An Assessment of Youth Mental Health in Nantucket, MA

An Interactive Qualifying Project Submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
In partial fulfillment of the requirements for the
Degree of Bachelor of Science

December 12, 2023

Authors
Simeon Hoffler Jr.
Mary Laurens
Elisia McLean
Myles St. Jean
gr_ack23-youth@wpi.edu

Sponsor
Jerico Mele,
HHS, Director of Human Services

Advisors
Professor Fred J. Looft
Professor Susan M. Jarvis
Worcester Polytechnic Institute

Abstract

The goal of this project was to develop a survey and interview subject matter experts to identify the mental health issues that are present within the middle and high school youth community on Nantucket. The online survey was designed to be modular and customizable to the user and contained a mixture of Likert scale and multiple-choice questions, and open-response questions. A slightly modified version of the survey was also distributed to Worcester Polytechnic Institute Undergraduates to gather data that could be compared with data from the Nantucket Youth Survey. Based on an analysis of the survey results, follow up recommendations included conducting focus groups with schoolteachers and counselors and interviews with youth-oriented professionals, adding specific questions to the survey to obtain data on future career interest and homelife, and investigating minority groups that do not have as much representation in their respective schools or communities as their peers.

Acknowledgements

We would like to thank all of those who have worked with the team and have assisted us throughout the project:

- Our sponsor Jerico Mele who guided the team through the project and helped release the survey to the schools.
- Our advisors Professor Looft and Professor Jarvis who worked with and guided us throughout the project with our report, presentation, and overcoming the challenges that we experienced along the way.
- The Nantucket Contract Review Committee who helped create this project and brought it to the attention of WPI.
- The following people who we have interviewed, were interested in the project, and provided the team with valuable information:
  - Pauline Proch, Executive Director of Our House
  - Jason Bridges, Executive Director of Fairwinds
- The Nantucket Yacht Club for giving us a place to live for 7 weeks and finally,
- Young's Bike Shop for supplying bikes to everyone in the Nantucket Cohort.

An Assessment of Youth Mental Health in Nantucket, MA
Executive Summary

1.0 Introduction

According to the Center for Disease Control, 37% of public and private high schoolers found their mental health consistently declining during the pandemic (CDC, 2021). One of the primary factors contributing to the decline was the switch to remote learning, which isolated many students from their friends and school communities (Rutkowska et al., 2022). While most of the nation has returned to in-person learning, the impacts on youth mental health due to COVID-19 continue to persist (Puteikis et al., 2022).

In light of the pandemic, growing concerns about youth mental health on Nantucket have surfaced. The Town of Nantucket Health and Human Services Department (HHS) requires baseline data to quantify these concerns and to secure funding for programs to support the youth. (J. Mele, Personal Conversation).

The lack of data on Nantucket youth mental health poses a challenge in tracking the program efficacy of efforts made by the HHS. In fact, a behavioral health needs assessment has not been conducted on Nantucket since the COVID-19 pandemic. For HHS to deploy services efficiently, baseline measurements of youth mental health must be established.

The goal of this project was to design a data-driven survey tool that the Nantucket Health and Human Services Department can use to track the mental health of the youth community on the island.

2.0 Background

The World Health Organization defines mental health as a "*state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community*." (World Health Organization: WHO, 2022). In other words, having "good" mental health enables people to fully engage and function in their communities. A person struggling with poor mental health can experience feelings of loneliness, helplessness, and depression, among many others. In extreme cases, poor mental health can lead to substance abuse, self-harm, and suicide (CDC, 2023).

Mental health is difficult to understand and diagnose; not everyone struggling with their mental health experiences the same symptoms, making finding help and support complex for an adult. Children and adolescents, whose minds and social skills are still developing, need extra support to ensure they grow into confident, happy, and productive young adults. According to the Youth Risk Behavior Health Survey from the CDC in 2021, 1 in 5 students have seriously considered attempting suicide, indicating that mental health for youth in America is critical (Center for Disease Control, 2021).

COVID-19's Impact on Youth (Grades 8-12)

Throughout the COVID-19 pandemic, the mental health of the youth community in the U.S. worsened. School closures due to the pandemic isolated many youths from the classroom and their friends, leading to increased mental and social issues (CDC,2021). A Covid Experience Survey (CES) conducted in the U.S. from October 16 to November 6, 2020, examined the impact of virtual, hybrid, and in-person learning on adolescent (13-19 years old) mental health and belonging (Hertz et al., 2022, p.59). 567 adolescents overall participated in the CES, representing 460 from public schools, 36 from private schools, and 69 from another type of school.

Almost one-half (44.7%) of students doing virtual learning reported high stress levels, and 34.8% reported low levels of school connectedness (Hertz et al., 2022, p.59). The data highlights the unfavorable impact that COVID-19 had on the youth community, specifically middle and high-school-aged students. Social isolation from the schools brought many challenges to students, particularly students of color (Black and Hispanic). These marginalized groups experience many challenges, including racism and social and economic inequalities. These challenges can contribute to a feeling of decreased social fit (ICMA, 2021).

Though the article does not reflect a disproportionate impact of COVID on LGBTQ+ youth, other studies indicate they experienced more loneliness than cisgender heterosexual youth (CDC, 2017). Members of the LGBTQ+ community are statistically more at risk of feeling lonely or socially isolated. Organizations such as the Trevor Project, founded in 1968, provide support and services to youth in the LGBTQ+ community (Trevor Project, n.d.). The Trevor Project conducted four polls: two included a poll with 600 LGBTQ+ youth ages 13-24, between July 21 and July 29, 2020, and another poll of 600 cisgender/straight youth ages 13-24 from July 21 to July 24, 2020. The Trevor Project examined the poll results and found that 68% of LGBTQ+ youth reported feeling stressed compared to 56% of cis/straight gender youth amidst the fallout of the pandemic. 54% of LGBTQ+ youth also reported feeling lonely compared to 38% of cis/straight youth (Trevor Project, 2020). These statistics from the polls examined by the Trevor Project show that the members of the LGBTQ+ community are more at risk for developing mental health issues and experiencing feelings of loneliness and hopelessness due to being socially isolated.

Previous Survey Efforts

National-Scale Survey Efforts

There are many notable initiatives to survey youth mental health nationally. Such initiatives are conducted by Mental Health America (MHA), the CDC, and Pride Surveys. MHA creates a report each year on mental health in the US; within that is data specifically related to youth, such as depressive episodes and substance use disorders, as well as treatment and insurance information (MHA, 2022). The CDC has the Youth Risk Behavior Surveillance System (YRBSS) (CDC, 2023) and the Adolescent Behaviors and Experiences Survey (ABES) (CDC, 2022).

Both tools track the habits and health of high school students, with ABES focusing on the COVID-19 impact specifically. The Pride Student Survey gathers data on bullying, substance abuse, and many more factors in grades 6-12 (Pride Surveys, 2023). The data these organizations report strengthens people's understanding of the mental health of American youth. The results of these initiatives can be shared across the country and used to impact youth populations nationally.

State-Wide Survey Efforts

Efforts to assess youth mental health also exist statewide. The Massachusetts Youth Health Survey (MYHS) investigates the health of children and young adults in grades 6-12 (Commonwealth of Massachusetts, 2021). Topics covered include chronic disabilities, drug use, obesity, and violence. The MYHS also identifies factors associated with lower youth health risk, such as having a solid support network. The Massachusetts Department of Public Health (MDPH) is responsible for this initiative, which provides data-driven insight into the mental health of youth in Massachusetts specifically. This initiative allows for the isolation of data pertaining only to this state, increasing relevance, and narrowing the context of the results. State-level data can drive state-level efforts to improve youth mental health.

3.0 Methods

The goal of this project was to design a data-driven survey tool that the Nantucket Health and Human Services Department can use to track the mental health of the youth community on the island. The team achieved this goal through the following objectives:

1. Identify factors (e.g. social or cultural) that contribute to the students' sense of belonging.
2. Identify the barriers that impede the students' willingness to use current mental health resources available in their schools and communities.
3. Document the impact that the COVID-19 pandemic had on the students' mental health and academic performance.
4. Assess how the students' involvement, or lack of involvement, in their schools and homes (e.g. family and friends) impacted their mental health.

Methods Used for All Objectives

In-depth Interviews

Multiple in-depth interviews were conducted individually with subject matter professionals. The interviews were meant to provide insight into the types of problems that the professionals find are prevalent in the youth community.

Online Survey for WPI Students

Before releasing the HHS survey to Nantucket youth, the team advertised a similar version to WPI students. This survey's goal was to receive feedback on the survey design and collect additional data relevant to this research. The design of this survey was consistent with that of the Nantucket HHS survey. The main difference between the 2 surveys was the change in questions relating to a student's age. This version of the survey also included a question at the end requesting feedback and suggestions for survey improvement.

Online Survey for Nantucket HHS

The team developed an online survey (Appendix A) with Qualtrics. The goal of the survey was to assess the mental health of middle and high school students, providing the team with baseline information on the youth population. The survey was designed to be modular so students could opt out of any sections they felt uncomfortable answering. Once the team finished creating the survey, it was sent to the Health and Human Services Department, which administered links to the survey to the principals of the schools. The principals then distributed the links to the teachers and scheduled a time during the school day for the students to take the survey.

4.0 Results and Findings

Once the HHS' consent form distribution plan was approved by the Town of Nantucket, the link to the student survey and parental consent form was distributed to school administrators and through town-affiliated social media outlets. The survey was administered to students at Cyrus Peirce Middle School only in the absence of an opt-out form signed on their behalf. Time was allocated for these students to complete the survey during the school day on Friday, December 1st. Neither the Nantucket High School nor the Nantucket New School allocated in-class time for students to complete the survey.

Scoring System

To aid in data analysis, The team developed a scoring system for questions relating to mental health, belonging, and COVID-19. This method yielded three different scores that were used to quantify a student's overall mental health, sense of belonging, and the experiences with learning during the pandemic. Below is an outline explaining each of the three scores,

highlighting the survey questions that were used for the calculation of each score and the respective scale that each score is on.

Table 4.1 displays the averages and standard deviations for the three scores among the entire population of students who took the survey.

Table 4.1 Breakdown of Scores

Score	Sample Size	Mean	Standard Deviation
Mental Health Score	202	3.86	0.91
Belonging Score	202	3.56	1.12
COVID Score	198	0.89	0.92

Note: A higher score represents a healthier mental health state using the scoring system described earlier.

Nantucket Youth Results and Findings

The team received a total of 204 responses from the survey that was distributed to the Nantucket Public Schools, and the Nantucket New School.

Gender seemed to play a larger role in mental health scores. Male and female identifying students differed by around a half point for their average Mental Health and Belonging scores, with men seeming to have better mental health and a better sense of belonging than women. The data also seems to point to women struggling more during virtual learning than men according to Figure 4.1.

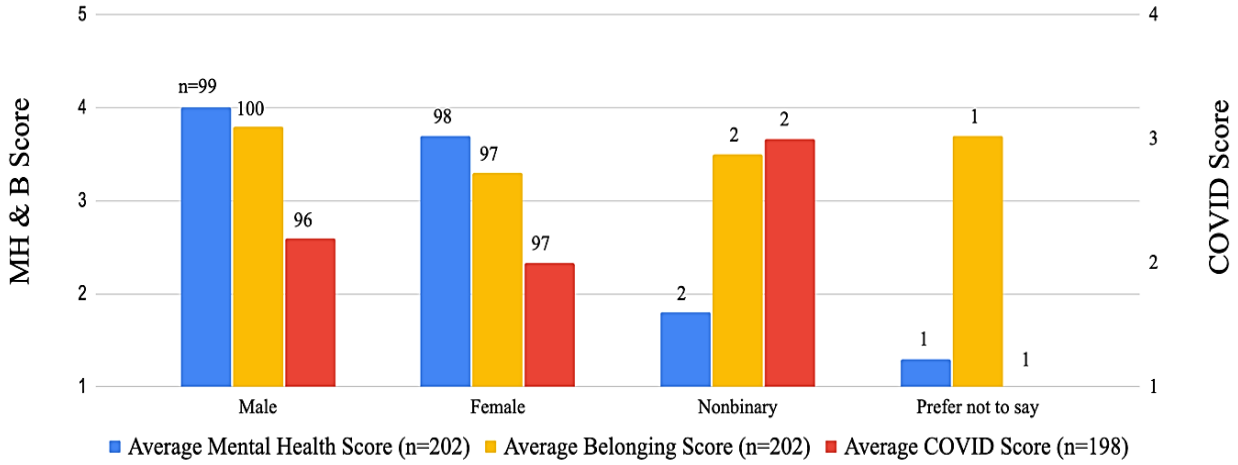

Figure 4.1 Comparison of Mental Health (MH), Belonging (B), and COVID Scores Across Gender Identities

Barriers to Mental Health Resources

The majority of students (66.2%) answered "No" to Question 37: "Would you ever use mental health services offered at your school?". A thematic analysis of these students' responses to Question 38: "Why would you use or not use these services?" is shown below in Figure 4.2:

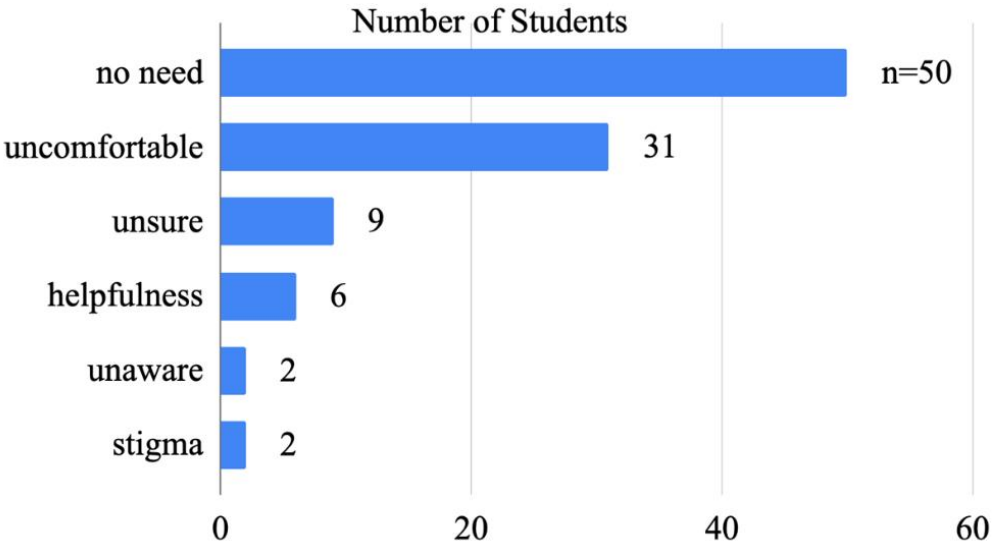

Figure 4.2 Common Themes of Student Hesitance

The primary reason students said they would not use mental health services was that they did not feel a need to use them. Many students reported that they were not struggling with any issues that mental health services could fix. Others responded that they had resources at their disposal that they would prefer to utilize over school-offered mental health services.

The secondary reason students answered "No" to Question 37 was that they felt uncomfortable using mental health services offered at their school. Students reported that they did not trust their school with sensitive information concerning their mental state. Others feared potential consequences that could arise from using these services.

Academics

Students were asked to self-report their overall grades in Question 23: "How would you describe your grades in school this year?". Figure 4.3 shows the distribution of students for each response and the average Mental Health, Belonging, and COVID score that correlated with a student's respective grades.

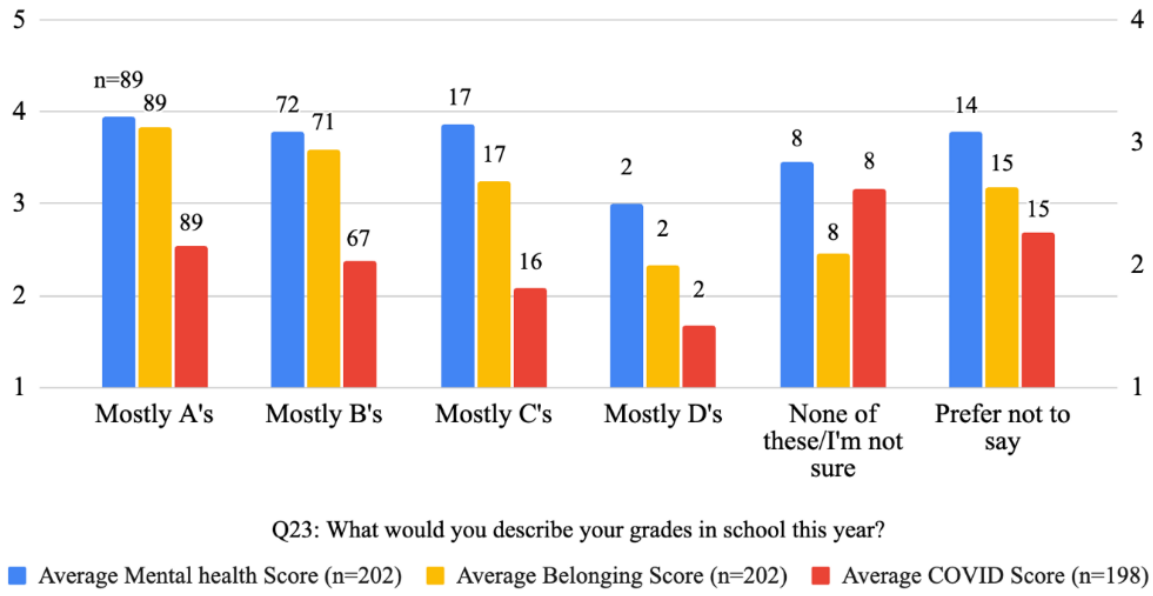

Figure 4.3 Comparison of Mental Health (MH), Belonging (B), and COVID Scores Relative to Students' Grades

The graph shows a steady decline in both Mental Health Score and Belonging Score as a student's grades get lower. The graph also shows that students with lower grade averages tended to struggle more during the pandemic, as evidenced by the increased COVID Score. Due to the limitations of the survey, it is unclear which factor affects which. It could be the case that having poor mental health causes a student to struggle with grades, or the opposite may be true; students receiving lower grades may cause their mental health to decline. More concentrated research must be conducted to further determine this relationship.

Interviews

The team interviewed Pauline Proch, an executive director of Our House and a board member of the Nantucket School Committee. Through this interview, the team learned more about the struggles that Nantucket youth are experiencing in the classroom. Her previous position as a schoolteacher provided a valuable perspective that the team considered while crafting the survey. Overall, Mrs. Proch emphasized the lack of student engagement and motivation to learn and ask critical questions that could benefit their future career and academic endeavors.

The team also interviewed Jason Bridges, a previous member of the select board of Nantucket, and the executive director of Fairwinds—Nantucket's Counseling Center. In speaking with Mr. Bridges, the team learned more about the challenges that youth are facing outside the classroom regarding extracurriculars and outside support resources. The team learned more about the challenges that youth are facing outside the classroom regarding extracurriculars and outside support resources.

5.0 Conclusions and Recommendations

Conclusions

HHS Survey

Trends within the data may suggest that there is an overall lack of willingness among a majority of students to use mental health resources offered in schools. To better understand this trend, the team performed a thematic analysis of student responses. The two most contributory factors to student hesitance were the perceived lack of need and a lack of comfort with using services. These themes were consistent across more than half of the 133 students who said they would not use mental health services at their school. Other barriers that were identified included the following; questioning the helpfulness of the resource, being unaware that such resources were available, and the stigma related to needing or using such resources.

The data also may suggest that students who do not identify with the LGBTQ+ community experience better mental health overall than students who do. However, because only 8.5% of students identified as part of the LGBTQ+ community, further research is needed to confirm this correlation.

The team concluded that students who reported receiving lower grades experienced worse mental health than those with higher grades. Additional research is needed to conclude the nature of this correlation, and to identify which factor influences which.

Interviews

As a result of the interviews conducted with Pauline Proch and Jason Bridges, the team drew the following conclusions that impacted survey design.

- Isolation and loneliness are prevalent concerns among the youth community on Nantucket (Pauline Proch Interview, November 2023).
- The geographical isolation of Nantucket is a contributing factor to such feelings of loneliness and isolation (Jason Bridges Interview, November 2023).
- Loneliness and isolation are two of the many implications that the COVID-19 pandemic had on Nantucket youth (Pauline Proch Interview, November 2023).

Recommendations

Focus Groups & Interviews

The team recommends that future investigators contact subject matter experts, school faculty, and parents of students in Nantucket and a peer community as soon as possible to schedule focus groups and interviews.

Interviews with experts in the field of youth mental health could provide reputable, insightful, and well-structured qualitative data relevant to this research. Focus groups with faculty and parents could provide firsthand perspective of the behavioral trends observed in

Nantucket schools and homes respectively. This insight could then be used to develop and revise the questions for an online survey (Deaton et al., 2022). Relevant guidelines and scripts can be found in Appendices C, D, and E.

Implementing this qualitative methodology with members of a peer community, such as Martha's Vineyard, would allow for the comparison of data gathered from Nantucket with that of a population with similar characteristics. Such a comparison could be used to identify common trends between the two populations and further shape recommendations made to the HHS.

The team's success in conducting focus groups and interviews was limited by the communication and availability of contacted individuals. Reaching out to schedule times for focus groups and interviews in the earliest possible stages of project work could reduce the time spent waiting for communication while on the island.

Online Survey Tool

The team recommends the following, in no particular order:

1. Implement survey questions related to the home environment of students.
2. Implement survey questions related to academic subject affinity and career interests.
3. Clarify questions which ask a participant to describe their interpretation of a word or phrase.
4. Specify to survey participants that personally identifiable information should not be included in their responses.
5. Determine survey approval processes, distribution methods, consent responsibilities, and any ethical or legal implications as soon as possible.
6. Implement all survey methodologies in a peer community to Nantucket.
7. Explore multiple networks of distribution for surveys.

Further Investigation

The team recommends that additional research be conducted to assess the following:

- The mental state of female students—as well as minorities of gender, orientation, or ethnicity—relative to that of their peers.
- The relationships between students' behavioral health and their grades, substance use, and any other measurable factors.

The survey responses of minorities fall short of significance to the Nantucket youth population. The team suggests a more thorough investigation into the behavioral health of students whose identity is underrepresented by a quantitative needs assessment of this scale. Monitoring these demographics could reveal actionable insights which inspire a higher degree of confidence than those found by the team. Majority demographics should not be ignored, however, as even these students' survey responses cannot stand on their own. More data is required to support the trends found in this study.

The team suggests that additional research be conducted to determine the correlation between a student's grades and their mental health. Additionally, more investigative action should be taken to identify if receiving poor grades causes poor mental health, if the inverse is true, or if there are additional factors at play. Further investigation into this topic could provide data that will allow school administrators, service providers, and parents to effectively address the needs of students who are struggling at school.

The team's survey tool covered a range of topics, many of which provided results that were too weak to draw conclusions from. However, these topics may still prove valuable to assess in future surveys, as new trends may emerge over time. Continuing to improve assessment techniques of all viably measurable student behaviors could strengthen survey methodology and promote a more comprehensive understanding of youth mental health on the island.

6.0 Bibliography

About Nantucket. About Nantucket | Nantucket, MA - Official Website. (n.d.). https://www.nantucket-ma.gov/1608/About-Nantucket

CDC. (2022, March 31). Adolescent Behaviors and Experiences Survey (ABES). Centers for Disease Control and Prevention. https://www.cdc.gov/healthyyouth/data/abes.htm

Commonwealth of Massachusetts. (2021, September 8). *COVID - 1 9 Community Impact Survey(CCIS)*. Mass.gov. https://www.mass.gov/info-details/ccis-spotlight-black-residents

Commonwealth of Massachusetts. (n.d.). Massachusetts Youth Health Survey (MYHS). Mass.gov. https://www.mass.gov/lists/massachusetts-youth-health-survey-myhs

The Pride Survey for grades 6-12 | Pride Surveys. (n.d.). Pride Surveys. https://www.pridesurveys.com/index.php/pride-student-survey-for-grades-6-12/

Trevor Project. (2020, August). *HOW COVID-19 IS IMPACTING LGBTQ YOUTH*. https://www.thetrevorproject.org/wp-content/uploads/2020/10/Trevor-Poll_COVID19.pdf

World Health Organization. (2022, June 17). *Mental health*. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

Qualtrics. (n.d.). https://www.qualtrics.com/support/survey-platform/getting-started/survey-platform-overview/

Puteikis, K., Mameniškytė, A., & Mameniškienė, R. (2022). Sleep Quality, Mental Health and Learning among High School Students after Reopening Schools during the COVID-19 Pandemic: Results of a Cross-Sectional Online Survey. *International Journal of Environmental Research and Public Health*, *19*(5), 2553. https://doi.org/10.3390/ijerph19052553

Table of Contents

1.0 Introduction

According to the Center for Disease Control, 37% of public and private high schoolers found their mental health consistently declining during the pandemic (CDC, 2021). One of the primary factors contributing to the decline was the switch to remote learning, which isolated many students from their friends and school communities (Rutkowska et al., 2022). While most of the nation has returned to in-person learning, the impacts on youth mental health due to COVID-19 persist (Puteikis et al., 2022).

In light of the pandemic, growing concerns about youth mental health on Nantucket have surfaced. In particular, the Town of Nantucket Health and Human Services Department (HHS) requires baseline data to quantify these concerns and to secure funding for programs to support the youth (J. Mele, Personal Conversation).

HHS is divided into two agencies: the Public Health Department and the Human Services Department. The mission of the Public Health Department is to provide "a *range of environmental and community health services to monitor and improve the health status and quality of life of persons who live or work on Nantucket Island*" (Town of Nantucket, n.d). The mission of the Human Services Department, critical to this report, is to "*connect residents to assistance and support through the following sub-divisions: Commission on Disability, Senior Services, and Veterans' Services*" (Town of Nantucket, n.d).

The lack of data on Nantucket youth mental health poses a challenge in tracking the efficacy of support efforts made by the HHS. In fact, a behavioral health needs assessment has not been conducted on Nantucket since the COVID-19 pandemic. For HHS to deploy services efficiently, baseline measurements of youth mental health must be established. One way to obtain baseline data is to conduct a survey on an appropriate scale of the Nantucket youth (J. Mele, August 2023 Project Description). The island's unique characteristics require a customized survey, the results of which must be relevant enough to island youth to inform decisions made for their benefit. These conditions can be satisfied by tailoring a survey tool to the needs of the target population and ensuring the content is relevant to the HHS of Nantucket.

The goal of this project was to design a data-driven survey tool that the Nantucket Health and Human Services Department can use to track the mental health of the youth community on the island. The team achieved this goal through the following objectives:

1. Identify factors (e.g. social or cultural) that contribute to the students' sense of belonging.
2. Identify the barriers that impede the students' willingness to use current mental health resources available in their schools.
3. Document the impact that the COVID-19 pandemic had on the students' mental health and academic performance.

4. Assess how the students' involvement, or lack of involvement, in their schools and homes impacted their mental health.

The remainder of this report is organized into 5 sections. Section 2 provides background information in support of this project; it begins with a brief overview of the meaning of mental health and identifies some of the factors that have impacted the mental health of the youth community. This section also provides an overview of previous efforts made statewide and nationwide to assess student mental health and well-being. Section 3 outlines the methods used to develop the online survey tool for the Health and Human Services Department. The findings presented in section 4 outline results from the survey administered to students and the in-depth interviews conducted with subject matter professionals. Finally, section 5 includes the team's conclusions based on the results and findings from the surveys and interviews that were analyzed in section 4. Section 5 also outlines the team's recommendations for future work on this project, considering the challenges the team experienced throughout the duration of the project.

2.0 Background

2.1 Introduction

The World Health Organization defines mental health as a "*state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community*." (World Health Organization: WHO, 2022). In other words, having "good" mental health enables people to fully engage and function in their communities. A person struggling with poor mental health can experience feelings of loneliness, helplessness, and depression, among many others. In extreme cases, poor mental health can lead to substance abuse, self-harm, and suicide (CDC, 2023).

Mental health is difficult to understand and diagnose; not everyone struggling with their mental health experiences the same symptoms, making finding help and support complex for an adult. Children and adolescents, whose minds and social skills are still developing, need extra support to ensure they grow into confident, happy, and productive young adults. According to the Youth Risk Behavior Health Survey from the CDC in 2021, 1 in 5 students have seriously considered attempting suicide, indicating that mental health for youth in America is critical (Center for Disease Control, 2021).

2.2 Adolescent vs. Adult Mental Health

Children and adolescents behave differently from adults when communicating their mental health, as children are still developing their social skills and sense of identity. Diagnosing children with mental illnesses is often more complicated since children are less effective at conveying their experiences and feelings (Perry 2022). Adults may be able to express exactly what they feel and experience and receive the care they need individually. To diagnose a child, however, doctors may observe children playing or interacting, and rely on accounts of prominent adults in the child's life (ibid). While severe mental illnesses can have detrimental effects on everyday life, milder cases of depression or anxiety can still cause a child's mental state to worsen if there is not sufficient diagnostic evidence to prescribe a medical treatment plan (Patel et.al, 2015).

Mental Illness

Approximately 1 in 5 adults and 1 in 6 adolescents have been officially diagnosed with a mental illness (NAMI, n.d.). It is essential to understand the difference between mental health symptoms and mental illnesses. Mental illnesses can include depression, anxiety, ADHD, and schizophrenia, among many others. Each of these illnesses can be diagnosed by a medical professional and describe people whose mental states negatively affect their lives and who may need medicinal or psychological treatment to lessen their symptoms. These diagnoses differ from someone without a mental illness, who may feel depressed when something makes them sad. Their symptoms do not tend to reach the level of someone with clinical depression. Mental

illnesses often have no cure and require professional help or prescribed medication to mitigate the symptoms (National Institutes of Health, 2007).

Influences of Adolescent Mental Health

The household a child comes from can significantly impact their mental health (McLaughlin et al., 2012). For example, a family with a lower annual income will often be living in a lower quality house, and the parents will often have to spend more of their time working than interacting with their children. It has been documented that children and adolescents living in lower-income families or environments were significantly more likely to develop a mental illness (McLaughlin et.al, 2012). Even if the child does not have a mental illness, children who live in low-income families disproportionately struggle with poor mental health. This is especially true if the child is aware of their family's financial struggles, which can lead to family tension in addition to feelings of dissatisfaction when comparing their home lives to their peers. Dr. Carol Dashiff and her team from the University of Alabama wrote, "*Adolescents from low socioeconomic environments are at a greater risk for teen suicide, and the violence exposure experienced by adolescents living in high poverty neighborhoods has been associated with increased depressive symptoms, anxiety, and externalizing problem behaviors*." (Dashiff et.al, 2009).

Peer Socialization

The school environment is also influential for children and adolescents. They spend a sizable portion of their lives in school. School is where they learn to socialize with both adults and peers. Teachers facilitate this, along with helping the students learn basic subjects. If a teacher is not empathetic or supportive of a student, their students are more likely to develop mental illnesses (Schulte-Körne, 2016).

Social interaction among students of all ages is essential for their social development (Hartup 1989). Children gain interpersonal communication skills from talking with peers that they cannot gain from conversations with adults. When talking to others of the same age, the students see each other as equals, whereas adults are usually seen as figures of authority. Even if the conversation is not perceived as "productive," they are still learning essential communication skills (Howe & Mercer, 2007).

Bullying is a common issue in students; 20% of US students report being bullied (PACER Center, 2020). Bullying is defined as a deliberate, repeated harmful act performed by one person or group to another to cause harm. It can include traditional bullying, like physical, verbal, and social abuse, or nontraditional forms such as cyberbullying. Cyberbullying became much more prevalent during the COVID-19 pandemic and can be equally as dangerous as traditional bullying (Forsberg, 2022). Cyberbullies will send hurtful messages to the victim or even post embarrassing things about the victim for others to see. Being either the perpetrator or the victim of bullying can result in many adverse mental health conditions, such as depression, anxiety, and self-harming behavior (Eyuboglu et.al, 2021). Both traditional and

cyberbullying can have severe effects on the children involved. A 2005 study spanning 28 countries asked children how often they were bullied and to report their symptoms. Each country showed strong correlations between bullying and feelings of loneliness, helplessness, isolation, and tiredness, regardless of gender or race (Due 2005).

Gender Identity, Race & Ethnicity

Gender identity, race, and ethnicity can all affect a student's mental health. Students' mental health tends to suffer if they feel different or isolated from their peers. Being part of the LGBTQ+ community can make students feel different from their peers in expressing themselves. As romantic or sexual preferences develop in high school, LGBTQ+ students can feel like their heterosexual friends do not understand them (Higa et.al, 2014). A study published by the Journal of Youth Studies found that LGBTQ+ students are at higher risk for self-harm and suicide. Transgender students were at an exceptionally elevated risk for self-harm and suicide (Fisher et.al, 2019) Members of the LGBTQ+ community are also more likely to experience intimate partner violence and sexual abuse than heterosexuals, which contributes to a negative mental state (Brown & Herman 2015). Additionally, a sample of LGBTQ+ youth reported that one-third had some psychiatric disorder (Mustanski et.al, 2011).

Regarding gender, males tend to be more prone to behavioral risk factors, such as alcohol and substance abuse, when experiencing stress or anxiety to cope with their worries. This is primarily due to the stimulation of dopamine, a molecule released into the brain responsible for the feeling of pleasure (*Alcohol and Dopamine*, n.d.). Meanwhile, women are more likely to develop anxiety, depression, and other mental health illnesses than men. According to a Mayo Clinic article, these feelings can be due to hormonal changes, difficulties with their identity, and stress from gender inequalities they face (Mayo Clinic Staff, 2019).

Similarly, students with a different race or ethnicity than their classmates tend to feel more isolated. Multiracial youth also might have less access to support systems. In a 2006 study spanning multiple countries, reports show that support system availability did affect mental health. (Klineberg et.al, 2006). Students from all ethnicities who reported the same level of support also had similar mental health states. However, since this study took place across multiple countries, most of the students were the same race as their classmates. Students of color in predominantly white regions have a weaker sense of belonging, leading to mental distress symptoms. Multiracial youth were also found to be more likely to have a mental illness (Fisher et.al, 2014). In the US, food insecurity was three times higher among African American adults and twice as high among Hispanic adults than for white adults. Harassment and discrimination and less access to stable housing were reported at higher rates for people of color than Caucasians. This disparity can lead to higher rates of substance abuse and suicide (McKnight-Eily et.al, 2021).

Self-harm

Poor mental health can be dangerous and cause the individual to engage in riskier behaviors (Goodyear-Smith et.al., 2017). Individuals with consistently poor mental health can be driven towards extreme measures, even at an early age. Without help, they could be a danger to both themselves and others.

In extreme cases, someone with an impaired mental state can attempt to harm themselves and even take their own life. For adolescents, 8% have engaged in nonlethal self-harm, and the rate of suicide in teens is 10.8 per 100,000 (Pappas, 2023), making suicide the leading cause of death in youth (McMahon et.al, 2023). A mental health disorder can increase these rates significantly—around 60% of youth with depression in a 2023 study by Wenjing Liu and their team admitted that they harmed themselves.

Substance Use

Another significant concern for youth with poor mental health is increased substance use. Substances like alcohol and marijuana, as well as other drugs, can adversely affect the health of teenagers. Alcohol can promote aggressive behavior, and frequent use of marijuana can worsen feelings of hopelessness and anxiety (Miller, 2023). These adverse effects are compounded when the user has a mental illness such as ADHD or schizophrenia—which are populations more likely to develop a substance use habit. In the worst cases, alcohol use can increase a user's risk for suicide, affecting impulsivity. Alcohol and other substances can negatively react with medications typically used to treat mental illnesses, making them even more dangerous for youth with mental illnesses (US Dept. Of Health and Human Services, 2003).

Academic Performance

Even without severe mental issues, students with poor mental health tend to perform worse in school and are absent more often than students with better mental health. Mental illnesses play an important part in this; only one-third of adolescents with a mental illness go on to post-secondary education, compared to the 60% US national average (SAMHSA, 2016). Mental health issues also cause students to act out, resulting in more suspensions and expulsions.

Students struggling with mental health have trouble focusing, recalling information, and problem-solving, resulting in lower grades. They also tend to have less energy to engage in social activities and have more difficulty making and maintaining friendships. If left untreated, these symptoms can create a cycle—students become more depressed if they do not have a good social life, which causes them to become less successful socially, creating a feedback loop that results in even more severe symptoms.

Long-Lasting Effects

Poor mental health experienced during childhood will often carry over into adulthood. Over an 8-year study, researchers found that adolescents with anxiety disorders and depression were less likely to live independently, work, or pursue higher education (Last, 1997). It was also found that young adults with mental illnesses had a lower quality of life than those with physical disabilities, further alluding to the importance of mental health to a person's well-being (Chen, 2006).

Resources & Treatment

An important factor in support of mental health, especially for students, is having a support system within their schools. Mental health support programs have shown many benefits for students who participate in them. These support systems provide access to professional guidance counselors, social workers, and nurses for any students who may need help. They provide a safe space for the students to discuss their feelings and offer solutions. Students with mental health disorders can be officially diagnosed and given medication and specialty treatment if needed. Any domestic cases like bullying can be eased with the help of a guidance counselor and other adults (Panchal, 2022). By getting access to treatment earlier in the process, students will feel happier and more confident, be able to maintain friendships, and their academic performances will improve.

After the COVID-19 pandemic, the U.S. Government, under President Joe Biden, invested in more mental health resources for youth, such as promoting early mental health screenings, funding schools to hire more school psychologists and counselors, and expanding access to treatment services like telehealth (The White House, 2021). However, for these services to be beneficial, students must take advantage of them. One of the most common reasons for not seeking help is the lack of knowledge about mental health and the perceived social embarrassment around seeking these services (Radez et.al, 2020). Even if students would benefit from some of these mental health services, they may not realize they need them or may be hesitant to utilize them due to the stigma surrounding mental health. Some suggested solutions include conversing more freely in the school environment about mental health and introducing formal education about the subject (Radez et.al, 2020). These efforts will decrease the stigma around mental health and educate students on the importance of mental health, which will remove some of the internal barriers students face in seeking mental health services.

2.3 COVID-19's Impact on Youth (Grades 8-12)

Throughout the COVID-19 pandemic, the mental health of the youth community in the U.S. worsened. School closures due to the pandemic isolated many youths from the classroom and their friends, leading to increased mental and social issues (CDC,2021). A Covid Experience Survey (CES) conducted in the U.S. from October 16 to November 6, 2020, examined the impact of virtual, hybrid, and in-person learning on adolescent (13-19 years old) mental health

and belonging (Hertz et al., 2022, p.59). 567 adolescents overall participated in the CES, representing 460 from public schools, 36 from private schools, and 69 from another type of school.

Almost one-half (44.7%) of students doing virtual learning reported high stress levels, and 34.8% reported low levels of school connectedness (Hertz et al., 2022, p.59). The data highlights the unfavorable impact that COVID-19 had on the youth community, specifically middle and high-school-aged students. Social isolation from the schools brought many challenges to students, particularly students of color (Black and Hispanic). These marginalized groups experience many challenges, including racism and social and economic inequalities. These challenges can contribute to a feeling of decreased social fit (ICMA, 2021).

Though the article does not reflect a disproportionate impact of COVID on LGBTQ+ youth, other studies indicate they experienced more loneliness than cisgender heterosexual youth (CDC, 2017). Members of the LGBTQ+ community are statistically more at risk of feeling lonely or socially isolated. Organizations such as the Trevor Project, founded in 1968, provide support and services to youth in the LGBTQ+ community (Trevor Project, n.d.). The Trevor Project conducted four polls: two included a poll with 600 LGBTQ+ youth ages 13-24, between July 21 and July 29, 2020, and another poll of 600 cisgender/straight youth ages 13-24 from July 21 to July 24, 2020. The Trevor Project examined the poll results and found that 68% of LGBTQ+ youth reported feeling stressed compared to 56% of cis/straight gender youth amidst the fallout of the pandemic. 54% of LGBTQ+ youth also reported feeling lonely compared to 38% of cis/straight youth (Trevor Project, 2020). These statistics from the polls examined by the Trevor Project show that the members of the LGBTQ+ community are more at risk for developing mental health issues and experiencing feelings of loneliness and hopelessness due to being socially isolated.

Food Insecurity

The data above highlights the impact COVID-19 had on youth (ages 13-24) in the U.S., though the subject of interest is youth on the island of Nantucket. Unfortunately, there is limited data on the island's mental health. One can only speculate how the youth on the Island might have been affected by circumstances such as food insecurity from being on an island. Geographic isolation *is the separation of two populations by geographical barriers*, which, in the case of Nantucket, is a body of water (ocean) from the mainland of Massachusetts. In 2015, Nantucket Cottage Hospital reported that among the population 8.8% of people experienced food insecurity (Nantucket Cottage Hospital, 2015, p.14). According to the Greater Boston Food Bank, during COVID-19 in 2021, 15% of the year-round island residents experienced food insecurity (Greater Boston Food Bank, 2021). Food insecurity is one of the many long-term struggles that residents face. Fearing an upcoming virus such as COVID-19 and being quarantined on an island with reduced resources can impact the mental health of anyone, particularly the youth who are naive to the situation—having them witness their distraught

parents trying to make ends meet for the family, inducing stress, worsening their mental health.

Dependence on Technology

The COVID-19 pandemic caused youth to depend more on technology, impacting their mental health and social development (Limone & Toto, 2021). The pandemic caused school closures, forcing students to rely on social media to communicate and socialize with friends and family, decreasing the adolescent's social development, especially for younger students (Ramsey et al., 2023). However, there is still uncertainty about the correlation between social media and the youth's mental health. In 2021, Common Sense Media, a nonprofit American organization dedicated to teaching families and children about digital literacy, conducted reports from 2015 to 2021 on the entertainment screen time of adolescents. Entertainment screen time includes watching TV, playing video games, using social media, browsing the internet, creating content, and reading eBooks. They found that the daily screen time of teenagers (13-18 years old) increased from 6.4 hours in 2015 to 8.36 hours in 2021 (Common Sense Media, 2021, p.3). Though the exact number varies from study to study, the trend is clear that teenagers spend more time on video games, social media, and TV than they did before the pandemic. Prolonged exposure to electronic products is known to increase stress and symptoms of depression for teenagers and adults (Nakshine et al., 2022, p.1).

Parents' Mental Health

The COVID-19 pandemic impacted many parents' mental health which is known to directly affect their children (CDC, 2021). During tough times like the pandemic, parents ensure safety and help their children through hardship. However, when a parent is also experiencing stress and anxiety, it becomes more difficult for them to effectively communicate with their children. A study found that parents under 35 were more likely to experience worsening mental health during the lockdown, and parents with younger children had higher stress levels due to the extra needs they required due to not being able to care for themselves (Whaley & Pfefferbaum, 2023, p.168). Witnessing a parent struggle with their mental health affects the child, as anxiety, depression, and low self-esteem correlate with abuse and child neglect (CDC, n.d). These parent-child relationships experienced additional strain among minority groups. For example, the Commonwealth of Massachusetts conducted the COVID-19 Community Impact Survey (CCIS) in 2020, of which 2,432 Hispanic/Latino residents in the state responded. 31% reported taking a leave of absence or reduced hours to care for their children, 75% reported being worried about overall expenses, and 57% worried about housing expenses (Commonwealth of Massachusetts, 2021, p.524). Within the African American community, 74% of the population of Massachusetts were more worried about their expenses, and 50% of parents in Massachusetts reported being concerned about their living expenses (Commonwealth of Massachusetts, 2021, p.245). Although these statistics are for parents across Massachusetts, they also likely reflected the situation on Nantucket. Additionally, COVID

impacts have been worse on Nantucket due to the high cost of living on the island (Housing Nantucket, n.d, p.2).

2.4 Previous Survey Efforts

National-Scale Survey Efforts

There are many notable initiatives to survey youth mental health nationally. Such initiatives are conducted by Mental Health America (MHA), the CDC, and Pride Surveys. MHA creates a report each year on mental health in the US; within that is data specifically related to youth, such as depressive episodes and substance use disorders, as well as treatment and insurance information (MHA, 2022). The CDC has the Youth Risk Behavior Surveillance System (YRBSS) (CDC, 2023) and the Adolescent Behaviors and Experiences Survey (ABES) (CDC, 2022). Both tools track the habits and health of high school students, with ABES focusing on the COVID-19 impact specifically. The Pride Student Survey gathers data on bullying, substance abuse, and many more factors in grades 6-12 (Pride Surveys, 2023). The data these organizations report strengthens people's understanding of the mental health of American youth. The results of these initiatives can be shared across the country and used to impact youth populations nationally.

State-Wide Survey Efforts

Efforts to assess youth mental health also exist statewide. The Massachusetts Youth Health Survey (MYHS) investigates the health of children and young adults in grades 6-12 (Commonwealth of Massachusetts, 2021). Topics covered include chronic disabilities, drug use, obesity, and violence. The MYHS also identifies factors associated with lower youth health risk, such as having a solid support network. The Massachusetts Department of Public Health (MDPH) is responsible for this initiative, which provides data-driven insight into the mental health of youth in Massachusetts specifically. This initiative allows for the isolation of data pertaining only to this state, increasing relevance, and narrowing the context of the results. State-level data can drive state-level efforts to improve youth mental health.

Surveys in Martha's Vineyard

Geographic proximity, cultural factors, and infrastructure make Martha's Vineyard a potential peer community to Nantucket. They are both islands located along the coast of Massachusetts. As such, they share many factors like mainland access, weather patterns, and seasonal population changes. The similarities between the two locations may allow parallels to be drawn between their communities.

The Martha's Vineyard Youth Task Force (YTF) biannually conducts a Youth Risk Behavior Survey adapted from the CDC's national survey of the same name (YTF, 2018). The anonymous survey asks middle and high school students about health and behavioral risks. YTF uses the results to help inform their initiatives and support the students' needs. This is similar to the

Nantucket HHS' mission of gathering baseline mental health data to help secure grant-funded youth mental health programs. Nantucket and Martha's Vineyard have closely aligned missions to assess their youth's mental health and address observed problems. Due to the islands' similarities, knowledge gained from Martha's Vineyard may be helpful when considering the needs of HHS and the youth of Nantucket.

Importance of Age Demographics

Age becomes relevant when considering the content and format of the survey itself. In the article "The Quality of Survey Data as Related to Age of Respondent," the authors state that "*older respondents may answer with less precision than younger respondents in a survey research interview or may be more influenced by the particular format used for presenting questions or eliciting answers*" (Andrews & Herzog, 1986, p.403). For this reason, it is crucial to ask age-appropriate questions that the respondent can accurately and honestly complete without losing focus. However, asking appropriate questions cannot come at the cost of creating a survey that will successfully yield relevant baseline data. There is an important balance to achieve between the needs of students in specific age ranges and the implementation of a survey on a school-wide scale across all age and maturity levels. Considering age as a factor during the creation and deployment of this tool will yield more specific results for analysis since youth of different ages have had different experiences. They have also experienced world events at various stages of life. This variance makes it imperative to factor in age when determining the mental health needs of a student on Nantucket.

Conclusion

The literature cited in this section is not meant to define the field of mental health in its entirety, nor is it intended to come from a place of expertise in the subject matter. Rather, it is a collection of examples from some of the many facets of mental health and survey design considered by the team during this study and in developing the survey tool provided to the Town of Nantucket Health and Human Services Department.

3.0 Methods

The goal of this project was to design a data-driven survey tool that the Nantucket Health and Human Services Department can use to track the mental health of the youth community on the island. The team achieved this goal through the following objectives:

1. Identify factors (e.g. social or cultural) that contribute to the students' sense of belonging.
2. Identify the barriers that impede the students' willingness to use current mental health resources available in their schools.
3. Document the impact that the COVID-19 pandemic had on the students' mental health and academic performance.
4. Assess how the students' involvement, or lack of involvement, in their schools and homes (e.g. family and friends) impacted their mental health.

3.1 Methods Used for All Objectives

In-depth interviews were used as supplementary information to a data-driven online survey. As a result, the methods described below were used to achieve all four of the objectives.

In-depth Interviews

Multiple in-depth interviews were conducted individually with subject matter professionals. The interviews were meant to provide insight into the types of problems that the professionals find are prevalent in the youth community. Topics discussed included:

- Signs of Worrisome Behavior
- Mental Health Issues
- Accessibility of Resources
- Students' Willingness to Use Resources

Online Survey for WPI Students

Before releasing the HHS survey to Nantucket youth, the team advertised a similar version to WPI students (Appendix B). This survey's goal was to receive feedback on the survey design and collect additional data relevant to this research. The design of this survey was consistent with that of the Nantucket HHS survey. The main difference between the 2 surveys was the change in questions relating to a student's age. This version of the survey also included a question at the end requesting feedback and suggestions for survey improvement. The team advertised the survey via personal and academic networks. The survey was directed towards WPI undergraduates above the age of 17 for consent purposes.

Online Survey for Nantucket HHS

The team developed an online survey (Appendix A) with Qualtrics. The goal of the survey was to assess the mental health of middle and high school students, providing the team with baseline information on the youth population. The survey was designed to be modular so students could opt out of any sections they felt uncomfortable answering. Once the team finished creating the survey, it was sent to the Health and Human Services Department, which administered links to the survey to the principals of the schools. The principals then distributed the links to the teachers and scheduled a time during the school day for the students to take the survey.

3.2 Ethical Considerations

The Health and Human Services Department managed all ethical considerations regarding the online survey for the schools. This research accomplishes Goal 3 of the United Nations Department of Economic and Social Affairs' goals for sustainable development.

Potential Benefits

The focus group participants may have felt a sense of purpose knowing that their contributions provided the team with the knowledge and information needed to develop the mental health survey for their students. This group was an opportunity for the participants to learn something new and learn from their peers while strengthening their relationships with one another as they shared their experiences and answers during the discussions.

The in-depth interview participants helped their student or child with their mental health by providing the team with information to better analyze which services are needed. Interview participants were able to express their feelings and opinions during the discussion. Their identities were kept confidential, and the team ensured that the interview was conducted in a safe space.

Risks & Risk Mitigation

One potential risk in conducting focus groups was the occurrence of groupthink, where participants tend to answer questions similarly to others for fear of standing out or disagreeing. This can allow dominant participants to take over the discussion and influence other participants to agree, potentially diminishing the benefits of having multiple perspectives. To address this issue, the team explained the agenda and the ground rules for the focus groups. The value of each participant's opinion of the study was emphasized. Everyone was arranged in a circle, creating a sense of equality among the participants, encouraging discussion, and allowing the facilitator to see every participant.

To avoid feelings of distress or discomfort among the participants when answering sensitive questions, the team warned participants of the questions that would be asked during the interview, allowing them to decide whether they wanted to continue or

withdraw. Also, the team was ready to answer any questions the participants might have regarding the study and their contribution.

Data Storage and Security

The data collected from the focus groups and in-depth interviews was saved to a OneDrive folder and shared with the team members. As an extra layer of security, the Word documents were password protected (Microsoft). Other protections and actions taken include:

- Data was password-protected in a shared Excel spreadsheet.
- Data files were deleted from the shared OneDrive before the end of the project term.
- Passwords for the Word documents and Excel spreadsheets were changed regularly.

The data collection for the online survey was done through Qualtrics, which has SOC2 Type 2 certification, which means that the data was secure within the software (Qualtrics). The team's work devices were protected when unattended. Laptops were kept close to ensure the data was secure and not accessed by someone other than the 4 team members. As an extra precaution to keep the data secure, the team set all laptops to turn off after extended periods of inactivity.

Informed Consent

HHS and the schools distributed survey consent forms to the parents of participating students. Also, consent forms were sent to the counselors, parents, and teachers before the meeting for the focus groups and in-depth interviews. At the start of each session, the team explained the consent forms to ensure they understood their rights, the context of the study, and the questions they would be asked. Before and after the focus groups and in-depth interviews, the team was ready to answer any questions, and reassured all participants that they could decide not to participate in the in-depth interviews or the focus groups at any time.

4.0 Results and Findings

Section 4 presents the results and findings from implementing the methodology outlined in Section 3.

4.1 Survey Development

This section of the paper details the survey development process, and the steps that were taken leading up to survey distribution. The purpose of this section is not to explain all the results in detail, which will be done in the following sections, but instead to briefly frame the survey development process.

During the first week on Nantucket, the team reached out to school administration and local youth behavioral health experts. This was done in an attempt to schedule focus groups and interviews for the purposes of survey development and feedback. Success in this endeavor was limited by the response time of the desired participants and resulted in a delay in survey deployment of about two weeks.

The WPI Institutional Review Board did not approve the student team to be involved in the distribution of consent forms to the parents. As a result, survey deployment was delayed an additional week as the HHS needed to secure approval from their legal team to proceed with the consent form distribution.

As the team waited for the HHS to receive consent form approval, a modified version of the Youth Behavioral Health Assessment was advertised to WPI undergraduates. To do this, the team established contact with various WPI clubs who then agreed to promote the survey to club members and WPI students in general. This was done with the intention of comparing certain metrics of the WPI and HHS data, as well as survey feedback. However, due to the age difference between the two populations, the team did not perform extensive comparative analysis on the two sets of data.

The WPI data set was useful for developing data analysis methods and techniques that could be used when analyzing the HHS data in the future. Section 4.3, for example, details the scoring system that was developed during the initial WPI survey data analysis. The WPI survey data also provided the team with analyzable data in case the HHS did not secure consent form approval and was unable to proceed with the survey distribution process.

After distributing the WPI survey, the team conducted an interview with Jason Bridges, Executive Director at Fairwinds Behavioral Health Center. This interview allowed the team to learn information (detailed in section 4.7) that would continue to assist the survey development process and provide recommendations to the HHS for future work on this project.

The WPI results and findings in the future sections are not meant to represent the whole student body. The distribution method of the survey was through clubs and organizations that team members were already affiliated with, potentially skewing the data, as most students who took the survey were from the Class of 2025 and shared a common interest with the team members.

4.2 Initial Nantucket Youth Survey Distribution

Once the HHS' consent form distribution plan was approved by the Town of Nantucket, the link to the student survey and parental consent form was distributed to school administrators and through town-affiliated social media outlets. The survey was administered to students at Cyrus Peirce Middle School unless the student had an opt out form signed on their behalf by a parent or guardian. Time was allocated for these students to complete the survey during the school day on Friday, December 1st. Neither Nantucket High School nor the Nantucket New School allocated in-class time for students to complete the survey.

4.3 Scoring System

To aid in data analysis, the team developed a scoring system for questions relating to mental health, belonging, and COVID-19. This method yielded three different scores that were used to quantify a student's overall mental health, sense of belonging, and the experiences with learning during the pandemic. Below is an outline explaining each of the three scores, highlighting the survey questions that were used for the calculation of each score and the respective scale that each score is on.

Overall Metal Health Score

Table 1: Mental Health Score

Score	Almost Always	Often	Sometimes	Not Often	Almost Never
Mental Health	1	2	3	4	5
Reference: 1: Weak Mental Health → 5: Strong Mental Health					

These questions can be found in Appendix A of Q12, Q13, and Q14 and in Appendix B of Q11, Q12, and Q13.

- How often do you experience feelings of depression?
- How often do you experience feelings of anxiety?
- How often do you experience feelings of hopelessness?

These questions ask students to report the frequency of their feelings of depression, anxiety, and hopelessness, on a five-point scale of "Almost always" to "Almost never". The responses to these questions are quantified and averaged to obtain a student's Mental Health Score. This score is a representation of the mental health of an individual and can be used to relate mental health with various factors that may influence it.

Belonging Score

Table 2: Breakdown of Belonging score

Score	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree
Belonging	1	2	3	4	5
Reference: 1: Weak sense of belonging → 5: Strong sense of belonging					

The question associated with these statements can be found in Appendix A of Q35 and in Appendix B of Q23.

Do you Agree with the following statements:

- I feel like my school accepts me for who I am.
- I can connect with my peers on an emotional level.
- I feel like I fit in with my peers.

Much like the Mental Health Score, the responses to the three statements in this question were numericized one to five and averaged together to calculate a student's Belonging Score. Sense of belonging is a factor the team and sponsor wanted to investigate in this study. This score allowed the team to discover which other variables are related to sense of belonging.

COVID Score

Table 3: Breakdown of COVID score

Score	Yes	Somewhat	No	Easier than in-person
COVID	1	2	3	4
Reference: 1: Harder to learn → 4: Easier to learn				

The question can be found in Appendix A of Q41 and in Appendix B of Q39.

- Was it hard for you to learn when you were doing virtual learning during the pandemic?

COVID Score is a measure of how much a student struggled with learning during the pandemic. Only one question was asked about difficulty learning during the pandemic, so each participant was assigned an integer score of one to four based on their response to this question. A response of "one" indicates the student struggled a significant amount during the pandemic, while a response of "four" indicates that the student found virtual learning to be easier than in-person learning. These scores can be used to correlate other factors to pandemic difficulty, and this system is supplemented by the open response question that follows it.

4.4 WPI Student Survey Results

Note: The full survey with all the questions that were asked in the survey can be found in Appendix B.

Section 4.4 details the results that the team analyzed and observed based on the WPI survey data. This data was gathered to check the validity of the survey and assess the mental health of a small pool of college students which could ultimately be compared with the results of high school (HS) students, if HS results were eventually available. The data collected from the WPI survey, and the analysis that was performed also served to develop the team's data analysis techniques and ideas.

Below is table 4 showing the mean and standard deviation for Mental Health Score, Belonging Score and COVID Score among the entire population of WPI students who took the survey.

Table 4: WPI Survey score statistics.

Score	Sample size	Mean	Standard Deviation
Mental Health Score	127	3.2 out of 5	0.9
Belonging Score	117	4.0 out of 5	1.0
COVID Score	115	1.8 out of 4	0.9

Note: A higher score represents a healthier mental health state using the scoring system described earlier in this report.

With a five-point scale used for the Mental Health Score and Belonging Score, 3 is the midpoint. This means that, on average, WPI students experience fair mental health and a good sense of belonging. The COVID Score midpoint is 2.5; the average score of 1.8 means that in general, WPI students did struggle to learn during the pandemic.

The standard deviations for all three scores are quite high for each score range. This indicates that the data had high variation. The typical threshold for statistical significance, when comparing different scores, is two standard deviations away from the mean, translating to around two points above or below the mean for the population (Aamodt 2016).

The gender makeup of the WPI survey respondents is shown in Table 5, and consisted of 65 males, 50 females, 11 who identified as nonbinary, one who responded as other, and two respondents who selected “prefer not to say”. The low number of responses from individuals who identified outside of the gender binary made it difficult to identify any significant correlations regarding this demographic.

Table 5: Gender Identity Demographic

Gender Identity	Percentage of Students
Male	50.4%
Female	38.8%
Nonbinary	8.5%
Other	0.8%
Prefer Not To Say	1.6%
Total (130)	100%

Figure 1 compares the average Mental Health score, Belonging score and COVID score of each gender identity. The data suggests that the Mental Health score of each gender was highest for males and females, and lowest for respondents who identified as nonbinary or selected “prefer not to say” or “other“. In contrast, a respondent's Belonging score was highest for those who responded with "other” as their gender identity. The disparity between the number of respondents for each score within each group is due to the nature of the survey. Every question was made optional, so not every student who took the survey answered every question.

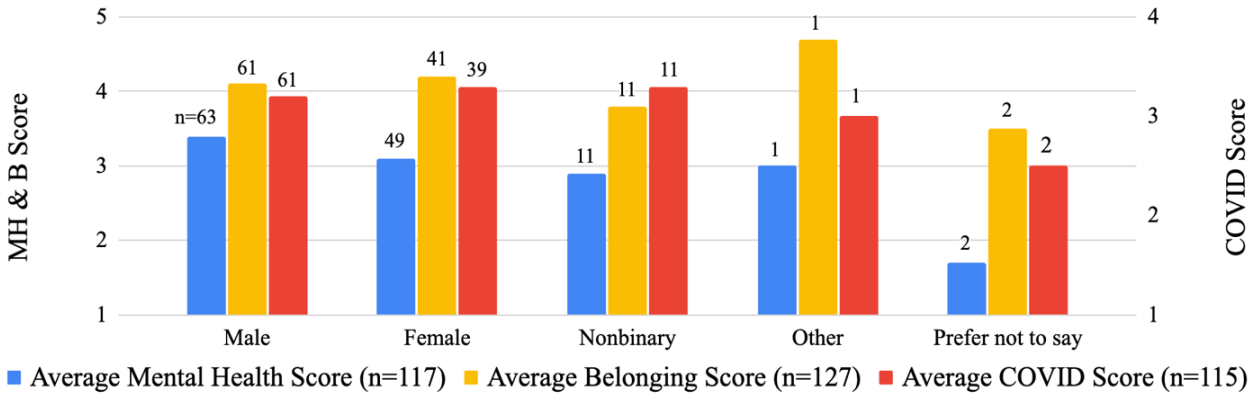

Figure 1: Comparison of Mental Health (MH), Belonging (B), and COVID Scores Among Each Gender Identity of WPI undergraduates.

Table 6, which is shown below, details the ethnic breakdown of the WPI undergraduate survey respondents. Over half of the survey respondents identified as White/Caucasian, with the next largest ethnicity group being Asian. Although there were only 129 respondents in this data pool, these findings are consistent with data presented on WPI demographics for the year 2021. According to the 2021 demographic breakdown around 60% of the student population was White/Caucasian and approximately 9% were Asian, which was reported as the 2nd most common ethnic group (DATA USA, n.d).

Table 6: Race/Ethnicity Demographic

Race/Ethnicity Identity	Percentage of Respondents
Asian	15.7%
Black/African American	5.5%
Hispanic/Latino	4.7%
White/Caucasian	63.0%
Mixed	9.4%
Other/Unspecified	1.6%
Native American or Alaskan	0.0%
Pacific Islander	0.0%
Total (127)	100%

Figure 2 compares the average Mental health score, Belonging score, and COVID score of each of the race/ethnicity identities within the survey sample size. The sample size n is at the top of each respective category representing the number of respondents that were considered in the scores amongst the categories.

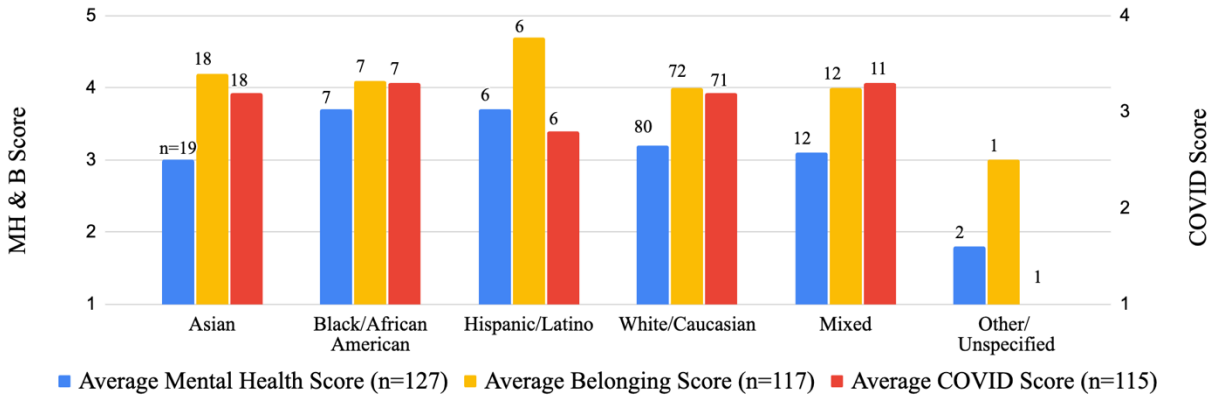

Figure 2: Comparison of Mental Health (MH), Belonging (B), and COVID Scores Between Each Ethnicity of WPI Undergraduates.

Figure 3 compares the average Mental health, Belonging, and COVID score of a student and whether they identify with the LGBTQ+ community within the survey sample size.

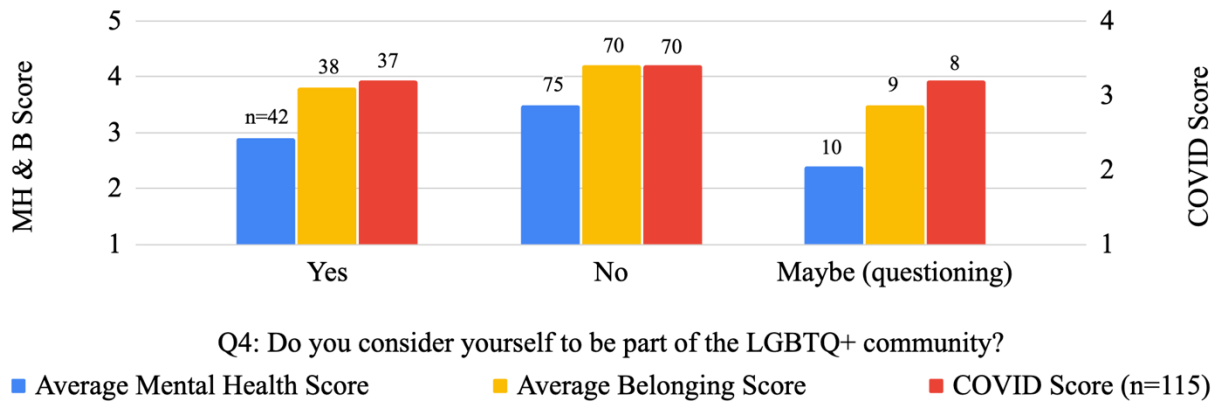

Figure 3: Comparison of Mental Health (MH), Belonging (B), and COVID Scores Across Sexual Orientations of WPI Undergraduates

Similar to the results shown in Figure 1, Figure 3 shows the breakdown of students who responded to a question asking whether they considered themselves to be a part of the LGBTQ+ community. The graph shows that those who responded as "questioning" if they were a part of the LGBTQ+ community experienced the lowest mental health score among all three groups of respondents. Those who responded with "no" (they did not identify as a part of the LGBTQ+ community) had the highest Mental health, COVID, and Belonging score among all the groups.

Table 7, which is shown below, details the LGBTQ+ identity breakdown among the WPI undergraduate survey respondents.

Table 7: LGBTQ+ Demographic

LGBTQ+	Percentage of Respondents
Yes	33.8%
No	58.5%
Maybe (questioning)	7.7%
Total (130)	100%

Table 8, shown below, details the breakdown of average mental health, belonging, and COVID scores across the spectrum of self-reported grades. The table shows that a student who earned higher grades had a higher average mental health score overall. This trend was consistent as a student's grades decreased, with students who received mostly NR's (failing grade) having the lowest mental health score on average. The average Belonging score and COVID score did not correlate as strongly with grades, but it was found that students who received mostly A's and B's had the highest average COVID and Belonging score overall.

Table 8: Grades

Grades	Number of Respondents (n=121)	Average Mental Health Score (n=121) (out of 5)	Average Belonging Score (n=117) (out of 5)	Average COVID Score (n=115) (out of 4)
Mostly A's	72	3.4	4.2	1.8
Mostly B's	31	3.1	4.2	1.8
Mostly C's	3	2.7	2.8	1.0
Mostly NR's	3	2.5	3.4	1.7
Prefer not to say	6	2.7	3.7	2.2
None of these/ I'm not sure	6	2.9	3.5	2.2
Total	121	3.2	4.0	1.8

Figure 4 shows the common themes that were found when analyzing the open-ended responses to whether a student would use the mental health services offered at their school. The graph shows that the most significant barriers to a student's willingness to use mental health services were that the students either did not feel that they had a need, or they weren't aware of the services offered. This implies that the accessibility and advertisement of a school's mental health services can impact their frequency of use. Other themes reported among the responses included a lack of trust in counselors, fear or uncertainty in using services, and a lack of time to pursue such mental health resources.

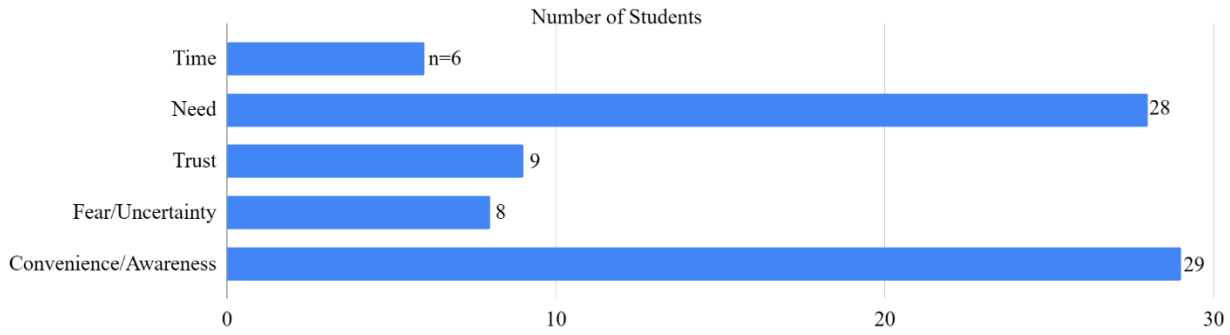

Figure 4: Barriers that impeded a student's willingness to use mental health services offered at their school.

Figure 5 compares the responses of two questions that determine the level of engagement a student has with their friends and family. The graph shows that students who spent more time with their family often tended to spend less time with their friends, and vice versa. The graph shows that the two largest groups of respondents often spent time with their friends outside of school, or sometimes spent time with their family. This may be because the WPI survey respondents were college students who, in many cases, no longer live in a home environment with their parents year-round.

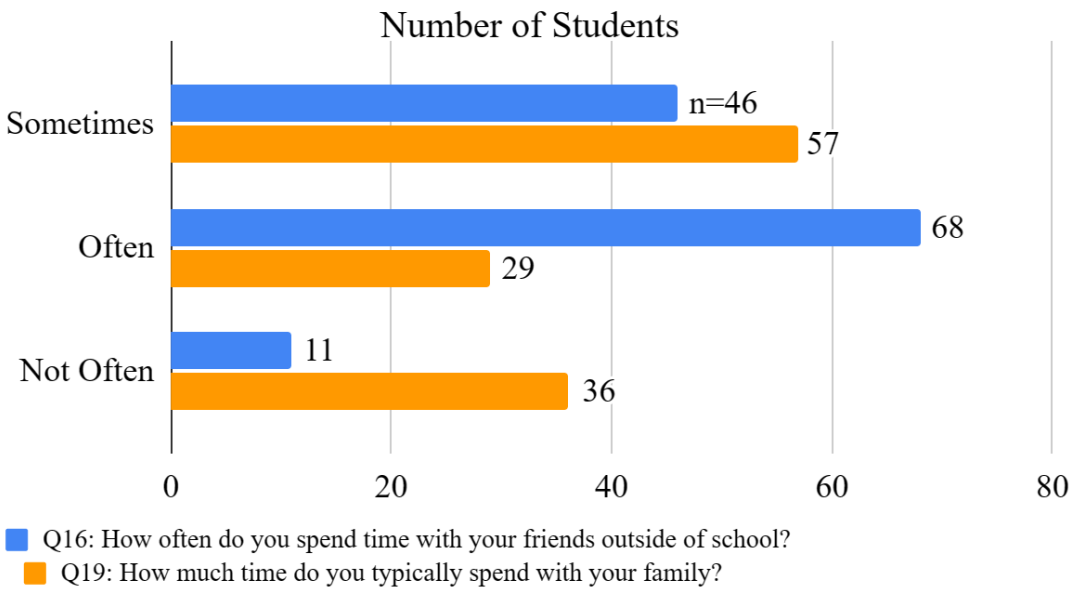

Figure 5: Students' Involvement With Friends And Family.

Table 9 details the average mental health score of the students that chose the options for their respective questions presented in Figure 5. The table shows that students who responded "often" to questions 16 and 19 had a higher average mental health score, while those who responded "not often" to questions 16 and 19 had the lowest average mental health score.

Table 9: Mental Health Score of respective options for questions 16 & 19.

Answer Response	Average Mental Health Score
Sometimes	3.2
Often	3.6
Not Often	2.9

4.4.5 WPI Findings[1]

The findings described below were of particular interest to the project team and are described in individual sub-sections.

[1] The full survey with all the questions that were asked in the survey can be found in Appendix B.

Gender Identity

The data in Figure 1 (P.19) seems to indicate that students who answered "prefer not to say" to the question asking their gender identity seemed to have a lower mental health score than the other gender identities. While there may only have been two students who chose "prefer not to say," further investigation might suggest that students who don't identify with a specific gender may struggle to feel accepted within a community. The low number of respondents who identified outside of the gender binary made it difficult to draw any statistically significant conclusions. However, certain national studies and data do support this finding. For example, a study done on undergraduate and graduate student's mental health during the COVID-19 pandemic showed that generalized anxiety disorder was higher among Latino and multiracial students, women, transgender, and nonbinary students; gay or lesbian, bisexual, queer, questioning, asexual and pansexual students (Chirikov, et. al, 2020).

Similarly, in Figure 3 the students who were questioning their sexual orientation (n=9) had the lowest mental health score. This issue should likely be explored in more depth to determine if students who are questioning their sexual orientation experience more mental health issues and to identify what services could be developed to help these students.

Relationships and Isolation

In Figure 5 the number of students that said that they do not often spend time with family was 36. As shown in Table 9, the average mental health score of those students that chose "Not Often" was 2.9 out of 5. The average mental health score of WPI respondents was 3.2, with a standard deviation of 0.92. The correlation between the quality of relationships the students have, and the mental health score could suggest that if a student does not create healthy relationships their social-emotional health will be impacted affecting their overall health. Certain national research also supports and is concurrent with this finding. For example, an article written in the journal of Child Development found that teens who reported having a strong friendship predicted an increase in the teen's overall sense of self-worth (Narr, 2019). Evidence also showed that close friendships among teens correlated with a positive change in feelings of social acceptance (Narr, 2019). Social isolation as explained further in section 2.3 of the background is proved to have detrimental effects to one's health and well-being so ensuring that students are being encouraged to engage with their peers and family should be highlighted upon further investigation of potential services and programs that could be re-enforced or established.

Summary of Findings

One of the limitations that the team encountered was the low number of survey respondents. The visual correlations that the team observed were supported by certain national studies (as discussed in the findings above) and data, but the number of survey respondents received did not make it possible for the team to make statistically significant findings from this

data set alone. The correlation between gender identity and the mental health score mentioned in section 4.4.5 is an example of this. The correlation found suggests that respondents who selected “nonbinary”, “other”, or “prefer not to say”, as a gender identity option, had overall lower mental health scores than respondents who identified as male or female. However, a total of 14 students fell into these categories, giving little confidence in this conclusion.

An additional limitation to this data resulted from the lack of specificity regarding the age of each respondent. The WPI survey included one question that asked whether the respondent was 18 or older, ignoring the details of age or grade level. This presented a challenge in the comparison of WPI data with Nantucket data, due to the already significant age difference between the two populations. If the team had included a question in the WPI survey requesting the respondent’s age and grade level, then data from younger WPI respondents could have potentially been compared to data from older high school respondents. Ultimately, due to the lack of high school participation, the WPI data was not as suitable for comparison as the team had initially anticipated. Most importantly, however, the WPI survey allowed for the development of the methodology used to analyze the Nantucket survey data.

4.5 Nantucket Youth Results and Findings[2]

The team received a total of 204 responses from the survey that was distributed to Cyrus Peirce Middle School and the Nantucket New School. The ages of respondents ranged from 11 to 14.

The following table displays the averages and standard deviations for the three scores among the entire population of students who took the survey.

Table 10: Statistics of the Scores for the Nantucket Youth Survey.

Score	Sample Size	Mean	Standard Deviation
Mental Health Score	202	3.86 out of 5	0.91
Belonging Score	202	3.56 of 5	1.12
COVID Score	198	0.89 out 4	0.92

Note: A higher score represents a healthier mental health state using the scoring system described earlier in this report.

The mean Mental Health Score for Nantucket students is higher than the mean for WPI students, meaning that on average, Nantucket students have better mental health than WPI students. However, they have a lower sense of belonging than the WPI students who took the survey, and struggled more during the pandemic, as shown in Table 4 (P.18).

The standard deviations for Nantucket are also relatively high for this range. With such high variation, the threshold for finding statistically significant data becomes higher. For any factor correlated with scoring systems, a category’s average needs to be around two points higher or lower than the mean for any conclusions to be drawn.

[2] The full survey with all the questions that were asked in the survey can be found in Appendix A.

Demographics

Demographics such as gender identity and ethnicity were found to play a role in a student's mental health. The population of students who took the survey was diverse in ethnicity, with many opting to identify themselves as multiple ethnicities or write in their own.

The demographics observed on Nantucket are similar to statewide data. According to the Massachusetts Department of Higher Education, 54.4% of students in Massachusetts (K-12, 2022-23 school year) identified as white/Caucasian, compared to 46.5% for the Nantucket data. In terms of gender, only .2% of students in statewide data identified as nonbinary, with males and females being roughly equal (Massachusetts Department of Higher Education, 2023). This holds true when scaled down to the sample size of the Nantucket survey.

Table 11: Gender Identity Demographic

Gender Identity	Percentage of Respondents
Male	49.8%
Female	48.8%
Nonbinary	1.0%
Other	0.0%
Prefer Not To Say	0.5%
Total (201)	100%

Table 12: Race/Ethnicity Demographic

Race/Ethnicity Identity	Percentage of Respondents
Asian	1.0%
Black/African American	10.0%
Hispanic/Latino	29.5%
White/Caucasian	46.5%
Mixed	5.5%
Other/Unspecified	6.0%
Native American or Alaskan	0.5%
Pacific Islander	1.0%
Total (200)	100%

Table 13: LGBTQ+ Demographic

LGBTQ+	Percentage of Respondents
Yes	4.0%
No	91.5%
Maybe (questioning)	4.5%
Total (199)	100%

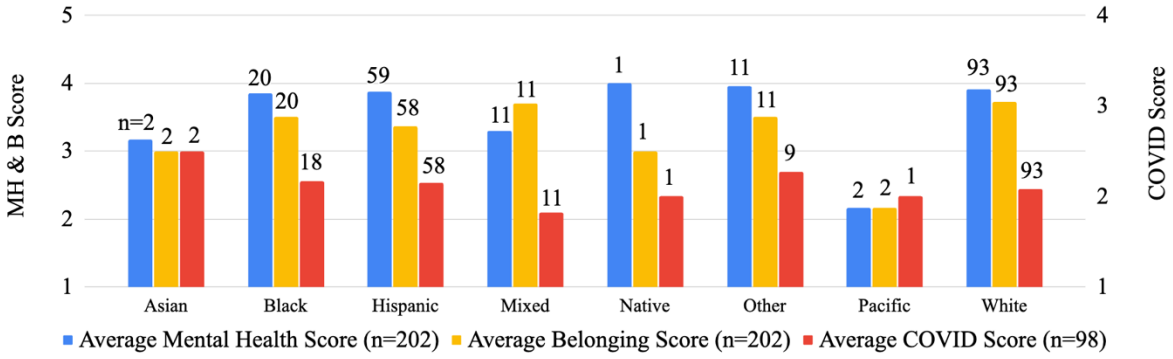

Figure 6: Comparison of Mental Health (MH), Belonging (B), and COVID Scores Across Ethnicities

Ethnicity itself did not seem to significantly affect a student's mental health or belonging score; most ethnicities were within one tenth of a point (one tenth of a standard deviation) from the population average Mental Health Score or Belonging Score. As shown in Figure 6 above, the only significant deviations in Mental Health or Belonging scores from the average were seen in populations with a very small number of participants. Asians and Pacific Islanders had the lowest average scores for any ethnicities at 3.2 and 2.2 respectively. However, there were only two students who identified as each Asian and Pacific Islander, meaning that these averages are highly skewed and cannot be used to make any generalizations. There does not seem to be a clear trend for difficulty with COVID learning based on ethnicity.

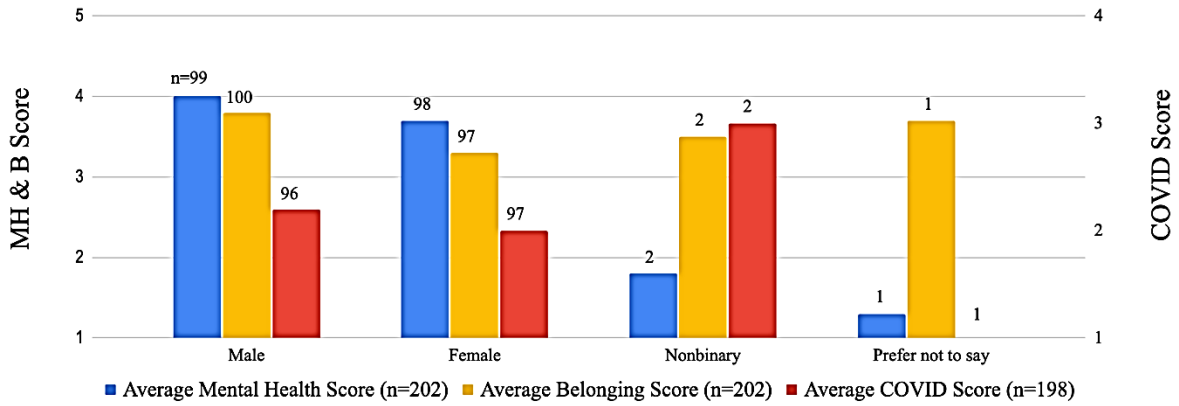

Figure 7: Comparison of Mental Health (MH), Belonging (B), and COVID Scores Across Gender Identities.

Gender seemed to play a larger role in mental health scores. Male and female identifying students differed by around a half point for their average Mental Health and Belonging scores, with men seeming to have better mental health and a better sense of belonging than women. The data also seems to point to women struggling more during virtual learning than men according to Figure 7. The sample size n is at the top of each respective category representing the number of respondents that were considered in the scores amongst the categories.

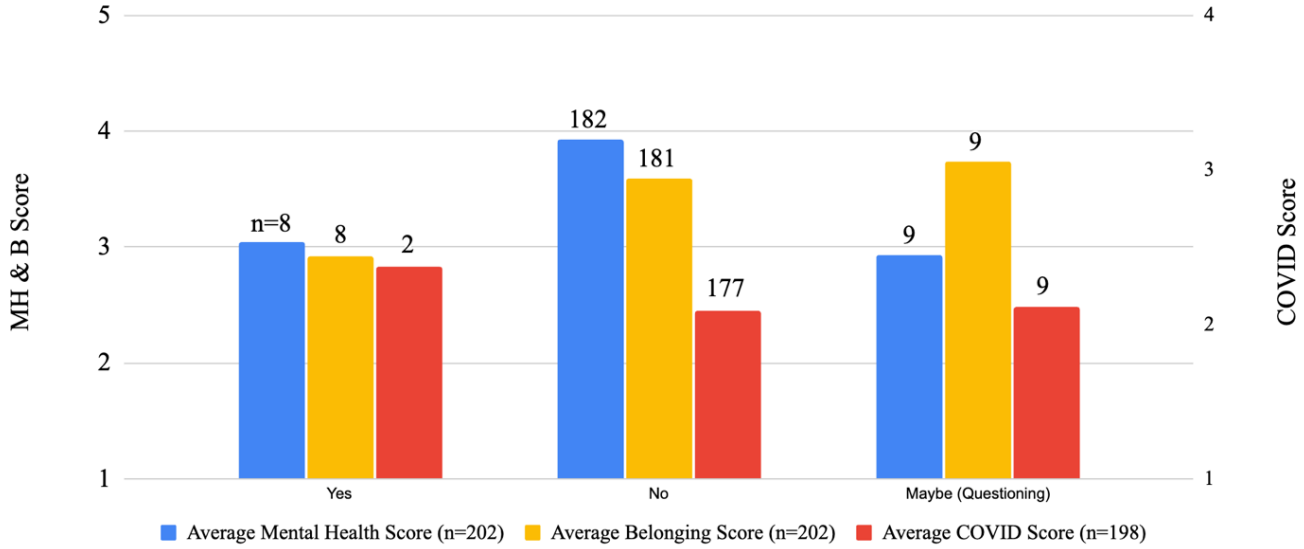

Figure 8: Comparison of Mental Health (MH), Belonging (B), and COVID Scores Across Orientations.

Unfortunately, due to low sample sizes, data about LGBTQ+ students cannot be generalized. Question Five asked “Do you consider yourself to be part of the LGBTQ+ community?”, and 91.5% of students answered “No”. Non-LGBTQ+ students had a higher average mental health score than students who answered “Maybe” or “Yes”, suggesting that

these students have better mental health, but without a larger sample size, further conclusions cannot be drawn. The sample size n is at the top of each respective category representing the number of respondents that were considered in the scores amongst the categories. National trends may support a link between LGBTQ+ and a poorer mental state. A study done on undergraduate and graduate student's mental health during the COVID-19 pandemic showed that generalized anxiety disorder was higher among transgender, nonbinary, gay, lesbian, bisexual, queer, questioning, asexual, and pansexual students (Chirikov, et. al, 2020).

Barriers to Mental Health Resources

Figures 9, 10, 11, and 12 present the data related to objective two in which the team identified common barriers within the open-ended responses to question 37 of the survey by applying themes to each of the open-ended responses. The team found that 133 students said they wouldn't use the mental health services offered at their schools. Figures 11 and 12 show the common barriers that occurred among the responses to question 37.

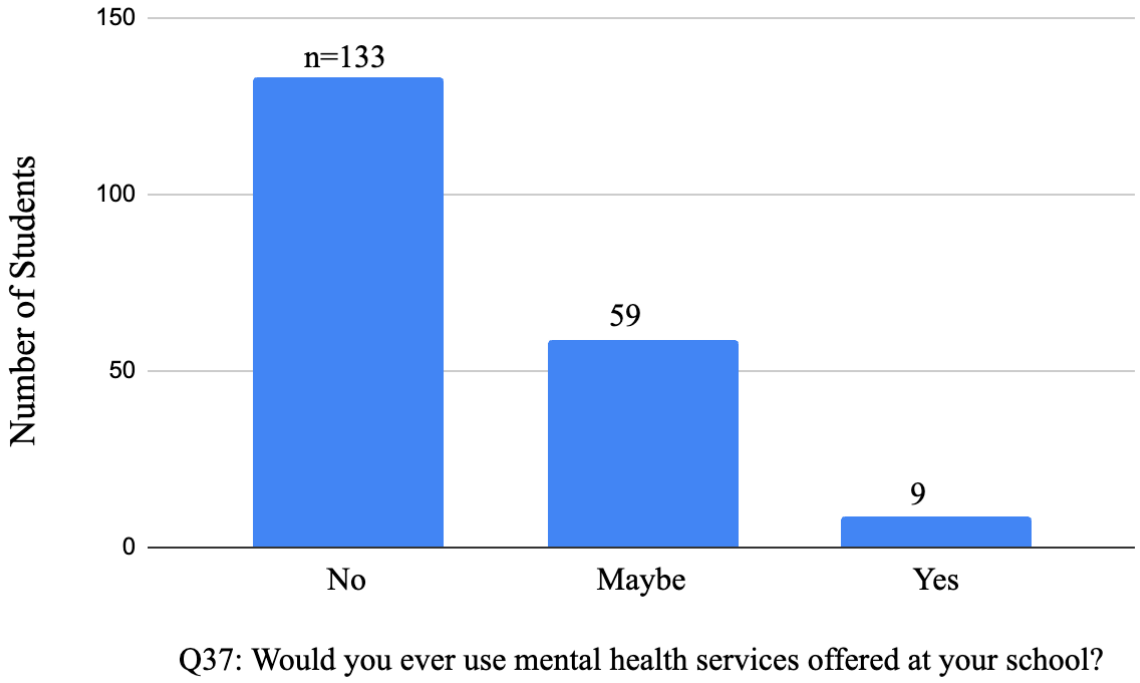

Figure 9: Number of Survey Respondents of Each Answer Choice to Q37

The majority of students (66.2%) answered "No" to Question 37: "Would you ever use mental health services offered at your school?". A thematic analysis of these students' responses to Question 38: "Why would you use or not use these services?" is shown below:

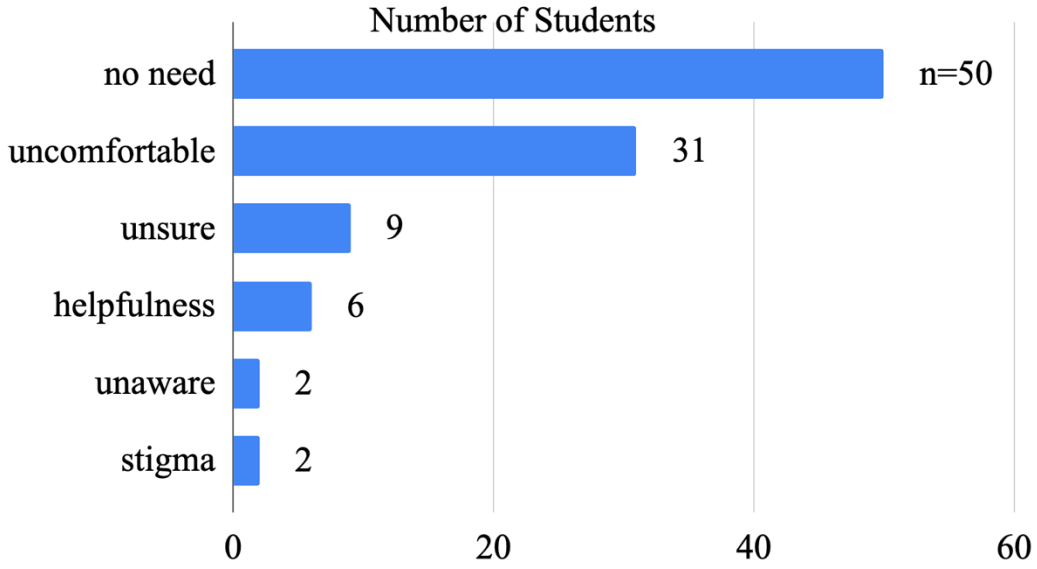

Figure 10 Common Themes of Student Hesitance

The primary reason students said they would not use mental health services was that they did not feel a need to use them. In Figure 11, eight students reported that they were not struggling with any issues that mental health services could fix. 12 students responded that they had resources at their disposal that they would prefer to utilize over school-offered mental health services.

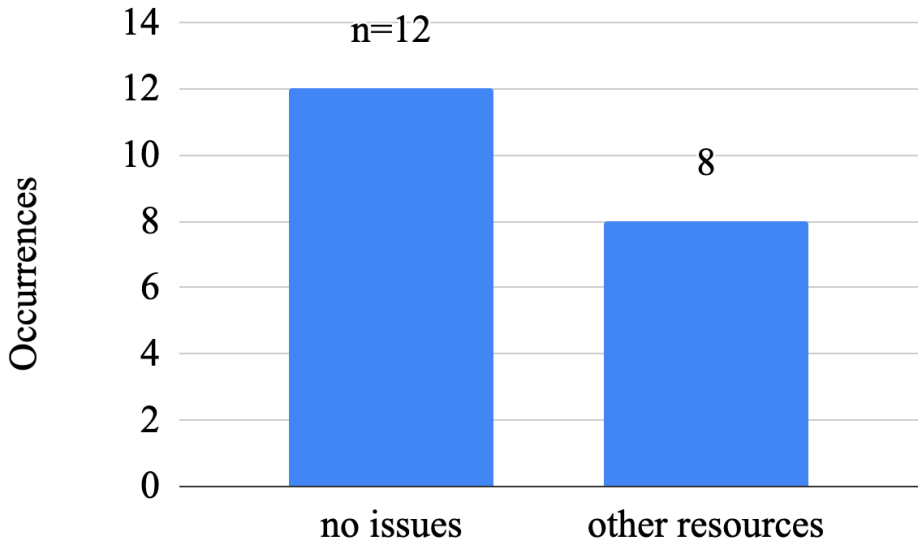

Figure 11: Breakdown of "No Need" responses for Q38

The secondary reason students answered "No" to Question 37 was that they felt uncomfortable using mental health services offered at their school. In Figure 12, 14 students reported that they did not trust their school with sensitive information concerning their mental

state. What was the most surprising was that seven students expressed in the open-ended response that they feared potential consequences that could arise from using these services.

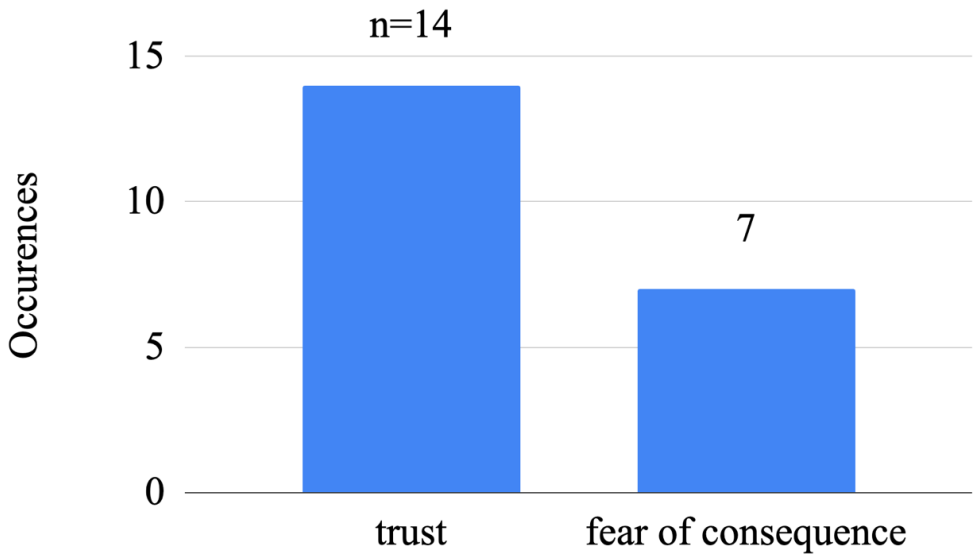

Figure 12: Reasons for "Uncomfortable" Responses to Q38

Suicide, Self-Harm and Substance Use

Out of the 155 students who completed the section about suicide and self-harm, 80.6% of students said they had never seriously thought about ending their own life. Students who answered "Never" to Question 32 had a significantly higher Mental Health Score than students who answered, "A few times" or "Many times". Suicidal thoughts are very highly associated with having poor mental health, as discussed in Section 2.2, so the association with Mental Health Score serves more as a confirmation that the scoring system is valid. Figure 13 shows that there is a strong association between frequency of suicidal thoughts and Mental Health Score.

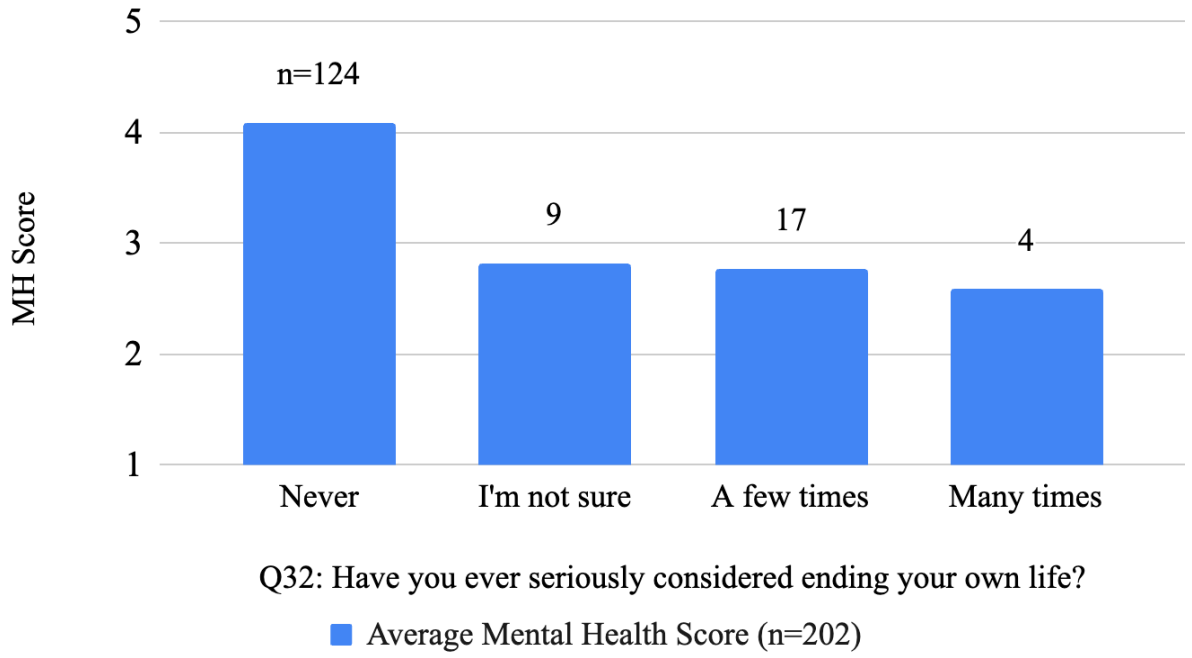

Figure 13: Suicidal Thoughts and Mental Health (MH) Score

Only 13 students out of 163 reported that they had ever tried alcohol outside of religious purposes. There is a considerable association between alcohol use and Mental Health Score as shown below. This association exists on a national scale as well, as reported by the National Governors Association. Among young people who fatally overdosed between July 2019 and December 2021, 41% had a mental health condition or treatment history (NGA, 2023).

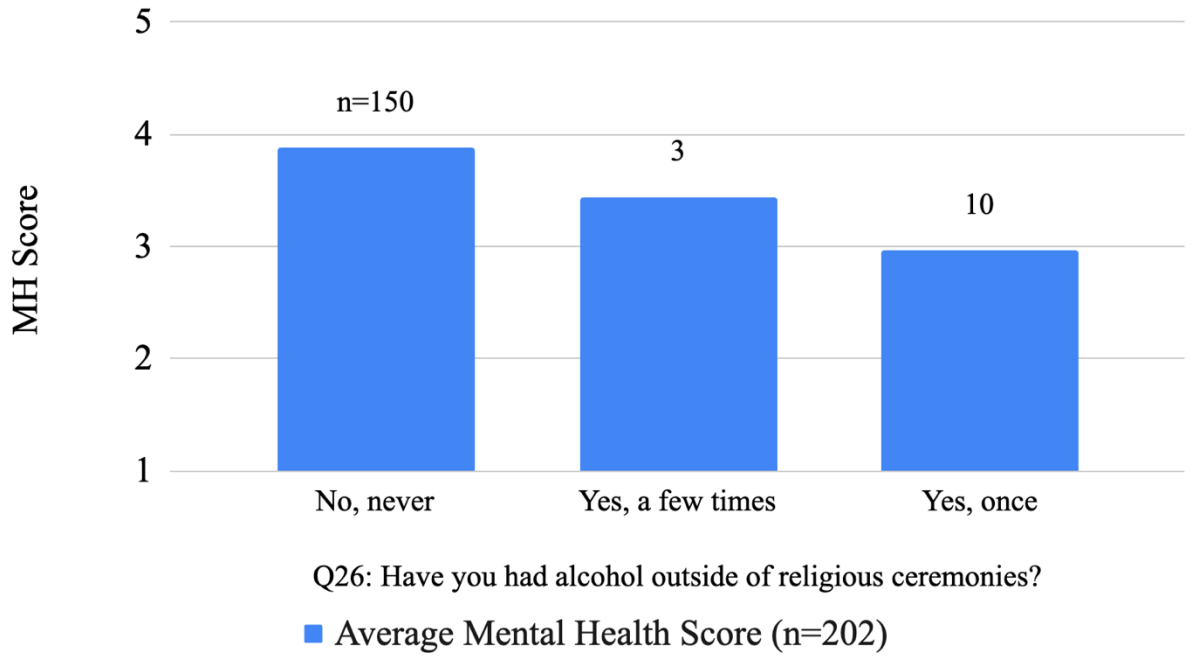

Figure 14: Alcohol Use and Mental Health (MH) Score

Academics

Grades and academic performance are important data to collect in any survey concerning middle or high school students. Students were asked to self-report their overall grades in Question 23: "How would you describe your grades in school this year"? Figure 15 shows the distribution of students for each response, and Figure 16 displays the average scores.

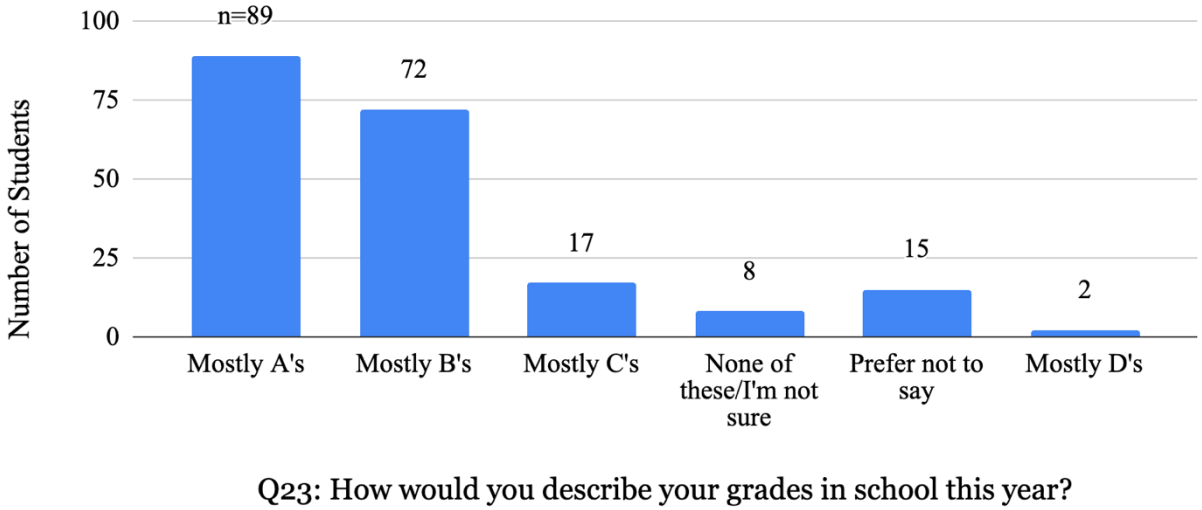

Figure 15: Count of Grades

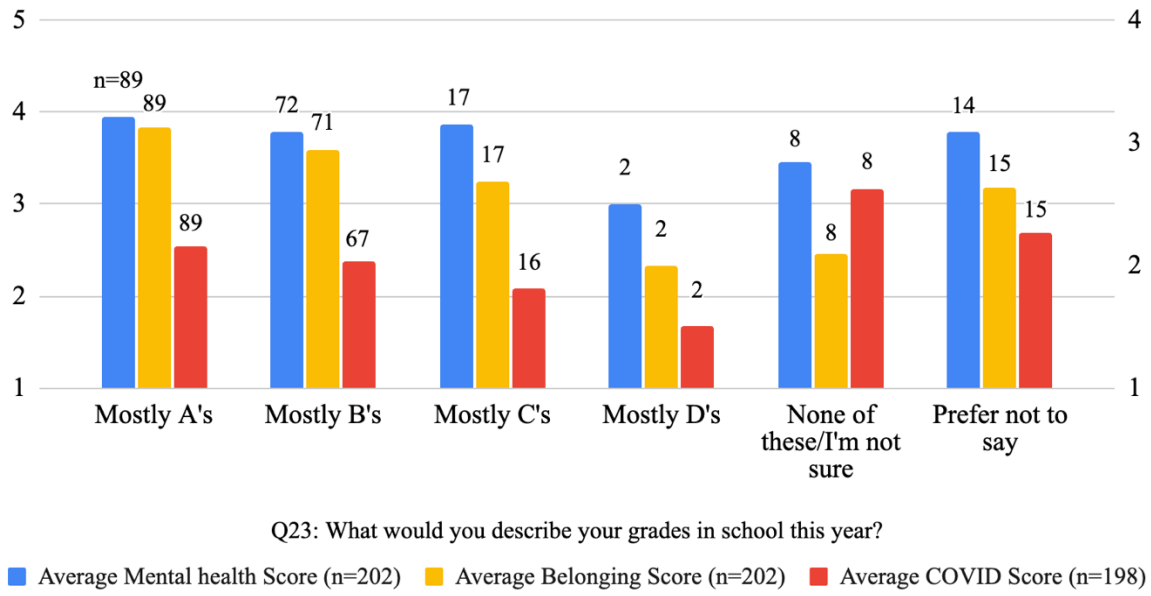

Figure 16: Mental Health (MH), Belonging (B), and COVID Score Relative to Students' Grades

There is a steady decline in both Mental Health Score and Belonging Score as a student's grades get lower, and students with lower grade averages also tended to struggle more during the pandemic, as evidenced by the increased COVID Score. This trend was also found in other studies worldwide (Murphy et al., 2016). Due to the limitations of the survey, it is unclear which factor affects which. It could be the case that having poor mental health is causing students to struggle with grades, or the opposite may be true; students seeing lower grades may make their mental health decline. More concentrated research must be conducted to further determine this relationship. The sample size n is at the top of each respective category representing the number of respondents that were considered in the scores amongst the categories.

COVID-19

As shown in Figure 18, there is no significant difference in virtual learning difficulty among learning styles. Additionally, the majority of students answered "I'm not sure" for their learning style, which indicates that the age group may be too young to understand what a learning style is or what theirs may be. In future surveys about learning styles with this age group, a definition may need to be given to ensure students are confident in how they respond to this question.

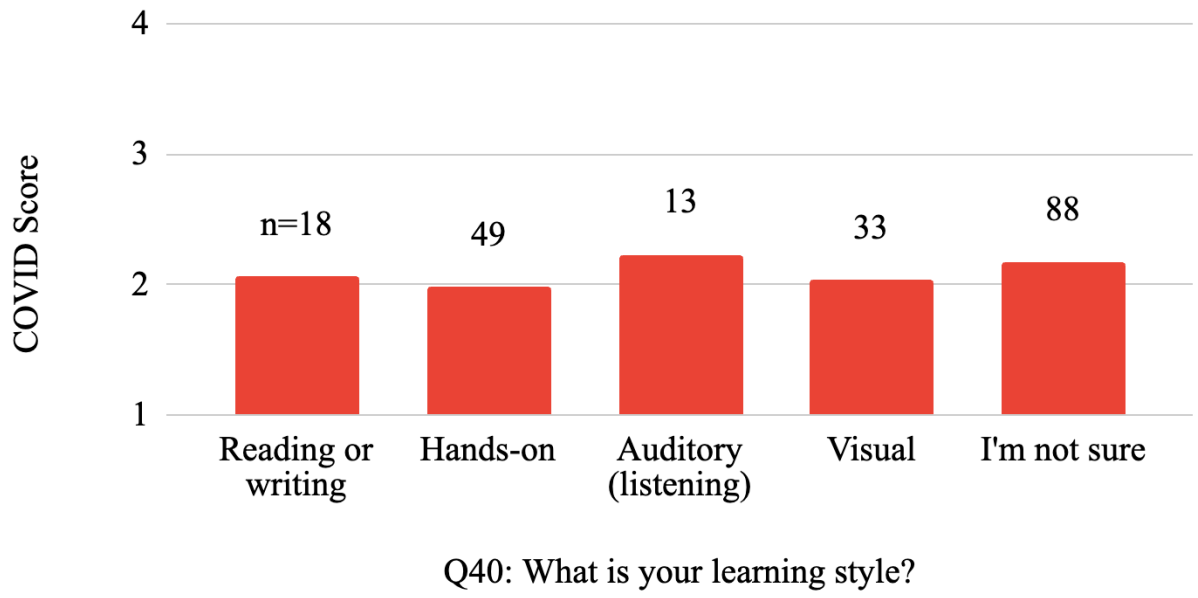

Figure 18 Learning Style and COVID Score

Screen Time and Social Media

In general, students who reported spending more time using electronic devices had lower Mental Health Scores as shown in Figure 19. The team compared this finding with nationally reported data on the correlation between mental health and screen time. According to a population-based study conducted by Jean Twenge and Keith Campbell, more hours of screen time was associated with lower well-being in children ages 2 to 17 (Twenge, et.al, 2018). The study also found that high screen time users showed less curiosity, self-control, and emotional stability (Twenge, et.al, 2018).

The trend observed among screen time users remained consistent for social media use and Belonging Score. However, an interesting relationship was found between social media use and Mental Health Score, as shown in Figure 20. Students who said they used social media more frequently tended to have lower Mental Health scores, although the second-lowest score was students who did not use social media at all. A possible explanation could be that students who do not have social media feel left out compared to their peers, but more concentrated research may be needed to verify this.

According to an article by the American Psychological Association, there isn't necessarily a negative correlation between a young person and their social media use. Instead, the effects of social media on an adolescent are more dependent on the child's personal and psychological characteristics, as well as their social circumstances (American Psychological Association, 2023).

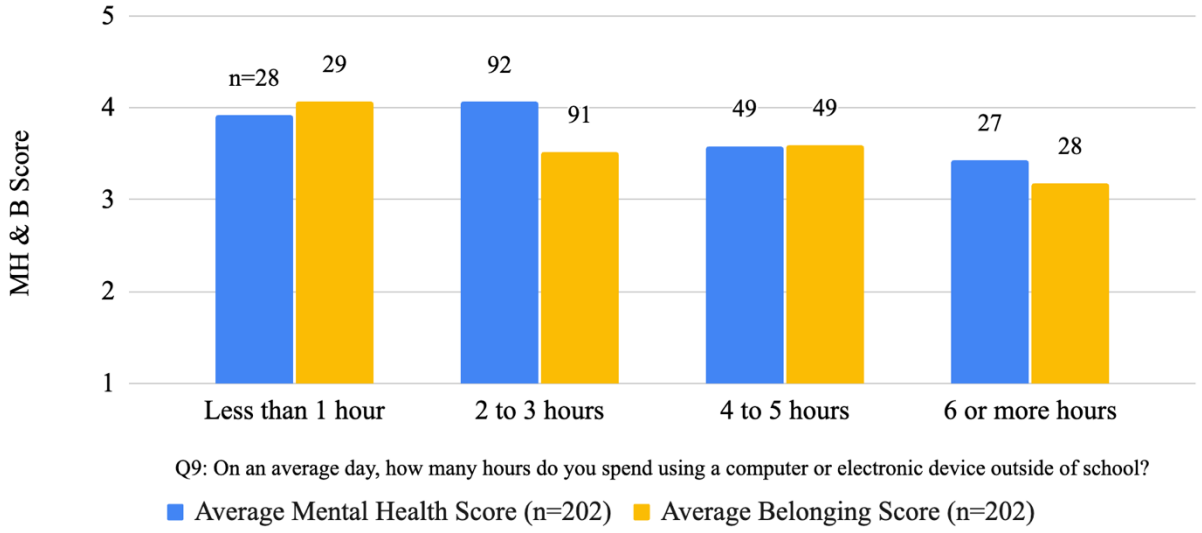

Figure 19: Comparison of Mental Health (MH) and Belonging (B) Scores Relative to Screen Time

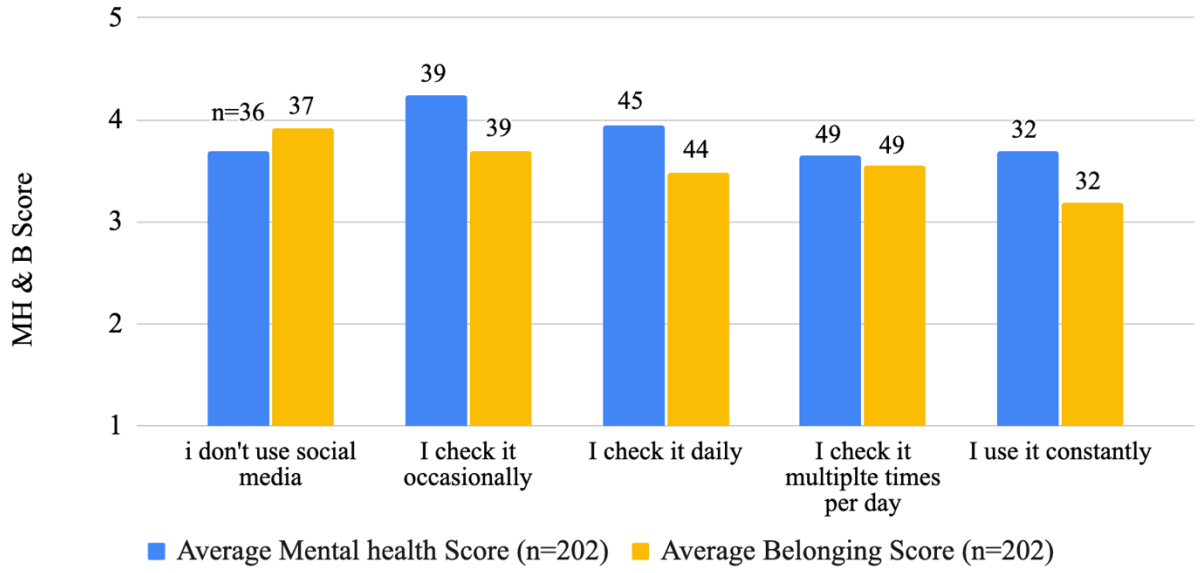

Figure 20 Mental Health (MH) and Belonging (B) Scores Relative to Social Media Usage

4.6 WPI vs. Nantucket Youth Results Discussion

Figure 21 shows the comparison of the common themes that were found when analyzing the written responses from the question asking, “What does "belonging" mean to you?” to the WPI undergraduates and the Nantucket Public and Private Middle Schoolers.

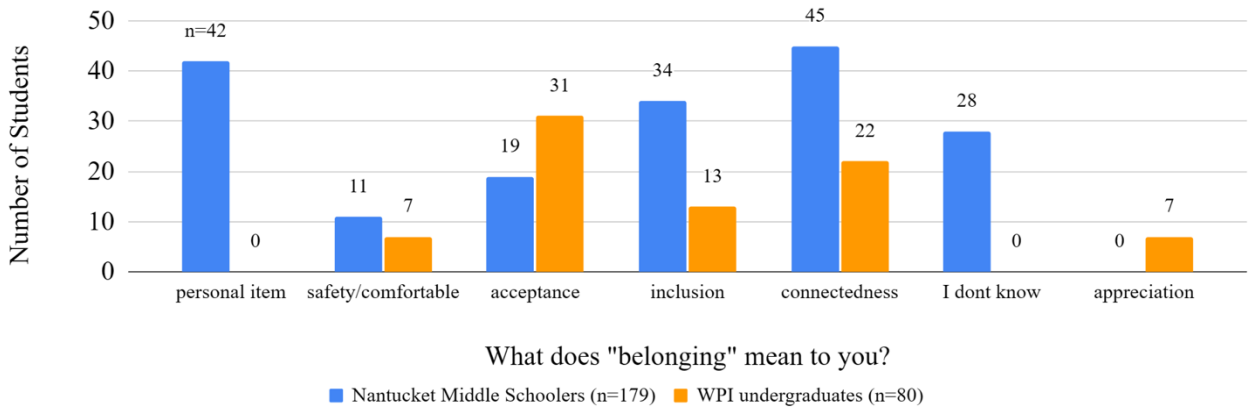

Figure 21: Comparison between the meaning of belonging of the WPI undergraduates and the Nantucket middle school students.

Figure 22 shows the comparison of the common themes that were found when analyzing the written responses from the question asking, "What made it harder or easier for you to learn during the pandemic?" to the WPI undergraduates and the Nantucket Public and Private Middle Schoolers. As shown in the graph

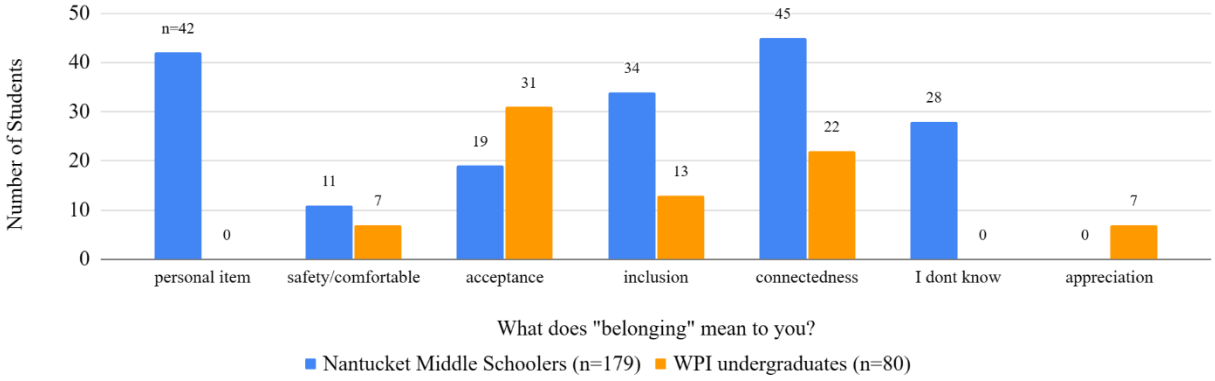

Figure 22: Comparison between what made learning harder during the COVID-19 pandemic of the WPI undergraduates and the Nantucket middle school students.

4.7 Interviews

The team interviewed Pauline Proch and Jason Bridges to gain external perspective on the challenges that Nantucket youth face from Nantucket-based subject matter professionals. The information received at these interviews enabled the team to customize the survey format and questions to reflect the concerns of professionals working with Nantucket youth.

Pauline Proch

The team interviewed Pauline Proch, an executive director of Our House and a board member of the Nantucket School Committee. Through this interview, the team learned more about the struggles that Nantucket youth are experiencing in the classroom. Her previous

position as a schoolteacher provided a valuable perspective that the team considered while crafting the survey.

In general, Mrs. Proch was concerned with the increasing pervasiveness of isolation and loneliness within the youth community. She expressed how feelings of isolation and loneliness do not always mean physically being alone, but students may feel isolated when they lack a sense of belonging among their peers and in their community. Mrs. Proch expressed how "*students are talked to all day in class and there is very little listening happening*." This statement shows a state of education where there is less engagement and understanding from the students when they are being talked to for prolonged periods throughout the day. When students are passively engaged in the material, and not actively engaged, it impacts their sense of belonging in the classroom along with their social-emotional development touching on the themes in objectives one and four.

Overall, Mrs. Proch emphasized the lack of student engagement and motivation to learn and ask critical questions that could benefit their future career and academic endeavors. This decreased motivation may cause depressive symptoms which can negatively impact the students' well-being (National Center on Safe Supportive Learning Environments (NCSSLE), n.d.).

Jason Bridges

The team interviewed Jason Bridges, a previous member of the select board of Nantucket, and the executive director of Fairwinds—Nantucket's Counseling Center. In speaking with Mr. Bridges, the team learned more about the challenges that youth are facing outside the classroom regarding extracurriculars and outside support resources. The team learned more about the challenges that youth are facing outside the classroom regarding extracurriculars and outside support resources.

At the beginning of the interview Mr. Bridges emphasized that the team would frequently hear him say the word "access" throughout the interview. He shared that one of the prominent challenges among middle and high school aged youth living on Nantucket is the lack of access to resources. Such resources can include extracurricular activities, after school programs, affordable summer programs/camps, and overall support for the island's youth. A lack of access to these forms of support, combined with Nantucket being an island isolated from the mainland, can lead to problematic behavior and poor mental health among youth (Jason Bridges Interview, 2023).

One motivating factor behind Fairwinds and their work is to provide families with better access to resources on Nantucket. Some of the existing youth resources on the island that Mr. Bridges highlighted include the Nantucket Boys & Girls Club, the Fairwinds Family Resources Center, and after school athletic programs. Although these resources are few, their impact encourages students to foster a sense of purpose and avoid troublesome situations due to boredom.

Some additional concerns addressed by Mr. Bridges included:

- What direct sources do youth feel they could benefit from, and do they recognize their need?
- How can the team ensure that communities such as the El Salvadorian, Dominican, and Jamaican have equal access to youth resources and the Youth Behavioral Health survey?
- How can the vaping problem within the schools be addressed?
- How can peer to peer support and accountability be encouraged?
- Lack of trust, social pressure, and peer pressure may all be potential barriers to successfully distributing a mental health survey.

The concerns posed by Mr. Bridges during the interview reflect the questions the team prioritized in developing the survey. Although the team was unable to cover the full scope of issues among youth on Nantucket, the goal of survey design was to extract data that would be most pertinent to a youth needs assessment.

5.0 Conclusions and Recommendations

This section outlines the team's conclusions based on the results and findings from the surveys and interviews analyzed in section 4. Section 5 also outlines the team's recommendations for future work on the project based on the challenges the team experienced.

5.1 Conclusions

WPI Survey

The trends within the data may indicate a correlation between participants who did not disclose their gender identity or identified outside of the gender binary, and a poor mental health score. Additionally, students who did not identify with any of the specified ethnicities tended to have a lower mental health score.

Nantucket Youth Survey

Trends within the data may suggest that there is an overall lack of willingness among a majority of students to use mental health resources offered in schools. To better understand this trend, the team performed a thematic analysis of student responses which is shown in Figure 10. The two most contributory factors to student hesitance were the perceived lack of need and a lack of comfort with using services. These themes were consistent across more than half of the 133 students who said they would not use mental health services at their school. Other barriers that were identified included the following: questioning the helpfulness of the resource, being unaware that such resources were available, and the stigma related to needing or using such resources.

The data also may suggest that students who do not identify with the LGBTQ+ community experience better mental health overall than students who do. However, because only 8.5% of students identified as part of the LGBTQ+ community, further research is needed to confirm this correlation.

The team concluded that students who reported receiving lower grades experienced worse mental health than those with higher grades. Additional research is needed to conclude the nature of this correlation, and to identify which factor influences which.

Interviews

As a result of the interviews conducted with Pauline Proch and Jason Bridges, the team drew the following conclusions that impacted survey design.

- Isolation and loneliness are prevalent concerns among the youth community on Nantucket (Pauline Proch Interview, November 2023).
- The geographical isolation of Nantucket is a contributing factor to such feelings of loneliness and isolation (Jason Bridges Interview, November 2023).

- Loneliness and isolation are two of the many implications that the COVID-19 pandemic had on Nantucket youth (Pauline Proch Interview, November 2023).

5.2 Recommendations

Focus Groups & Interviews

The team recommends that future investigators contact subject matter experts, school faculty, and parents of students in Nantucket and a peer community as soon as possible to schedule focus groups and interviews.

Interviews with experts in the field of youth mental health could provide reputable, insightful, and well-structured qualitative data relevant to this research. Focus groups with faculty and parents could provide firsthand perspective of the behavioral trends observed in Nantucket schools and homes respectively. This insight could then be used to develop and revise the questions for an online survey (Deaton et al., 2022). Relevant guidelines and scripts can be found in Appendices C, D, and E.

Implementing this qualitative methodology with members of a peer community, such as Martha's Vineyard, would allow for the comparison of data gathered from Nantucket with that of a population with similar characteristics. Such a comparison could be used to identify common trends between the two populations and further shape recommendations made to the HHS.

The team's success in conducting focus groups and interviews was limited by the communication and availability of contacted individuals. Reaching out to schedule times for focus groups and interviews in the earliest possible stages of project work could reduce the time spent waiting for communication while on the island.

Online Survey Tool

The team recommends the following, in no particular order:

1. **Implement survey questions related to the home environment of students.**

   Background research on home environments was conducted, but the team decided to omit related questions to avoid receiving personally identifiable information. A careful introduction of questions of this nature may be useful in identifying the home-related factors that contribute to students' mental health and wellbeing.

2. **Implement survey questions related to academic subject affinity and career interests.**

   Career interests are a key factor in students' lives and can impact their future decisions. Some careers are not viable on Nantucket, resulting in many students having to leave the island to work in their field of interest (F. Looft, November 2023, Personal Conversation). While it may not be suitable to pose career-related questions to middle school students, Qualtrics allows for the conditional presentation of such questions to

high school juniors and seniors (Qualtrics). This would enable future investigators to collect data pertaining to the educational and professional trajectories of island youth, a topic of interest for Jerico Mele, Director of Human Services on Nantucket (J. Mele, November 2023, Personal Conversation). Questions regarding academic subject affinity may be more suitable for younger participants.

3. **Clarify questions which ask a participant to describe their interpretation of a word or phrase.**

    The intended context of each question should be apparent to the participant. For example, in this survey, students were asked about the word "belonging". While the question was meant to assess their understanding of social fit and inclusion, many students responded with answers referring to the physical possession of objects. Rephrasing questions of this nature could increase response quality and improve relevance between survey results and intended methodology.

4. **Specify to survey participants that personally identifiable information should not be included in their responses.**

    Many survey participants, when asked who they could emotionally confide in, responded with the full names of friends or family. Clarifying that the intention of these types of questions is not to gather the names of specific individuals could help to maintain the anonymity of survey participants and their confidants.

5. **Determine survey approval processes, distribution methods, consent responsibilities, and any ethical or legal implications as soon as possible.**

    The approval and distribution processes for the survey were a source of significant delay to project work. Identifying the responsibilities of each involved party in the earliest possible stages of project work could prevent confusion from arising during the survey deployment process. Additionally, initiating any approval processes immediately following the conclusion of survey development could alleviate potential delays in distribution.

6. **Implement all survey methodologies in a peer community to Nantucket.**

    A similar version of any behavioral health assessment used in future research should be deployed across one or more communities which share demographic and cultural characteristics with the Nantucket youth population. Implementing survey methodologies in a peer community could provide future investigators with a point of comparison for Nantucket survey results.

7. **Explore multiple networks of distribution for surveys.**

    Future investigators should cultivate a willingness to adapt to their circumstances if they are unable to adhere to their intended distribution strategy. If school administrators are uncooperative during the survey deployment process, pursuing

alternate distribution networks could be useful for surveying the youth of Nantucket. Such networks include the Nantucket Boys & Girls Club, Our House, Fairwinds, and the Nantucket Health and Human Services Department.

Further Investigation

The team recommends that additional research be conducted to assess the following:

- The mental state of female students—as well as minorities of gender, orientation, or ethnicity—relative to that of their peers.
- The relationships between students' behavioral health and their grades, substance use, and any other measurable factors.

The survey responses of minorities fall short of significance to the Nantucket youth population. The team suggests a more thorough investigation into the behavioral health of students whose identity is underrepresented by a quantitative needs assessment of this scale. Monitoring these demographics could reveal actionable insights which inspire a higher degree of confidence than those found by the team. The majority demographics should not be ignored, however, as even these students' survey responses cannot stand on their own. More data is required to support the trends found in this study.

The team suggests that additional research be conducted to determine the correlation between a student's grades and their mental health. Additionally, more investigative action should be taken to identify if receiving poor grades causes poor mental health, if the inverse is true, or if there are additional factors at play. Further investigation into this topic could provide data that will allow school administrators, service providers, and parents to effectively address the needs of students who are struggling at school.

The issue of substance use within the Nantucket student population can be difficult to quantify with a survey of this nature. As all questions are optional, students may elect not to report their substance use habits. Additionally, it is inherently impossible to tell whether a student is lying in their responses to this section. Additional monitoring of student behaviors relating to substance use could highlight a clearer pattern than would otherwise be possible through surveys. Additional research could be conducted to determine a method of assessing students' substance use habits that would promote higher levels of honesty than achieved by this study.

The team's survey tool covered a range of topics, many of which provided results that were too weak to draw conclusions from. However, these topics may still prove valuable to assess in future surveys, as new trends may emerge over time. Continuing to improve assessment techniques of all viably measurable student behaviors could strengthen survey methodology and promote a more comprehensive understanding of youth mental health on the island.

6.0 Bibliography

Pew Research Center. (2023b, April 3). *37% of U.S. high schoolers face mental health struggles amid COVID most or all the time, CDC finds | Pew Research Center*. https://www.pewresearch.org/short-reads/2022/04/25/in-cdc-survey-37-of-u-s-high-school-students-report-regular-mental-health-struggles-during-covid-19/

2021 YRBSS Data release available now. (n.d.). https://www.cdc.gov/healthyyouth/data/yrbs/index.htm

Aamodt, M. (2016, January 20). *What does a statistically significant standard deviation mean?. DCI Consulting Blog. https://blog.dciconsult.com/blog/statistically-significant-standard-deviation-mean*

About Nantucket. About Nantucket | Nantucket, MA - Official Website. (n.d.). https://www.nantucket-ma.gov/1608/About-Nantucket

Allen, J. S. (2023, April 28). *How much does a house on Nantucket cost?* Fisher Real Estate Nantucket. https://fishernantucket.com/how-much-does-a-house-in-nantucket-cost/

Brown, T., Herman, J. (2015, November). *Intimate partner violence and sexual abuse among LGBT people*. Williams Institute. https://williamsinstitute.law.ucla.edu/wp-content/uploads/IPV-Sexual-Abuse-Among-LGBT-Nov-2015.pdf

Bullying Statistics. PACER Center - Champions for Children with Disabilities. (2020, November). https://www.pacer.org/bullying/info/stats.asp

CDC. (2022, March 31). Adolescent Behaviors and Experiences Survey (ABES). Centers for Disease Control and Prevention. https://www.cdc.gov/healthyyouth/data/abes.htm

Centers for Disease Control. (2021). *YOUTH RISK BEHAVIOR*. https://www.cdc.gov/healthyyouth/mental-health/index.htm

Chen, H., Cohen, P., Kasen, S., Johnson, J. G., Berenson, K., Gordon, K. (2006). *Impact of adolescent mental disorders and physical illnesses on quality of life 17 years later*. Archives of Pediatrics & Adolescent Medicine, 160(1), 93. https://doi.org/10.1001/archpedi.160.1.93

Commonwealth of Massachusetts. (2021, September 8). *COVID - 1 9 Community Impact Survey(CCIS)*. Mass.gov. https://www.mass.gov/info-details/ccis-spotlight-black-residents

Commonwealth of Massachusetts. (2021, September 8). *COVID - 1 9 Community Impact Survey(CCIS)*. Mass.gov. https://www.mass.gov/info-details/ccis-spotlight-hispaniclatinx-residents

Commonwealth of Massachusetts. (n.d.). Massachusetts Youth Health Survey (MYHS). Mass.gov. https://www.mass.gov/lists/massachusetts-youth-health-survey-myhs

Danilina. (2022). *Nonstandard work weeks and work schedules influence on motivation and productivity, work culture, and attitudes among front-line workers in Nantucket, MA, during the COVID-19 pandemic*. LCC tarpaulin universities. Prieiga per eLABa – nacionalinė Lietuvos akademinė elektroninė biblioteka.

Dashiff, C., DiMicco, W., Myers, B., Sheppard, K. (2009). *Poverty and adolescent mental health*. Journal of Child and Adolescent Psychiatric Nursing, 22(1), 23–32. https://doi.org/10.1111/j.1744-6171.2008.00166.x

Dattini, S. (2023, May 26). *How do researchers study the prevalence of mental illnesses?* Our World in Data. https://ourworldindata.org/how-do-researchers-study-the-prevalence-of-mental-illnesses

Due, P., Holstein, B. E., Lynch, J., Diderichsen, F., Gabhain, S. N., Scheidt, P., Currie, C. (2005). *Bullying and symptoms among school-aged children: International Comparative Cross-Sectional Study in 28 countries.* European Journal of Public Health, 15(2), 128–132. https://doi.org/10.1093/eurpub/cki105

Engaging Marginalized Communities: Challenges and best practices. (2021, September 1). icma.org.https://icma.org/articles/pm-magazine/engaging-marginalized-communities-challenges-and-best-practices

Eyuboglu, M., Eyuboglu, D., Pala, S. C., Oktar, D., Demirtas, Z., Arslantas, D. & Unsal, A. (2021). *Traditional school bullying and cyberbullying: Prevalence, the effect on mental health problems and self-harm behavior*. Psychiatry Research, 297, 113730. https://doi.org/10.1016/j.psychres.2021.113730

Fisher, S., Reynolds, J. L., Hsu, W.-W., Barnes, J. & Tyler, K. (2014). *Examining Multiracial Youth in Context: Ethnic Identity Development and Mental Health Outcomes*. Journal of Youth and Adolescence, 43(10), 1688–1699.

Forsberg, J.T., Thorvaldsen, S. *The severe impact of the COVID-19 pandemic on bullying victimization, mental health indicators and quality of life*. Sci Rep 12, 22634 (2022). https://doi.org/10.1038/s41598-022-27274-9

Goodyear-Smith, F., Martel, R., Darragh, M., Warren, J., Thabrew, H., & Clark, T. C. (2017). Screening for risky behaviour and mental health in young people: The youthchat programme. Public Health Reviews, 38(1). https://doi.org/10.1186/s40985-017-0068-1

Gnan, G. H., Rahman, Q., Ussher, G., Baker, D., West, E., Rimes, K. A. (2019). *General and LGBTQ-specific factors associated with mental health and suicide risk among LGBTQ students.* Journal of Youth Studies, 22(10), 1393–1408. https://doi.org/10.1080/13676261.2019.1581361

Hartup, W. W. (1989). *Social relationships and their developmental significance*. American Psychologist, 44(2), 120–126. https://doi.org/10.1037/0003-066x.44.2.120

Hertz, M. F., Kilmer, G., Verlenden, J., Liddon, N., Rasberry, C. N., Barrios, L. C., & Ethier, K. A. (2022). Adolescent mental health, connectedness, and mode of school instruction during COVID-19. *Journal of Adolescent Health*, *70*(1), 57-63. https://doi.org/10.1016/j.jadohealth.2021.10.021

Howe, C. and Mercer, N. (2007) Children's Social Development, *Peer Interaction and Classroom Learning (Primary Review Research Survey 2/1b)*, Cambridge: University of Cambridge Faculty of Education.https://doi.org/10.1007/s10964-014-0163-2

Information about mental illness and the brain. National Institutes of Health. (2007). https://www.ncbi.nlm.nih.gov/books/NBK20369/

Kavanaugh, J. (2023, August 1). *With override, Nantucket boosts affordable housing efforts*. Massachusetts Municipal Association (MMA). https://www.mma.org/with-override-nantucket-boosts-affordable-housing-efforts/

Klineberg, E., Clark, C., Bhui, K. S., Haines, M. M., Viner, R. M., Head, J., Woodley-Jones, D., Stansfeld, S. A. (2006). *Social Support, ethnicity and Mental Health in Adolescents. Social Psychiatry and Psychiatric Epidemiology*, 41(9), 755–760. https://doi.org/10.1007/s00127-006-0093-8

Largesse, E. (2022). Class, climate change, and closed systems: Inverted Quarantine on Nantucket island. *Environmental Sociology*, *8*(3), 331–344. https://doi.org/10.1080/23251042.2022.2042887

Last, C. G., Hansen, C., Franco, N. (1997). Anxious children in adulthood: *A prospective study of Adjustment*. Journal of the American Academy of Child Adolescent Psychiatry, 36(5), 645–652. https://doi.org/10.1097/00004583-199705000-00015

Liu, W., Hu, Z., Liu, Z., Zhang, F., Ding, Y., Shui, Y., Yang, Z. & Cheng, W. (2023). *Age- and sex-dependent increase in self-harm among adolescents with mental health problems in East China during COVID-19-related society-wide isolation*. Frontiers in Public Health, 11. https://doi.org/10.3389/fpubh.2023.1129123

Massachusetts Department of Higher Education. (2023). Massachusetts School and District Profiles. Enrollment Data (2022-23) - Massachusetts (00000000). https://profiles.doe.mass.edu/profiles/student.aspx?orgcode=00000000&orgtypecode=0&

McLaughlin, K. A., Costello, E. J., Leblanc, W., Sampson, N. A., & Kessler, R. C. (2012). *Socioeconomic Status and Adolescent Mental Disorders*. American Journal of Public Health, 102(9), 1742–1750. https://doi.org/10.2105/ajph.2011.300477

McMahon, E. M., Hemming, L., Robinson, J., Griffin, E. (2023). *Editorial: Suicide and self-harm in young people*. Frontiers in Psychiatry, 13. https://doi.org/10.3389/fpsyt.2022.1120396

Mental health of children and parents —a strong connection. (2021, April 23). Centers for Disease Control and Prevention. https://www.cdc.gov/childrensmentalhealth/features/mental-health-children-and-parents.html

Miller, C., Howard, J. (2023, April 27). *How trauma affects kids in school.* Child Mind Institute. https://childmind.org/article/how-trauma-affects-kids-school/

Miller, C. (2023, July 13). *Mental health disorders and teen substance use*. Child Mind Institute. https://childmind.org/article/mental-health-disorders-and-substance-use/

Murphy, J. M., Guzmán, J., McCarthy, A. E., Squicciarini, A. M., George, M., Canenguez, K. M., Dunn, E. C., Baer, L., Simonsohn, A., Smoller, J. W., & Jellinek, M. S. (2014). Mental health predicts better academic outcomes: A longitudinal study of elementary school students in Chile. Child Psychiatry & Human Development, 46(2), 245–256. https://doi.org/10.1007/s10578-014-0464-4

Mustanski, B. S., Garofalo, R., Emerson, E. M. (2011). *Mental Health Disorders, Psychological Distress, and Suicidality in a Diverse Sample of Lesbian, Gay, Bisexual, and Transgender Youths*. American Journal of Public Health, 100(12), 2426–2432. https://doi.org/10.2105/ajph.2009.178319

Nakshine, V. S., Thute, P., Khatib, M. N., & Sarkar, B. (2022). Increased screen time as a cause of declining physical, psychological health, and sleep patterns: A literary review. *Cureus*. https://doi.org/10.7759/cureus.30051

Nantucket Cottage Hospital. (2011, April 21). *!FY15 Community!Health!Needs!Assessment and! Implementation!Plan*. Nantucket Cottage Hospital | Wellness Found Here. https://nantuckethospital.org/wp-content/uploads/2015/08/NCH-2015-CHNA.pdf?x32675

Nantucket Cottage Hospital. (2015). *!FY15 Community!Health!Needs!Assessment and! Implementation!Plan.* https://nantuckethospital.org/wp-content/uploads/2015/08/NCH-2015-CHNA.pdf?x32675

Panchal, N., Cox, C., Rudowitz, R. (2022, September 6). *The landscape of school-based mental health services.* KFF. https://www.kff.org/mental-health/issue-brief/the-landscape-of-school-based-mental-health-services/

Pappas, S. (2023). More than 20% of teens have seriously considered suicide. Psychologists and communities can help tackle the problem. Monitor on Psychology, 54(5), 54.

Patel, R., Shetty, H., Jackson, R., Broadbent, M., Stewart, R., Boydell, J., McGuire, P., & Taylor, M. (2015). *Delays before diagnosis and initiation of treatment in patients presenting to mental health services with bipolar disorder*. PLOS ONE, 10(5). https://doi.org/10.1371/journal.pone.0126530

Perry, V. (2022, February 1). *Difference between child and adult psychiatry*. Remedy Psychiatry, Inc. https://remedypsychiatry.com/difference-between-child-and-adult-psychiatry/

Ramsey, N., Obeidallah, M., & Abraham, A. (2023). Impact of COVID-19 on adolescent health and use of social media. *Current Opinion in Pediatrics*, *35*(3), 362–367. https://doi.org/10.1097/mop.0000000000001248

Schulte-Körne, G. (2016). *Mental Health Problems in a School Setting in Children and Adolescents*. Deutsches Ärzteblatt International. https://doi.org/10.3238/arztebl.2016.0183

Stocker, D (2023). The consequences of Economic Disparity in a Resort Community: Examining the Stratification of Cape Cod. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=aab8916372a7b8f0781ed1b206c35594f4353186

Surveys and Assessments | MVYTF2. (n.d.). Mvytf2. https://www.mvyouthtaskforce.org/copy-of-initiatives

Taylor, E. H. (1998). *Advances in the diagnosis and treatment of children with serious mental illness*. Child Welfare, 77(3), 311-32.

The Pride Survey for grades 6-12 | Pride Surveys. (n.d.). Pride Surveys. https://www.pridesurveys.com/index.php/pride-student-survey-for-grades-6-12/

Trevor Project. (2020, August). *HOW COVID-19 IS IMPACTING LGBTQ YOUTH*. https://www.thetrevorproject.org/wp-content/uploads/2020/10/Trevor-Poll_COVID19.pdf

Trevor Project.https://www.thetrevorproject.org/

U.S. Census Bureau quickfacts: Nantucket County, Massachusetts. (n.d.). https://www.census.gov/quickfacts/fact/table/nantucketcountymassachusetts/PST045222

U.S. Department of Health and Human Services. (2003). Harmful interactions. National Institute on Alcohol Abuse and Alcoholism. https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/harmful-interactions-mixing-alcohol-with-medicines

World Health Organization. (2022, June 17). *Mental health*. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

Worsham, M. L. D., Julius, E. P., Nice, C. C., Diaz, P. H., & Huffman, D. G. (2017). Geographic isolation facilitates the evolution of reproductive isolation and morphological divergence. *Ecology and Evolution*, *7*(23), 10278–10288. https://doi.org/10.1002/ece3.3474

Youth data 2022. (n.d.). Mental Health America. https://mhanational.org/issues/2022/mental-health-america-youth-data

Di Chiara, G. (1997). *Alcohol and dopamine*. PubMed Central (PMC). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6826820/

Rettew, D. C., & Pawlowski, S. (2016). Bullying. *Child and Adolescent Psychiatric Clinics of North America*, *25*(2), 235–242. https://doi.org/10.1016/j.chc.2015.12.002

Boyce, C. W., & Neale, P. (2006). Conducting in-depth interviews: a guide for designing and conducting in-depth interviews for evaluation input. *Pathfinder International*. https://www.popline.org/node/177523

Caulfield, J. (2023, June 22). *How to do thematic analysis | Step-by-Step Guide & Examples*. Scribbr. https://www.scribbr.com/methodology/thematic-analysis/

Deaton, J. D., Ohrt, J. H., Linich, K., Wymer, B., Toomey, M., Lewis, O., Guest, J. D., & Newton, T. L. (2022). Teachers' experiences with K-12 students' mental health. *Psychology in the Schools*, *59*(5), 932–949. https://doi.org/10.1002/pits.22658

Google AI. (2023). *BardAI* (July 13 version) [Large language model]. https://bard.google.com/chat/18920f8c3d39584b

Melchior, M. (2016). Parental influences on children's mental health: the bad and the good sides of it. *European Child & Adolescent Psychiatry*, *25*(8), 805–807. https://doi.org/10.1007/s00787-016-0891-9

Protect a document with a password - Microsoft Support. (n.d.). https://support.microsoft.com/en-us/office/protect-a-document-with-a-password-05084cc3-300d-4c1a-8416-38d3e37d6826

Qualtrics. (n.d.). https://www.qualtrics.com/support/survey-platform/getting-started/survey-platform-overview/

Zabek, F., Lyons, M. D., Alwani, N., Taylor, J. V., Brown-Meredith, E., Cruz, M. A., & Southall, V. H. (2022). Roles and functions of school mental health professionals within Comprehensive School Mental health Systems. *School Mental Health*, *15*(1), 1–18. https://doi.org/10.1007/s12310-022-09535-0

World Bank Group. (2021, November 18). New World Bank report: Remote Learning during the pandemic: Lessons from today, principles for tomorrow. *World Bank*. https://www.worldbank.org/en/news/press-release/2021/11/18/new-world-bank-report-remote-learning-during-the-pandemic-lessons-from-today-principles-for-tomorrow

Rutkowska, A., Cieślik, B., Tomaszczyk, A., & Szczepańska-Gieracha, J. (2022). Mentalhealth conditions among E-Learning students during the COVID-19 pandemic. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.871934

Puteikis, K., Mameniškytė, A., & Mameniškienė, R. (2022). Sleep Quality, Mental Health and Learning among High School Students after Reopening Schools during the COVID-19 Pandemic: Results of a Cross-Sectional Online Survey. *International Journal of Environmental Research and Public Health*, *19*(5), 2553. https://doi.org/10.3390/ijerph19052553

Whaley, G. L., & Pfefferbaum, B. (2023). Parental Challenges during the COVID-19Pandemic: Psychological outcomes and risk and protective factors. *Current Psychiatry Reports*, *25*(4), 165–174. https://doi.org/10.1007/s11920-023-01412-0

Mental health of children and parents —a strong connection. (2021b, April 23). Centersfor Disease Control and Prevention. https://www.cdc.gov/childrensmentalhealth/features/mental-health-children-and-parents.html

Housing Nantucket. (2022, June 29). *Home - Housing Nantucket*. Housing Nantucket -Housing the Nantucket Community Since 1994. https://www.housingnantucket.org/

Andrews, F. M., & Herzog, A. R. (1986). The quality of survey data as related to age of respondent. *Journal of the American Statistical Association*, *81*(394), 403–410. https://doi.org/10.1080/01621459.1986.10478284

Health risks of social isolation and loneliness. (2023, May 8). Centers for Disease Control and Prevention. https://www.cdc.gov/emotional-wellbeing/social-connectedness/loneliness.htm

Coronavirus Disease 2019. (n.d.-b). Centers for Disease Control and Prevention. https://www.cdc.gov/media/releases/2022/p0331-youth-mental-health-covid-19.html

Health Disparities among LGBTQ Youth | DASH | CDC. (n.d.). https://www.cdc.gov/healthyyouth/disparities/health-disparities-among-lgbtq-youth.htm

Limone, P., & Toto, G. A. (2021). Psychological and emotional effects of digital technology on children in COVID-19 pandemic. *Brain Sciences*, *11*(9), 1126. https://doi.org/10.3390/brainsci11091126

Higa, D., Hoppe, M. J., Lindhorst, T., Mincer, S., Beadnell, B., Morrison, D. M., Wells, E. A., Todd, A., & Mountz, S. (2014). Negative and Positive Factors Associated With the Well-Being of Lesbian, Gay,

Bisexual, Transgender, Queer, and Questioning (LGBTQ) Youth. *Youth & society*, *46*(5), 663–687. https://doi.org/10.1177/0044118X12449630

Worcester Polytechnic Institute. Data USA. (n.d.).

https://datausa.io/profile/university/worcesterpolytechnicinstitute#:~:text=The%20enrolled%20studen

t%20population%20at,American%20Indian%20or%20Alaska%20Native.

Narr, R. K., Allen, J. P., Tan, J. S., & Loeb, E. L. (2017). Close friendship strength and broader peer group desirability as differential predictors of adult mental health. *Child Development*, *90*(1), 298–313. https://doi.org/10.1111/cdev.12905

Youth Mental Health and Substance use. National Governors Association. (2023, May 10). https://www.nga.org/publications/youth-mental-health-and-substance-use/

Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive medicine reports*, *12*, 271–283. https://doi.org/10.1016/j.pmedr.2018.10.003

American Psychological Association. (n.d.). *Health Advisory on social media use in adolescence*. American Psychological Association. https://www.apa.org/topics/social-media-internet/health-advisory-adolescent-social-media-use