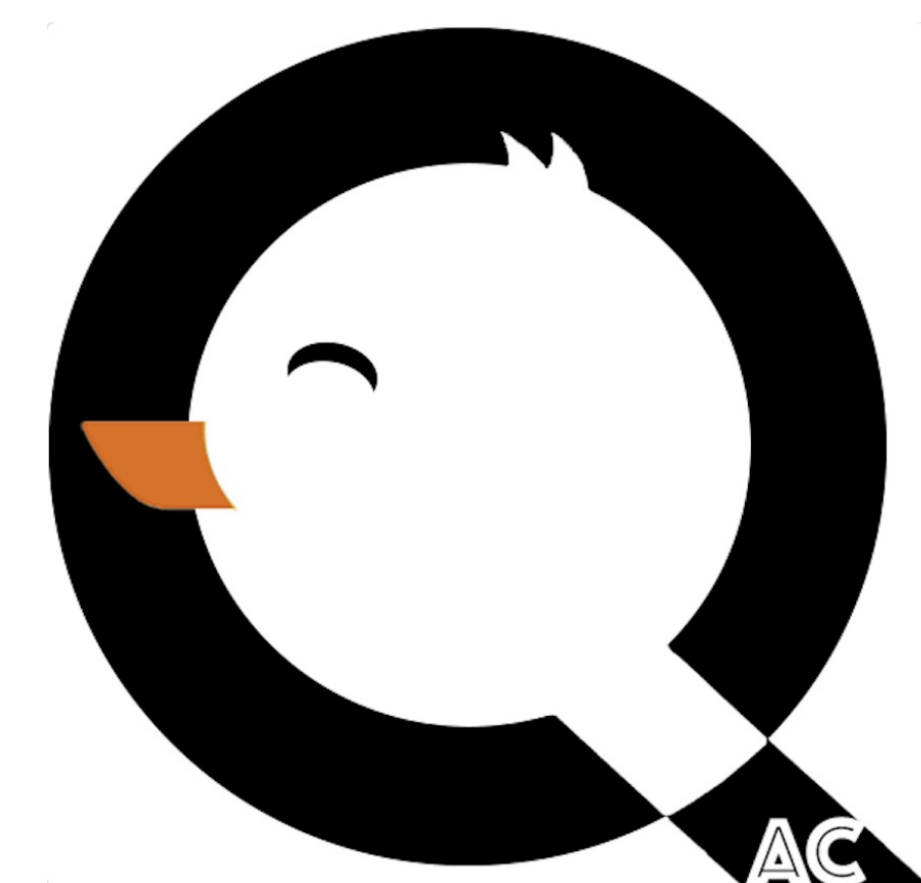


# The Association Between Mental Health and Gender in Adolescents During the COVID-19 Pandemic



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## Introduction

- When the COVID-19 pandemic began in March 2020, nearly every classroom across the United States suspended in-person instruction, disrupting the education of more than 57 million primary and secondary students nationwide (Donohue, & Miller, 2020).
- Students attending school virtually reported poorer mental health outcomes than their peers attending in person, and hybrid learning models were associated with higher levels of depressive symptoms across racial and ethnic groups (Rai, Laestadius, & Campos-Castillo, 2024). In contrast, fully in-person instruction consistently demonstrated the lowest levels of reported mental health risk (Hertz, Kilmer, Verlenden, Liddon, Rasberry, Barrios, & Ethier, 2022).
- Research on gender differences during virtual learning suggests meaningful disparities between female and male students' success with self-regulated online learning (SROL), indicating that girls may have adapted more effectively to the independent and less structured nature of remote instruction, whereas boys may have been more vulnerable to challenges related to motivation, organization, and self-monitoring (Liu, Zhao, Hong, 2021).

## Methods

### Sample

- Data was drawn from the 2021 Adolescent Behaviors and Experiences Survey (ABES), conducted by the Centers for Disease Control and Prevention (CDC) during the spring of 2021 (CDC, 2022).
- ABES was designed to provide nationally representative data on U.S. high school students (grades 9–12) enrolled in public and private schools across all 50 states.
- The final analytic sample consisted of 6,480 students.

### Measures

- Adolescents' mental health was measured with the question: "During the COVID-19 pandemic, how often was your mental health not good?" Possible responses ranged from 1 (Never) to 5 (Always)
- Student's perceived difficulty of schoolwork was measured with the question: "Do you agree or disagree that doing your schoolwork was more difficult during the COVID-19 pandemic than before the pandemic started?" Possible responses ranged from 1 (strongly agree) to 5 (strongly disagree).
- Other variables measured include: grade, school provision of Wi-Fi hotspots and laptops, reduced class, and instruction mode.

## Research Questions:

- What factors affected adolescents' mental health over the pandemic?
- Do school-provided resources make it less likely for adolescents to report poor mental health?

## Results

### Univariate

- 51.90% of respondents were female, 47.73% were male, and 0.36% did not specify

### Bivariate

- Chi-squared analysis shows that **there is a significant relationship between sex and mental health**. The worse the mental health score, the higher the proportion of female respondents. (Figure 1)
- Chi-squared analysis shows that **students with poor mental health are much more likely than expected to agree that schoolwork became more difficult** over the pandemic.
- Chi-squared analysis shows that **there is no significant relationship** between mental health and grade, instruction model, reduced class size, and school-provided resources

### Multivariate

- Logistic regression shows that **females are 3.6 times more likely than males** to report worse mental health
- Students with **laptops have about 53% lower odds of reporting worse mental health** compared to those without laptops, but **96.72% of students had access to laptops**. The effect of laptop access does not depend on instructional model
- Greater perceived school difficulty was significantly associated with worse mental health**, with each one-unit increase in the scale corresponding to approximately a **21.23% increase in the odds** of reporting worse mental health. (Figure 2)

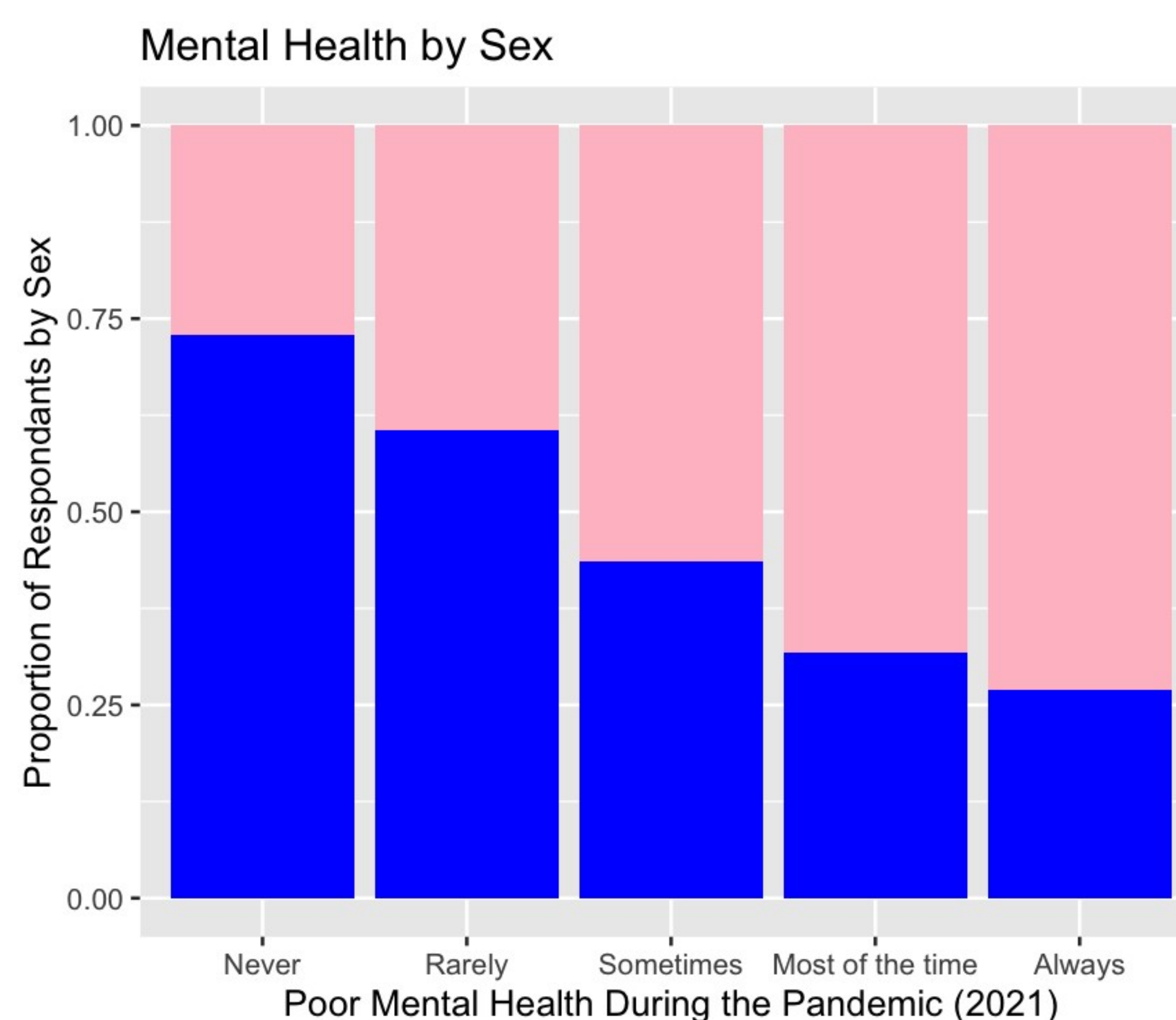


Figure 1: Adolescent Mental Health in Response to "During the COVID-19 pandemic, how often was your mental health not good?" by Sex

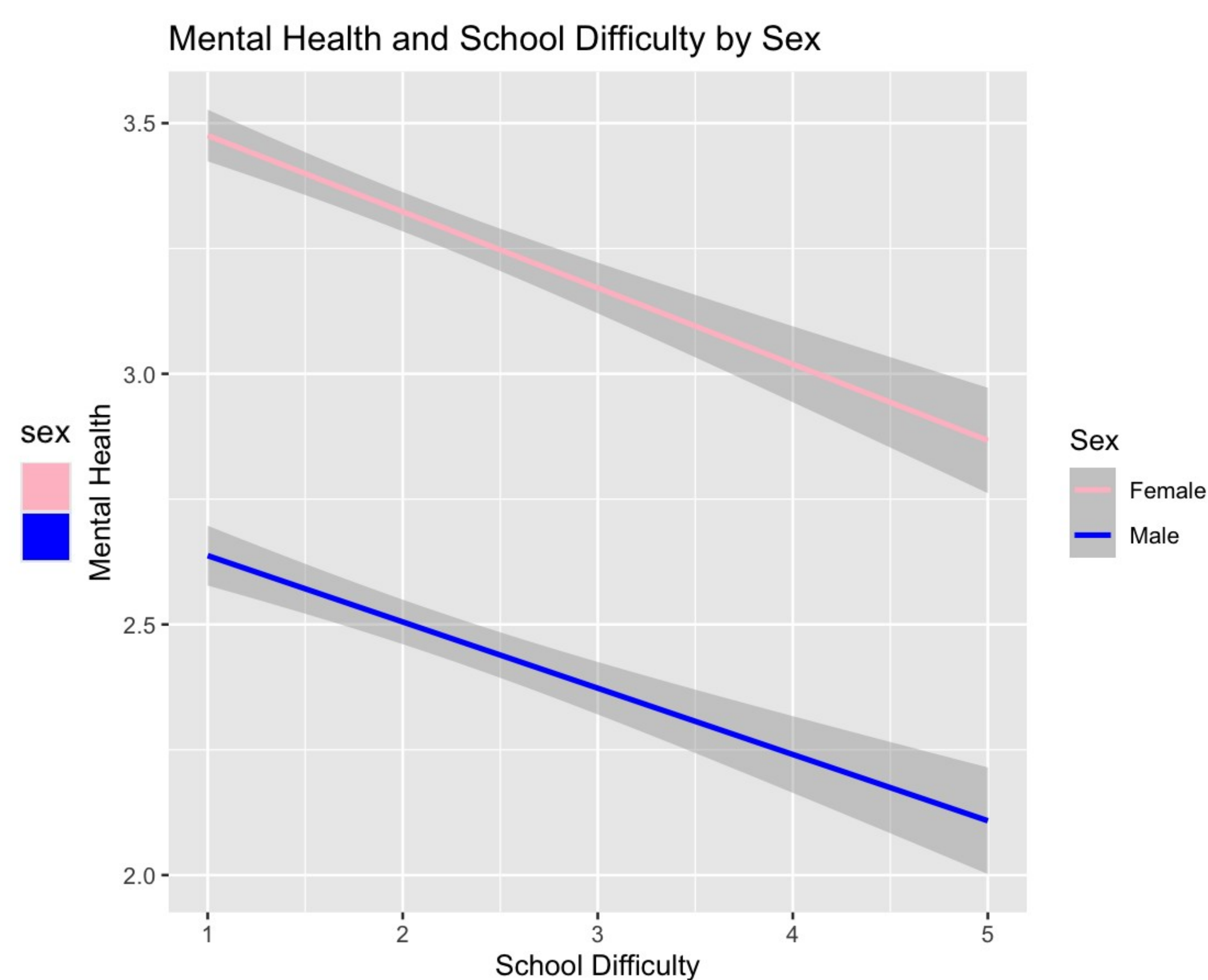


Figure 2: Mental Health, Schoolwork more difficult during the pandemic ranging from from 1 (strongly agree) to 5 (strongly disagree), by Sex

## References

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## Discussion

- **Females have substantially higher odds of worse mental health** during the pandemic than males, independent of instruction model or school provided resources.
- **School resources including Wi-Fi hotspots and reduced class size have no significant effect on mental health outcomes**, but laptop did significantly reduce odds of worse mental health. However laptop access was extremely high across all instructional models, with an average of 96.72%
- **School modality had no significant impact on mental health outcomes**, contradicting existent literature (Hertz, Kilmer, Verlenden, Liddon, Rasberry, Barrios, & Ethier, 2022) & (Rai, Laestadius, & Campos-Castillo, 2024). Both of these studies used data collected from The National Opinion Research Center's (NORC) AmeriSpeak Teen Panel consisting of nationally representative panel of adolescents in 2020 and 2021 respectively. Their samples were much smaller consisting of 510 and 567 students. The questionnaires were solely focused on pandemic experience. The scope and depth of their samples may account for discrepancies between our conclusions.
- **Higher perceived difficulty of schoolwork during the pandemic is associated with worse mental health**, though the direction of causality is undetermined
- These findings contribute to a better understanding of the uneven ramifications of the pandemic on adolescents. More research needs to be done to determine what causes this disparity between sexes and the best way to rectify it.