Mental Health Factors and Covid

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[1] "/Users/annalisecramer/MADA/CRAMER-MADA-Project"

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# 1. Summary/Abstract

Isolation and quarantine strategies employed for containment of SARS-Cov-2 infection led to unexpected mental health struggles among the population of the United States. Infected individuals and healthy individuals were affected, but little is known about the potential relationships between mental health and physical health. In this study, we utilized Nataional Health Information Surveys from 2019-2021 to examine the relationships between receieving a positive COVID-19 test and self reporting mental health factors such as meeting recommended guidelines for exercise, meeting the recommended number of hours of sleep per night, reporting feeling depressed recently, reporting having trouble sleeping recently, and reporting receiving less social support.

We find

# 2. Introduction

## 2.1 General Background Information

During the SARS-CoV pandemic, methods implemented to control the transmission of the disease had broader societal impacts. A common complaint surrounding social distancing and quarantine policies is the effects on mental health 1. This study aims to better understand the associations between mental health factors and contracting covid. Using data from the National Health Interview Surveys collected during the SARS-CoV-2 pandemic, simple and multiple regression models are created.

Cite this properly later: 1.) https://www.tandfonline.com/doi/full/10.1080/09638237.2020.1757052

## 2.2 Description of data and data source

Data for this project is survey data collected from the National Health Interview Survey, produced by IPUMS through the University of Minnesota. This data was collected among United States residents of all ages and genders from 2019 - 2022 in the United States.

## 2.3 Questions/Hypotheses to be addressed

1.) What is the prevalence of poor mental health? 2.) Is poor mental health associated with a positive covid test?

Factors studied will include hours of sleep, reported depressed mood, reported trouble sleeping, recent exercise, and reported social/emotional support.

# 3. Methods

## 3.1 Schematic of workflow

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| --- |
| Figure 1: Flowchart depicting methodology |

## 3.2 Data aquisition

National Health Information Survey data was obtained from IPUMS, used with permission. Data was subsetted to years 2019-2022, to cover the brunt of pandemic years. Despite low prevelance of COVID-19 cases in 2019 worldwide, the appearance of COVID-19 in the news (and consequential potential impact on mental health factors) led us to include this data. The final dataset contains 151406 observations.

## 3.3 Data import and cleaning

Binary variables were created to allow for interpretability. EXERCISE is a combination of number of minutes of passive or aerboic exercise, descirbing whther weekly amount meets the American Heart Association’s guidelines for exercise needed to stay healthy, as exercise is known to relate to mental health. SLEEP is based on the NIH guidelines for recommended hours of sleep per day, which differs by age. DEPRESSED includes if the individual reports feeling depressed on a weekly or daily basis, but not at a frequency of monthly or less. TROUBLE\_SLEEPING indicates struggling to fall asleep several days per week, more than half the days, or nearly every day. SOCIAL describes individual feeling like they have less social support than their regular amount. Answers for don’t know or unsure were converted to missing.

## 3.4 Statistical analysis

After creating binary variables, significant amounts of data were missing. Multiple imputation was used to create 5 sets of imputed data, and used for the remainder of analysis. To calculate later statisitcs, processes were preformed on each of the 5 sets and then averaged.

Complex survey design was used to allow for generalizability of results, using variables PSU, STRATA, and SAMPWEIGHT. A summary table was generated to find occurence of each of the factors and their inverses among the data. Next, single models were ran to find associations between each variable with covid test postivity. To explore the data further, a multivariate model, LASSO regression, and a third advanced model (replace this) were ran with cross validation.

# 4. Results

## 4.1 Exploratory/Descriptive analysis

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| Figure 2: Summary statistics table |

## 4.2 Basic statistical analysis

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| --- |
| Table 1: Single model table |

## 4.3 Full analysis

*Use one or several suitable statistical/machine learning methods to analyze your data and to produce meaningful figures, tables, etc. This might again be code that is best placed in one or several separate R scripts that need to be well documented. You want the code to produce figures and data ready for display as tables, and save those. Then you load them here.*

Example tbl-resulttable2 shows a summary of a linear model fit.

# 5. Discussion

## 5.1 Summary and Interpretation

*Summarize what you did, what you found and what it means.*

## 5.2 Strengths and Limitations

*Discuss what you perceive as strengths and limitations of your analysis.*

## 5.3 Conclusions

*What are the main take-home messages?*

*Include citations in your Rmd file using bibtex, the list of references will automatically be placed at the end*

This paper [@leek2015] discusses types of analyses.

These papers [@mckay2020; @mckay2020a] are good examples of papers published using a fully reproducible setup similar to the one shown in this template.

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# 6. References