of Palestinians one way or another. This is not a "war" against Hamas, as Western news outlets suggest, but a genocide against the Palestinian people.

In case the humanitarian approach is not enough, I want to emphasize that regardless, these are clear war crimes. This is a clear textbook genocide case, and I will prove it by using the legal definitions and policies. Furthermore, I will go into detail of the specific acts of the Geneva Conventions that Israel is violating in addition to discussing a few of Israel's perspectives on the ongoing genocide, which I will be rebutting.

Section 2: Why Should We Care About Palestine from a Legal Standpoint?

The Geneva Conventions

The Geneva Conventions and their Additional Protocols are international treaties that hold the most important rules limiting the barbarity of war to preserve civilian lives. Specifically, they protect people who are not involved with the fighting, like civilians and medics, for example. Article 2 of the convention defined genocide as "any of the following acts committed with intent to destroy, in whole or in part, a national, ethnic, racial, or religious group, as such: killing members of the group; causing serious bodily or mental harm to members of the group; deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part; imposing measures intended to prevent births within the group; and forcibly transferring children of one group to another group." (Geneva Conventions,

1949). Israel is violating four of the five acts mentioned above, which I will explain in further detail.

A: Killing members of the group

As I have mentioned a few times throughout this paper, Israel has murdered 30,000 Palestinians since October 7th. Of these 30,000 civilians, nearly 13,000 were children and over 8,000 were women (Efesoy, 2024). An Oxfam study has shown that the number of average deaths per day in Gaza is higher than any recent major armed conflict, including Syria (96.5 deaths per day), Sudan (51.6), Iraq (50.8), Ukraine (43.9), Afghanistan (23.8), and Yemen (15.8) (Relief Web, 2024.) Because Gaza is so densely populated at 14,000 people per square mile, the impacts of airstrikes are deadly, producing high numbers of reported deaths (AP News, 2023).

B: Causing serious bodily or mental harm to members of the group

In addition to the tens of thousands of murdered civilians, nearly 70,000 have been injured since October 7th (Marsi & Siddiqui, 2024). Seeing as 12,000 bombs have been dropped on Gaza during this period, this makes it one of the most intense bombing campaigns in history within a populated area. The consequences of these bombings, if not death, result in fractures, peripheral nerve injuries, amputations of one or several limbs, spinal cord injuries, traumatic brain injuries, and burns, according to the Humanity & Inclusion charity. In addition to this, Gazans do not have adequate medical supplies to treat these injuries. Due to the lack of medical supplies, amputations are carried out without anesthesia or pain relief for those who can reach a hospital. For those who can't, amputations can be carried out with normal cooking knives, scissors, and other household items (Mahfouz, 2024). As for mental harm, the constant bombardment has lasting effects on civilians across Gaza, but mainly allocated to children. UNICEF has estimated at least 17,000



El Anany

children in Gaza are unaccompanied or have been separated from immediate relatives (Amer, 2024). The displacement and loss of family members result in anxiety, depression, PTSD, and other adverse mental health conditions in children (Schlein, 2024). They can't sleep as they have emotional outbursts or panic every time they hear the bombings. For many children, death is a more desirable outcome than to continue living in the conditions they are currently in (Nichols, 2024).

C: Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part

The prevention of aid into Gaza is deliberately inflicting on the group conditions of life seeing as that it causes serious harm to Gazans as a whole. According to the UNRWA, 500 trucks of humanitarian aid alone are needed each day to meet the basic needs of the people in Gaza. Since October 7th, an average of 95 aid trucks per day entered Gaza (Ebrahim, 2024). An excerpt from PBS News stated that “United Nations agencies and aid groups say the ongoing hostilities, the Israeli military’s refusal to facilitate deliveries, and the breakdown of order inside Gaza make it increasingly difficult to bring vital aid to much of the coastal enclave” (PBS News, 2024.) Israel denies these claims, saying they have restricted shipments of fuel out of speculation that it will fall into the hands of Hamas (Neuman, 2023). Additionally, Palestinians have consistently come under Israeli fire while waiting for aid and humanitarian supplies. For example, the Flour Massacre occurred on February 29th, in which over 100 people were murdered when Israeli forces opened fire on the crowd of civilians waiting for aid (Chehayeb, 2024). This is a clear indication of Israel’s intent to wipe out the Palestinian race; where is the reasoning behind murdering starving people who were waiting for aid?

D: Imposing measures intended to prevent births within the group

As of November, there were an estimated 50,000 pregnant women in Gaza, with over 180 giving birth each day (Bajec, 2024.) By preventing aid and medical supplies into Gaza, these women are giving birth in shelters, in their homes, or on the streets with the rubble. For those who can reach healthcare facilities, which are overwhelmed, sanitation is a key issue and puts them at risk of infection and medical complications. With the hospitals running out of fuel, the lives of over 130 premature babies who rely on intensive care services continue to be threatened and other necessary medical equipment will no longer function (WHO, 2023). From the WHO’s office in Cairo, “The injured patients are all over the floor, they are being sutured on the floor. There are not enough beds or stretchers. There isn’t any pain medication. They’re basically just bleeding on the floor.” In addition to the lack of medical supplies, hospitals continue to be shot at and attacked. Israeli authorities had promised staff and patients that they would be unharmed by sheltering in the hospital, which was neither true nor honored. Israeli snipers have been shooting civilians outside Nasser Hospital, killing 21 in roughly 24 hours (Al Jazeera, 2023). These factors have a direct impact on reproductive health for pregnant women in Gaza, including an increase in stress-induced miscarriages, stillbirths, and premature births. Since Israel’s bombing campaign, health organizations have reported a 300 percent surge in miscarriages among women in Gaza (Bajec, 2024).

What is Israel Saying?

A: On Intent

The ongoing genocide was kicked off from the October 7th attacks by Hamas onto Israel citizens in which 1,200 people were tragically killed (Byman, 2023). Consequently, Prime Minister Netanyahu stated in an interview that “Israel has responded in a way that is responsible, but also



determined... iron determination to wipe the terrorist group Hamas off the face of the Earth, and that is something we will do.” Though Netanyahu indicated that the target was Hamas, over 30,000 innocent Palestinians have been killed as a “responsible” response. Similarly, Netanyahu also stated “Our goal is to rid Gaza of Hamas terrorists and free our hostages. Once this is achieved, Gaza can be demilitarized and deradicalized, thereby creating a possibility for a better future for Israel and Palestinians alike.”

If Netanyahu is truly trying to eliminate Hamas and preserve the life of innocent civilians, why are 30,000 people dead? Why are numerous hospitals, ambulances, refugee camps, schools, universities, houses, towns, and entire neighborhoods completely destroyed? For example, Israel has recently launched another military operation on Al-Shifa hospital, despite the claims that the IDF had dismantled Hamas’ command structure back in January. During the newer operation in March, 3,000 Palestinians were sheltering in the hospital, deprived of food and water (Ebrahim, 2024). Those attempting to flee the hospital were targeted by snipers or fire from helicopters. If Israel is solely targeting Hamas, out of speculation that Al Shifa was being used as a military base by Hamas, why were the innocent lives of Palestinians undermined? How is it justified to target and starve innocent people taking shelter out of speculation of “terrorist” activity with no concrete evidence?

B: On Hostages & Ceasefire

The aftermath of the October 7th attacks resulted in the abduction of 250 Israeli citizens by Hamas (Byman, 2023.) During the weeklong ceasefire in November, over 100 hostages were released in exchange for the release of 240 Palestinians imprisoned by Israel (Euronews, 2024). Since these attacks, Israel and Hamas have been having difficulties coming to an agreement on the conditions of a ceasefire. Netanyahu, for example, said that total victory over Hamas, not negotiations, is what would

constitute the hostages’ release (Baskin, 2024). On the other hand, Hamas wants an agreement to secure an end to Israeli military operations and the expulsion of Israeli soldiers from Gaza, in addition to allowing displaced Palestinians the right to return to their homes (Parker, 2024). Seeing as that the two parties were unable to come to an agreement, this genocide has carried on. Despite Israel’s military intelligence, only three hostages were rescued by Israeli soldiers, yet have been able to destroy several civilian infrastructures and crush Gaza collectively.

Netanyahu has made it clear that there will be no ceasefire until Hamas is completely eliminated. According to Netanyahu in a recent statement, to achieve a “complete victory” over Hamas, Rafah must be invaded. Specifically, he stated “This victory requires entry into Rafah and the elimination of the terrorist battalions there... It will happen, there is a date.” This incredibly limited statement of a military operation puts 1.7 million Palestinians at risk as Rafah is a refugee space. The irony of this situation is that Netanyahu explicitly stated Rafah to be a safe space for civilians to flee Gaza, but has once again contradicted his promises, endangering the lives of millions (VOA News, 2024).

C: On Humanitarian Aid

There are currently two million Palestinians at risk of famine as the constant bombing and airstrikes from the Israeli military has destroyed avenues to accessing food (Euro-Med, 2023.) Netanyahu has addressed this humanitarian crisis by flipping the blame onto Hamas, saying “Humanitarian deaths and starvation is, for us, it’s a tragedy. For them, it’s a strategy. They think that this will help them place more pressure on Israel to stop the war, leave them in place so they can repeat the October 7 massacre.” Due to this speculation of aid getting into the hands of Hamas, Israel has implemented blockades of humanitarian aid into Gaza. Furthermore, Israel has already taken a military veto over what enters and exits the Rafah-Egyptian



El Anany

border (Parker, 2024). What else can be done to ensure aid is not falling into Hamas' control if Israel already controls the entry of aid into the border? Additionally, the same element of generalizing Palestinians with Hamas is present in this scenario. Israel's Defense Minister Yoav Gallant stated "No electricity, no food, no water, no fuel. Everything is closed. We are fighting human animals and we are acting accordingly."

This here is the one of the root causes of the lack of humanitarian aid into Gaza. This generalization of equating Palestinians with Hamas will forever prevent Palestinians from being treated as human beings and using their rights entitled to them under international law. If politicians in the Israeli government are saying heinous statements as such, can we really be surprised of how Israel has been handling this situation? In this case, how is it just to prevent millions of Palestinians from acquiring aid out of speculation, with again no concrete evidence, that it will fall into the hands of Hamas? Why do millions of people have to suffer for something they did not do? Surely, as one of the strongest militaries in the world, there must be practices ensuring humanitarian aid into Gaza without it "falling" into Hamas' hands.

In these three arguments, it all ultimately leads back to Hamas, as Prime Minister Netanyahu made clear. The problem with this stance is that there is no differentiation between innocent Palestinians and Hamas. With this mindset, the constant bombings and airstrikes are justified seeing as that Israel is looking to completely eliminate Hamas. With this mindset, forced starvation of millions of Palestinians is justified because this aid will supposedly fall into Hamas' hands. With this mindset, bombing hospitals and schools were justified because they were speculated to be Hamas' military bases. With this mindset, the destruction of an entire city, home to two million people, was justified because Hamas had supposed tunnels underground that posed a threat to Israeli society. The Geneva Conventions were created to ensure the horrors

of the Holocaust were not to be repeated in the future. We were taught from a young age of the violent acts fueled by hatred and supremacy that killed millions of people, ranging from slavery of the African Americans, the Native American Genocide, the Holocaust, and numerous others. We sat in class and wondered just how we could let something so horrible happen. Here we are in 2024, watching humanity fail to recognize this is a textbook case of genocide. Regardless of your political views of Palestine or Arabs in general, these are human beings who are being brutally murdered by the state of Israel. Regardless of your personal feelings, these are war crimes being committed and banned by international law. We have the overwhelming burden of proof seeing as that we are watching this genocide from our phones, which is something we didn't have in prior cases. If anything, this should show you the clear evidence of the atrocities happening in Palestine. It's right in front of you.

Conclusion

There is something very harrowing about witnessing a genocide live streamed through social media platforms. We have overwhelming evidence of the atrocities that are occurring in Gaza right now. Though Israel has murdered numerous journalists and reporters to mask the heinous crimes against humanity imposed on Palestinians, we still see content being uploaded day by day for those who have the resources to do so. There are no words to describe the things I've seen from my own social media platforms. It's a very chilling, disturbing thing to witness; the remains of human beings who were mercilessly bombed, the destruction of an entire city, hearing the voices of children pleading for help under the rubble of what was once their homes, their schools, and their city.

There was a particular video that haunts my mind from the earlier days of the genocide that I saw on X. Israel had cut out the power in Gaza, meaning there was no light, no water, and no viable method of communication for civilians



to contact one another. Israel started bombing Gaza in the middle of the night, thus providing a source of light through the vibrancy of the flames from the numerous explosions. I could hear the screams of innocent people begging for help, trying to flee from their homes. I could hear the mosque in the background using the speakers to attempt to communicate with people. Then the camera shook, and the video ended. I don't know what happened to the person recording. My luxury allowed me to back out of the video, and my timeline refreshed to some thread about the highlights of Beyonce's "The Renaissance Tour." I wish I could explain how disturbing the video I had just seen was, how long it lingered on my mind to this day. Yet that's all it was for me; it was just a feeling. I was able to go back to what I was doing before. I had the privilege of witnessing it in my home, with water, electricity, and food, where I was safe. The bombings didn't stop when the video cut off – it kept going on and continued to kill thousands of people.

I am of Egyptian origin, Palestine neighboring our country. In another world, if we were just 216 miles further east, 40 miles more than the distance between Seattle and Portland, this would have been our reality. In another world, this could have been your reality. You would have watched your people be subject to genocide, your cities be burned down, your culture disintegrating, your family and friends going missing or winding up murdered. You would have lacked the adequate aid needed to survive. You would have been subject to be murdered at any waking second, depending on when Israel decides to continue with its air strikes with no warning. If they happened to give you a warning, that they often don't intend to honor, you could have been killed or injured by their airstrikes. To top this all off, you would have concrete evidence of the heinous living conditions you are in, and the world simply wouldn't care. The entire world would be watching just how much you and your people were suffering and continued to move on with their lives. America would continue to support

and fund the murder of your people. You would watch as the ICJ would advise Israel to taking precautions to avoid any more unnecessary civilian casualties, and Israel would continue on with its genocidal campaign.

It's important to keep in mind that these casualties are not just numbers. These were 30,000 human beings who had individual dreams and aspirations. They had families, friends, neighbors, just like everyone else. They had childhoods, for those who were lucky enough seeing as that the average age of Palestinians murdered were 5 years old. They would have grown up to go to school, to go to college, to start a family, to go after whatever it was their hearts desired. Yet they did not get that opportunity. They were murdered. For those who are still alive, they are constantly wondering if the next airstrike will take them out. Family members have regularly been marking their children with their names on their bodies in case they do end up dead from Israeli airstrikes, as often the impacts of these airstrikes are so severe the bodies are not easily identifiable. Since majority of the population in Gaza are children, they will grow up to resist Israel's occupation. They will forever be haunted by the sight of their parents in body bags if they were even able to identify them. For those who were separated from their families, they will forever be wondering what happened to their loved ones. Were they killed? Are they stuck somewhere under the rubble? Are they being held in detention centers? The children of Palestine will always remember these horrific events and be living reminders of what we allowed to happen from our own silence.

A Palestinian child once said "We pray six times a day. Fajr, Zuhr, Asr, Maghrib, Isha, and Janazah." Janazah is the prayer Muslims pray at a funeral. The Palestinians have gotten so accustomed to the increasing deaths in everyday life that Janazah is a regular part of their day. I have the luxury of raising awareness about what's happening in Palestine from behind a



El Anany

computer with the electricity and resources available to me at any time. I have the luxury of attending classes at my university and going to work without the fear of being bombed. Palestinians don't. You don't need to be Arab or Muslim to care about Palestine, you just need to have humanity. We tend to get wrapped up in the details of race and ethnicity, but we must remember that regardless, we are all human beings. We are one human race, and we must look out for each other. I urge you to look at the conditions Palestinians are in and realize they are in grave danger. I urge you to speak on their behalf and advocate for an immediate ceasefire. I urge you to use your voice to speak up for the oppressed.

References

- Abdulrahim, Raja. "Gaza Has Suffered under 16-Year Blockade." *The New York Times*, *The New York Times*, 7 Oct. 2023, www.nytimes.com/2023/10/07/world/middleeast/gaza-blockade-israel.html.
- Al Jazeera. (2023, December 18). "bloodbath": Israel continues to target Gaza hospitals and civilians. *Al Jazeera*. <https://www.aljazeera.com/news/2023/12/18/bloodbath-israel-keeps-hitting-gaza-hospitals-amid-international-uproar>
- Al Jazeera. (2024, January 24). How Israel has destroyed Gaza's schools and universities. *Al Jazeera*. <https://www.aljazeera.com/news/2024/1/24/how-israel-has-destroyed-gazas-schools-and-universities>
- Al Jazeera. (2024, March 1). "cold-blooded massacre": Israeli forces kill over 104 aid seekers in Gaza. *Al Jazeera*. <https://www.aljazeera.com/news/2024/2/29/dozens-killed-injured-by-israeli-fire-in-gaza-while-collecting-food-aid>
- Aljamal, A. (2023, November 1). Gaza War: Hundreds of Palestinian families erased from Civil Registry. *Palestine Chronicle*. <https://www.palestinechronicle.com/gaza-war-hundreds-of-palestinian-families-erased-from-civil-registry/>
- Amer, R., & Marsi, F. (2024, February 15). "he was nameless": Orphaned children lose family, identity in Gaza. *Al Jazeera*. <http://www.aljazeera.com/features/2024/2/15/he-was-nameless-orphaned-children-lose-family-identity-in-gaza#:~:text=UNICEF%2C%20the%20UN%20agency%20for,population%20of%201.7%20million%20people>
- Amnesty International. "Israel's Apartheid against Palestinians: A Cruel System of Domination and a Crime against Humanity." *Amnesty International*, 28 Sept. 2022, www.amnesty.org/en/latest/news/2022/02/israels-apartheid-against-palestinians-a-cruel-system-of-domination-and-a-crime-against-humanity/.
- AP News. (2023, December 6). The Gaza Strip: Tiny, cramped and as densely populated as London. *AP News*. <https://apnews.com/article/israel-gaza-hamas-war-90e02d26420b8fe3157f73c256f9ed6a>
- Bajec, A. (2024, January). Miscarriage rates in Gaza turn pregnancy into death sentence. *The New Arab*. <http://www.newarab.com/features/miscarriage-rates-gaza-turn-pregnancy-death-sentence#:~:text=Gaza's%20pregnant%20women%20face%20a%20double%20nightmare&text=They%20also%20alerted%20that%20the,miscarriages%2C%20stillbirths%20and%20premature%20births>
- Bowman, Emma, and Daniel Estrin. "The U.N. Is Marking the 75th Anniversary of Palestinians' Displacement." *NPR*, NPR, 15 May 2023, www.npr.org/2023/05/15/1176097958/un-nakba-day-explained-anniversary-palestine-israel.
- Britannica, The Editors of Encyclopaedia. "Hussein-McMahon correspondence". *Encyclopedia Britannica*, 7 Nov. 2023, <https://www.britannica.com/topic/Husayn-McMahon-correspondence>. Accessed 24 February 2024.
- B'Tselem. (n.d.). Administrative detention. Retrieved from https://www.btselem.org/administrative_detention
- Byman, D., McCabe, R., Palmer, A., Doxsee, C., Holtz, M., & Duff, D. (2023, December). Hamas's October 7 attack: Visualizing the Data. *CSIS*. <https://www.csis.org/analysis/hamass-october-7-attack-visualizing-data#:~:text=The%20October%207%20attack%20was,was%20unprecedented%20in%20Israeli%20history.>



- Chehayeb, K. P. F. (2024, February 29). Israeli troops fire on Palestinians seeking food. Israel says deadly scene was a chaotic stampede. *Military.com*. <https://www.military.com/daily-news/2024/02/29/israeli-troops-fire-palestinians-seeking-food-israel-says-deadly-scene-was-chaotic-stampede.html>
- Ebrahim, N. (2024, February 11). Why only a trickle of aid is getting into Gaza. *CNN*. <http://www.cnn.com/2024/02/11/middleeast/why-only-a-trickle-of-aid-is-getting-into-gaza-mime-intl/index.html>.
- Ebrahim, N., Haq, S. N., Za'anoun, K. A., & Salman, A. (2024a, March 28). Why Israeli forces are raiding Gaza's al-Shifa Hospital – again. *CNN*. <https://www.cnn.com/2024/03/28/middleeast/gaza-shifa-hospital-raid-israel-war-explainer-intl/index.html>
- Efesoy, C. (2024, February). Children, women death toll in Israel War on Gaza 6 times higher than Russia-ukraine war. *Anadolu Ajansi*. <https://www.aa.com.tr/en/middle-east/children-women-death-toll-in-israel-war-on-gaza-6-times-higher-than-russia-ukraine-war/3146398>
- Euro-Med Monitor. (2024, February 8). Policy Paper: Israel's policy of starvation in Gaza will have long-term effects, is causing famine [en/ar] - occupied Palestinian territory. *ReliefWeb*. <https://reliefweb.int/report/occupied-palestinian-territory/policy-paper-israels-policy-starvation-gaza-will-have-long-term-effects-causing-famine-enar>
- Euronews. (2024, February 23). Displaced Palestinian children in Rafah protest in support of other children suffering from war. *Euronews*. Retrieved from <https://www.euronews.com/2024/02/23/displaced-palestinian-children-in-rafah-protest-in-support-of-other-children-suffering-fro>
- Euronews. (2024, February). Netanyahu rejects proposed ceasefire and hostage deal with Hamas. *Euronews*. <https://www.euronews.com/2024/02/07/israel-confirms-31-gaza-hostages-killed-as-ceasefire-talks-continue#:~:text=Israel's%20Prime%20Minister%20on%20Wednesday,and%20bring%20Israeli%20hostages%20home>.
- Frankel, Julia. "Israel Holds over 1,200 Detainees without Charge. That's the Most in 3 Decades, a Rights Group Says." AP News, *AP News*, 1 Aug. 2023, apnews.com/article/israel-detention-jails-palestinians-west-bank-793a3b2a1ce8439d08756da8c63e5435.
- Ghaedi, Monir. "How Do Hamas and Hezbollah Compare with Israel Militarily? – DW – 10/21/2023." Dw.Com, *Deutsche Welle*, 25 Oct. 2023, www.dw.com/en/how-do-hamas-and-hezbollah-compare-with-israel-militarily/a-67166698.
- Holleis, Jennifer. "What Is the Palestinian Nakba and Why Does It Matter? – DW – 05/15/2023." Dw.Com, *Deutsche Welle*, 16 May 2023, www.dw.com/en/what-is-the-palestinian-nakba-and-why-does-it-matter/a-65539735.
- Human Rights Watch. (2023, November 29). Why Does Israel Have So Many Palestinians in Detention and Available to Swap? *Human Rights Watch*. Retrieved from <https://www.hrw.org/news/2023/11/29/why-does-israel-have-so-many-palestinians-detention-and-available-swap>
- Humanity & Inclusion UK. (2023, December 12). Gaza: Amputations, nerve injuries and fractures - new report on injuries caused by heavy bombing. *Humanity & Inclusion UK*. <http://www.humanity-inclusion.org.uk/en/gaza-amputations-nerve-injuries-and-fractures-new-report-on-injuries-caused-by-heavy-bombing>
- Institute for Middle East Understanding. (n.d.). Quick facts: *The Palestinian Nakba*. Retrieved from <https://imeu.org/article/quick-facts-the-palestinian-nakba>
- Kekatos, Mary. (2024, January). More than 500,000 people in Gaza face "catastrophic hunger": UNRWA. *ABC News*. <https://abcnews.go.com/International/500000-people-gaza-face-catastrophic-hunger-unrwa/story?id=106593939>
- Krauss, J. (2024, February 21). Why isn't desperately needed aid reaching Palestinians in Gaza? *PBS*. <https://www.pbs.org/newshour/world/why-isnt-desperately-needed-aid-reaching-palestinians-in-gaza#:~:text=United%20Nations%20agencies%20and%20aid,much%20of%20the%20coastal%20enclave>.



El Anany

- Legal Information Institute, Cornell Law School. (2022). *Apartheid*. Retrieved from <https://www.law.cornell.edu/wex/apartheid#:~:text=Apartheid%20refers%20to%20the%20implementation,of%20the%20International%20Criminal%20Court>.
- Lotze, Michael. "5 Things You Need to Know about What's Happening in Israel and Gaza ." American Friends Service Committee, *AFSC* , Feb. 2024, afsc.org/news/5-things-you-need-know-about-whats-happening-israel-and-gaza.
- Mahfouz, H. (2024, January). Kitchen table amputation underscores Gaza's healthcare crisis - *The Washington Post*. <https://www.washingtonpost.com/world/2024/01/20/gaza-healthcare-crisis-amputation-anesthesia/>
- Marsi, F., & Siddiqui, U. (2024, March 12). Israel's War Cabinet mulls truce proposal, anti-netanyahu protests continue. *Al Jazeera*. <https://www.aljazeera.com/news/liveblog/2024/2/24/israels-war-on-gaza-live-unrwa-no-longer-functional-in-north-gaza#:~:text=At%20least%2029%2C606%20Palestinians%20killed,7%20attacks%20stands%20at%201%2C139>.
- Masters, Jonathan. "U.S. Aid to Israel in Four Charts." Council on Foreign Relations, *Council on Foreign Relations*, Jan. 2024, www.cfr.org/article/us-aid-israel-four-charts.
- Neuman, S., & Baba, A. (2023, December 9). Delivering aid in a war zone is always difficult. In Gaza, it's proving even harder. *NPR*. <http://www.npr.org/2023/12/09/1217767373/gaza-humanitarian-aid-refugees-war-israel-hamas>.
- Nichols, M. (2024, February). MSF slams US on Gaza at UN, says children as young as 5 want to die | *Reuters*. <https://www.reuters.com/world/middle-east/msf-slams-us-gaza-un-says-children-young-5-want-die-2024-02-22/>
- Oxfam International . (2024, February 21). Daily death rate in Gaza higher than any other major 21st century conflict - *oxfam*. *Oxfam International*. <https://www.oxfam.org/en/press-releases/daily-death-rate-gaza-higher-any-other-major-21st-century-conflict-oxfam>
- Oxford Languages & Google. (n.d.). English. Retrieved from <https://languages.oup.com/google-dictionary-en/>
- Paddison, L., & Marsh, R. (2023, October 24). Gazans forced to drink dirty, salty water as the fuel needed to run water systems runs out. *CNN*. <https://www.cnn.com/2023/10/24/middleeast/gaza-water-war-climate-intl-cmd/index.html#:~:text=Most%20of%20Gaza's%20water%20comes%20from%20a%20coastal%20aquifer%2C%20a,by%20untreated%20wastewater%20and%20pollution>.
- Parker, C. (2024, March). How Israel's restrictions on aid put Gaza on the brink of famine - *The Washington Post*. <https://www.washingtonpost.com/world/2024/03/03/gaza-aid-convoy-israel-war/>
- Parvaz, D. (2024, February 26). With or without a cease-fire, Netanyahu says Israeli operation in Rafah Will happen. *NPR*. <https://www.npr.org/2024/02/26/1233766185/israel-hamas-gaza-ceasefire-rafah-netanyahu-mohammad-shtayyeh>
- Parvaz, D., & Baba, A. (2024, February 21). How much humanitarian aid is getting into Gaza? the exact answer can be hard to know. *NPR*. <http://www.npr.org/2024/02/21/1232605200/humanitarian-aid-gaza-israel>
- Ronzheimer, P., & Stanley-Smith, J. (2024, March 10). Netanyahu denies Palestinians are starving. *POLITICO*. <https://www.politico.eu/article/israel-pm-netanyahu-denies-palestinians-are-starving/>
- Said, E. W. (1978). *Orientalism*. New York, Pantheon Books.
- State Crime. (2024). Preface: Israel's Genocide of the Palestinian People. *State Crime*, 12(2), 123–125. <https://doi.org/10.13169/statecrime.12.2.0123>
- Tahhan, Zena Al. "More than a Century on: The Balfour Declaration Explained." *Al Jazeera*. 2 Nov. 2018, www.aljazeera.com/features/2018/11/2/more-than-a-century-on-the-balfour-declaration-explained
- Tegler, Eric. "The IDF's Interim Data Report Shows the Scale of the Israel-Hamas War." *Forbes, Forbes Magazine*, 18 Jan. 2024, www.forbes.com/sites/ericteglert/2024/01/17/the-idfs-interim-data-report-shows-the-scale-of-the-israel-hamas-war/?sh=5fd99e125f16.



- The Economic Times. (2023). What Is Israel's Military Strength? Here's Everything You Need to Know. *The Economic Times News*. Retrieved from <https://economictimes.indiatimes.com/news/international/us/what-is-israels-military-strength-heres-everything-you-need-to-know/articleshow/104615713.cms?from=mdr>
- The Times of Israel . (2024, February). Netanyahu: US response to attack like Oct. 7 would be “at least as strong” as Israel’s | The Times of Israel. *The Times of Israel* . <https://www.timesofisrael.com/netanyahu-us-response-to-attack-like-oct-7-would-be-at-least-as-strong-as-israels/>
- United Nations. (2024, February 25). UN chief condemns ‘indiscriminate’ attacks in Gaza, as toll climbs. *UN News*. <https://news.un.org/en/story/2024/02/1147082#:~:text=The%20UN%20Secretary%2DGeneral%20said,killed%20and%20over%2070%2C000%20injured.>
- United Nations. (n.d.). About the Nakba - Question of Palestine. *United Nations*. Retrieved from <https://www.un.org/unispal/about-the-nakba/>
- United Nations. Attacks on schools and hospitals – Office of the Special Representative of the Secretary-General for Children and Armed Conflict. Office of the Special Representative and Secretary General for Children And Armed Conflict. *United Nations*. Retrieved from <https://childrenandarmedconflict.un.org/six-grave-violations/attacks-against-schools/#:~:text=Prohibition%20under%20International%20Law,principles%20of%20distinction%20and%20proportionality>
- Voice of America (VOA News). (2024, February 11). Netanyahu promises Palestinians in rafah “safe passage” before ground offensive. *Voice of America*. <https://www.voanews.com/a/netanyahu-promises-palestinians-in-rafah-safe-passage-before-ground-offensive-/7483051.html>
- Voice of America, (2024, February 11). Netanyahu promises Palestinians in rafah “safe passage” before ground offensive. *Voice of America*. <https://www.voanews.com/a/netanyahu-promises-palestinians-in-rafah-safe-passage-before-ground-offensive-/7483051.html>
- World Health Organization. (2023, December). Lethal combination of hunger and disease to lead to more deaths in Gaza. *World Health Organization*. <https://www.who.int/news/item/21-12-2023-lethal-combination-of-hunger-and-disease-to-lead-to-more-deaths-in-gaza#:~:text=The%20people%20of%20Gaza%2C%20who,for%20an%20immediate%20humanitarian%20ceasefire.>
- World Health Organization. (2024, March). Famine in Gaza is imminent, with immediate and long-term health consequences. *World Health Organization*. <https://www.who.int/news/item/18-03-2024-famine-in-gaza-is-imminent-with-immediate-and-long-term-health-consequences>
- World without Genocide. (n.d.). United Nations Convention on the Prevention and Punishment of Genocide. United Nations Convention on the prevention and punishment of genocide “world without genocide - making it our legacy.” <https://worldwithoutgenocide.org/genocides-and-conflicts/background-and-overview-information/united-nations-convention-on-the-prevention-and-punishment-of-genocide>





ABOUT THE STUDENT AUTHORS

Annie Edwards (she/her/hers) Is a recent 2024 UW Bothell graduate. She got her B.A. in Health Studies. She was on the UW Bothell Black Student Union board in 2023-2024. She plans on applying to graduate programs soon. She has a passion for learning about underrepresented groups in healthcare and how to advocate for them. She hopes her work can reflect that passion.

Ayla Badr, currently a junior majoring in health studies, aspires to pursue a career in health administration upon graduation. Her research primarily delves into the health disparities prevalent among minority communities within the United States. With an eye towards contributing further knowledge to the health sector, Ayla aims to enhance resources available for underserved communities.

Chuck Frickin-bats is a queer, non-binary, disabled sex worker and sex worker advocate (who is obsessed with bats and goats). (They always wear crop tops and have headphones on, obsessively listening to Sleep Token). After starting sex work in 2010, they quickly got involved in community advocacy and it is what drives their education. Chuck is interested in creating educational material to teach healthcare professionals and the public about the societal and health impacts of occupational stigma on sex workers. They also want to create access to healthcare for sex workers and other marginalized communities. “Nothing about us without us.”

Dalia Abraham (she/her/hers) is an Eritrean American third year undergraduate student at the University of Washington Bothell, pursuing a degree in health studies and a minor in biology. After graduating, she intends to apply to physician assistant school where she will continue her studies as a PA student in hopes of becoming a pediatrics physician assistant. During her free time she enjoys reading, spending time with my family, and hiking.

Elise Bao is a senior undergraduate student at University of Washington Bothell, graduating in Summer 2023 with a Bachelor of Art in Health Studies. Elise currently works with people with neurodevelopmental disabilities as an Intern. Driven by her desire for learning more about the complexities of the human brain, she wants to pursue a career in psychiatry. In her free time, she likes to try new food and discover new places with her family and friends.

Emma Uderski (she/her, they/them) is a second-year undergraduate student at the University of Washington Bothell, majoring in Biology and minoring in Health Studies. They are passionate about the biological sciences and supporting humans and animals in their community as a Veterinary Assistant at the PAWS Spay & Neuter Clinic and plan to apply to a Doctor of Veterinary Medicine program in late 2025. In her free time, Emma enjoys knitting, reading, and attending live music shows.

Faith Lambert (she/her) is a fourth year undergraduate student. She is a biology major and chemistry minor with a career interest in cancer research. As a lifelong learner, she plans to attend graduate school and earn a Ph.D. in cellular and molecular biology, immunology, or pathobiology. She aspires to someday lead her own research team to tackle the most prominent issue in healthcare today. Outside of classes, she engages in activism and educational advocacy as the club president of the Alliance 4 Sustainability at UWB. In her downtime, she enjoys writing free-verse poetry and working on her fantasy-turned-sci-fi book series.

Giselle Mak (She/her/hers) is a fourth-year undergraduate student studying Health Studies major and Biology minor. She currently works as a dental assistant, and she is interested in pursuing dentistry upon graduation. She enjoys hiking and spending time with her family and friends in her free time.



Author Biographies

Gursimar Tonk (She/Her) is a second-year Biology major and Health Studies minor with political aspirations. Her passion for biological sciences extends to her interest for health-related lab research and exploring the intricacies of public health. Intrigued by the social dimensions of health, she aims to connect her health studies knowledge with her interest in politics at various levels of governance. She finds joy in occupying herself in the dynamic landscape of American politics, from local community issues to federal policies. Beyond academia and politics, she enjoys indulging in her hobbies, which include listening to music, watching YouTube, staying updated on pop culture, and keeping up to date with current American political news. Her enthusiasm for learning continually drives her exploration of new subjects and her dedication to the pursuit of knowledge.

Halle Egan (she/her/hers) is a first-generation college student at the University of Washington Bothell, majoring in Health Studies and minoring in Biology. Following graduation in June 2025, she plans to further her education at medical school to become a surgeon. She currently works at a bariatric surgery center as a scrub technician and wants to pursue endoscopic and laparoscopic surgeries in her career. In her free time, she enjoys reading and riding horses, along with spending time with her family, friends, and animals.

Hoda El Anany (she/her/hers) is a junior pursuing a double degree in Business Administration and Law, Economics, and Public Policy with a minor in Human Rights. She has a passion for music and loves attending concerts. In her professional career, she has been working as an Administrative Assistant for UW Medicine. Following her anticipated graduation in Spring 2026, she intends to go to law school with a passion for international law and policy.

Hyojeong Kim is a junior at the University of Washington Bothell, majoring in health studies and minoring in biology. She aims to continue her education by attending dental school post-graduation to embark on a career path as a dentist

Karla Alvarez is currently a junior at the University of Washington Bothell. She plans to graduate in 2025, with a bachelor of arts in Health Studies. Professionally, she aims to be successful and strive for a work-life balance. Personally, she wants to travel more and expand her knowledge of different cultures. Her educational goal is to graduate with a 3.0 gpa or higher. Her favorite pastimes are listening to music, doing martial arts, building Legos, reading, and spending time with friends and family.

Kori Cantwell (she/her/hers) is a first-generation senior at UW Bothell, graduating in Spring 2024 with her Elementary and Special Education dual-teaching certifications. Her goal as a teacher is to build meaningful relationships with students and create a loving classroom community. As an educator, she plans to learn more about how trauma affects students and how best to support them in her classroom. She has worked as a peer writing consultant at UWB's Writing and Communications Center as well as a nanny and toddler teacher. In her free time, she loves to read, write, spend time with her friends, travel, and crochet.

Layla Youssef (she/her) is a first-year graduate student studying Museology. She graduated with a BA in Global Studies and American Ethnic Studies with an emphasis on postcolonial studies, human rights, cultural histories, all of which influence her work in museums. Her interests in museum work lie in curation and exhibit design for cultural and history museums, specifically in understanding how interpretation of exhibits impacts the ways visitors understand the world. She plans to design exhibits depicting underrepresented histories and integrate community-based curation practices in museums, libraries, and archives. In her free time, she enjoys visiting local coffee shops, hanging out with friends, watching movies, and writing stories.



Liam Hunter (he/him) is a sophomore double majoring in LEPP & Psychology with a minor in Human Rights. He currently works as a peer writing consultant at UWB's Writing & Communication Center. In June 2025, he plans to graduate and move on to UW Seattle Law School. Liam intends to use his multicultural background to support his endeavors towards becoming an international intellectual property (IP) lawyer.

Luis Cruz (he/him/his) is an undergraduate student at the University of Washington Bothell. He is currently pursuing a major in Chemistry and a minor in Creative Writing. After graduating, he plans on pursuing a career as a scientific researcher in the pharmaceutical field. Scientifically, he is interested in the research and development of new medicines. In his written work, he enjoys analyzing internet culture, music, and film through a critical literary lens.

Nadira Hajimohamed (she/her/hers) is a third-year University of Washington Bothell student. She is a Health Studies major who will graduate in the spring of 2024. After graduating, she plans on pursuing dental hygiene and starting a master of science in community health and social justice program at UWB hopefully in Fall 2024. She grew up in Renton, Washington, and loves going on nature walks, painting, and reading.

Nicole Vicente (she/her/hers) is in her senior year, graduating with her Bachelor of Arts in Health Studies and minoring in Biology. She intends to take her DAT in a couple of months and apply to Dental School for the 2024-2025 application cycle, hoping to pursue a career in pediatric dentistry. Growing up as a Filipino-American, she has emphasized her community service within her church that resides in South Seattle through teaching kids, mentoring youth, and continuing volunteer services for local homeless shelters. She is currently working as a pediatric dental assistant and an undergraduate researcher at the Ruohola-Baker Lab at UW Medicine. She enjoys spending time in nature such as camping and hiking, and loves to cook for the people she loves.

Phillip Gruenemay is a senior undergraduate at UW Bothell who will graduate during the 2023-2024 academic year with a Bachelor of Arts in Media and Communication Studies. During his junior year, he took the Independent Undergraduate Research class, in which he meshed two of his many interests – Movies and American History – throughout three research papers to see how movies of the silent era were influenced by the sociohistorical events that were unfolding during their production and release. The paper published in this journal is the first of those research papers. Phillip wants to thank Dr. David S. Goldstein and Professor Louise Spiegler for their invaluable mentorship during the creation of these research papers and his academic career at large.

Ryan Van Vuitton is diligently working towards completing an interdisciplinary degree encompassing psychology, health studies, and data visualization. Post-graduation, he remains open to various opportunities, aiming for stability in his career endeavors before making significant decisions for the future.

Shakambari Ramachandran (she/her/hers) is a third year transfer student in the Psychology program. She is interested in research, which is what prompted her to publish her paper in the CROW. She hopes to do more research work in the future. Currently she is a part of the Marketing club and NAMI, and in her spare time she volunteers to teach art and tutors young children in English. Her hobbies include reading, watching movies, and painting.



Author Biographies

Steven Suarez (he/him) is in his senior year at the University of Washington, Bothell. As an Applied Computing major, he is passionate about the fields of math and computer science. Specifically, he is interested in quantum computing. During his time in college, he has also come to learn a lot about social and economic justice and wants to use his voice to empower people of oppressed and underprivileged backgrounds, especially in STEM. Outside of academics, he loves taking long afternoon hikes on the Sammamish River Trail, having spontaneous meetups with his friends, playing tabletop games, and hanging out with his Golden Retriever.

Xuantao (Rico) Zhang (He/Him) is a dedicated third-year undergraduate student at UWB, pursuing a major in Chemistry with the goal of becoming a dentist. Inspired by his family's involvement in the medical field, he is passionate about leveraging his scientific knowledge to help alleviate people's pain and improve their well-being. He finds great satisfaction and a sense of accomplishment in contributing to the health and happiness of others. Beyond his academic pursuits, he is a multifaceted individual with a love for music. In his free time, he enjoys playing the saxophone or guitar, viewing music as an integral part of his life that brings joy and balance to his endeavors. As he continues his educational journey and works towards his aspirations in dentistry, he remains committed to making a positive impact on the lives of those around him, both through his scientific endeavors and his passion for music.

Yahya Wardak is a senior. He is currently majoring in Health Studies and minoring in Biology. He plans to pursue a career in public health. He wants to share his research project regarding his proposal to understand the journey of adolescents misusing opioids, which is a severe public health problem in the United States. He wants to be part of an effort that works to create an intervention method for this crisis. Yahya is very excited to have his work be published by The CROW. During his free time he enjoys the outdoors, playing sports, and watching movies.



ABOUT THE EDITORIAL BOARD

Morgan Fu-Mueller (he/they) is a second-year Psychology major with legal aspirations. He loves to think about K-pop, play D&D, and make art, drawing on all of that to advance his writing. As a WaCC tutor, they're passionate about enabling people to convey their points in their own voices, and making academic writing more accessible. Their experience with topics in the medical field stems from growing up around doctors and in hospitals, with lots of gory anecdotes over the dinner table. They're excited to be working with the CROW editorial board this year, to gain experience with a wide variety of writing in a new environment and help produce the best and silliest issue yet.

Newton (Newt) Austria-Ball (they/them) is in their second year as an undergraduate at UWB. They are following a path towards majoring in Biology to later become a Doctor of Pharmacy, while also minoring in Creative Writing. They love all kinds of writing and being able to help others with their writing which is what led them to becoming a writing tutor. This is their first year on the CROW Editorial Board. Having lived in an underprivileged area for most of their life, they want to help shed light on those who do not have ready access to healthcare, advocating for more affordable and accessible healthcare. In their free time, they like taking walks in the wetlands and learning about plants and medication. As well as, writing, playing and learning how to play new instruments, and painting.

phoenix kai vaughan-ende (they/them) is a poet, writer, and multimedia artist located on the unceded Indigenous lands of the Coast Salish peoples in Seattle, WA. they received their BA in Ethnic Studies from the University of Colorado Boulder and are working toward their MFA in Creative Writing and Poetics at the University of Washington Bothell. their work has appeared in *Sweet: A Literary Confection*, *Beyond Queer Words*, *The Timber Journal*, and elsewhere. their work is currently fascinated with queer belonging, physics, identity, speculative futures, and mythological retellings. In their practice, they strive to do the undoable, to laugh in the face of gravity and frolic among the stars.

Robin Stone (he/them) is in their last undergraduate year at UWB. As a Health Studies Major, they have a personal passion for working to treat Alzheimer's and it's related dementias; working to help the individuals, families, and communities devastated by the disease. Outside of mountain biking and playing *Dungeons & Dragons*, he is also a devout Mormon and Christian, who advocates for an authentically faith filled life while still being authentically queer.

Sabine Drake (she/her/hers) is a third-year undergraduate student. She is currently a Health Studies major, intending to minor in Chemistry in the hopes of pursuing her Doctor of Veterinary Medicine career. She is passionate about public health research and community disparities, as well as her work as a Veterinary assistant. She enjoys writing and reading, especially surrounding health-related topics. This is her first year working with the CROW editorial board, and she is looking forward to expanding her abilities and knowledge in working with others and their writing. In her free time, she enjoys spending time with her family, being outside, and of course, spending time with her two adorable dogs.



— |

| —

— |

| —