

# CSC110 Project Proposal: Your Anxiety During COVID-19

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## Problem Description and Research Question

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), commonly known for causing the illness COVID-19, spread wildly after its emergence in late 2019 (Britannica, T. Editors of Encyclopaedia, 2021). Following its discovery, society as we knew it was upended, and countries went into lockdown. Individuals were required to stay home to prevent the spread of the virus, restricting any socializing to very minimal interactions with others. Tested by working from home, unemployment, lack of social connections and many more challenges, many individuals found it challenging to adapt, making them especially vulnerable to mental health complications (World Health Organization, 2021).

While COVID-19 has proven challenging to combat, Canada has put forth their best efforts to prevent the spread of the virus, becoming one of the top vaccinated countries in the world (Mathieu et al., 2021). Despite social regulations having been eased, many of the psychological effects linger. In fact, mental health has become such a prominent concern due to the pandemic that analysts at The National Institute of Mental Health now describe online therapy as essential (Prout, 2021).

There is no doubt that the onset of the pandemic affected everyone differently — some found it easy to adjust, some struggled to do so, and many experienced some combination of the two — all for varying reasons. We would like to measure these differences quantitatively. Thus, we decided to research and answer the question: **what is the relationship between one's identity and the degree to which COVID-19 has impacted their mental health?**

Our research will examine various traits that the subjects of the survey have, such as their education level, marital status, gender, and age, then compare their surveyed response to the pandemic alongside their traits and identities to determine a relationship between certain identity groups and the socio-psychological effects COVID-19 has had on them. From the results, we will ascertain which types of people are more susceptible to psychological issues due to the pandemic. We believe that this data can be applied to strengthen mental health resources and allow for more specialized and efficient care.

## Dataset Description

COVIDiSTRESS Global Survey dataset on psychological and behavioural consequences of the COVID-19 outbreak (Yamada et al., 2020) is a survey which was organized by researchers in over 90 universities across the globe, investigating the mental health conditions and personal views surrounding COVID-19. It was conducted during the first major wave of the pandemic, and the responses of approximately 125,000 participants aged 18 and over, ranging across 42 countries, were recorded through this survey. The data is stored in a .csv file with each row containing information about a single person, including their gender, age, occupation status, marital status, and more. The file also includes each participant's responses to a broad range of questions posed on the survey about COVID-19. These questions range from questions about the individual's support systems to questions about how they obtain information about COVID-19. Most questions were answered through a six-point Likert scale, which will help us quantify each participant's responses.

## Computational Plan

Our computational plan is composed of three stages:

- **Stage 1:** Read the data from the CSV file containing the test subjects' information and responses

Figure 1: Sample Data

- The textual output will be “You are less/more likely to be anxious than  $r$  % of the population” or “... than  $r_2$  % of <selected\_identity>.” These statistics will also be displayed graphically using a gauge or a progress bar.

We will be using the external library `PyQt5` to create an interactive graphical user interface (Riverbank Computing Limited., 2021). We will use the package’s `QWidget` class along with its subclasses: `QPushButton` as interactive buttons; `QLabel` as text display; `QLineEdit` as one-line text input; plus many more to make the interface organized and engaging. To plot the data, we will be using `PyQtGraph`, a graphing library designed for `PyQt5` (pyqtgraph, 2021). Compared to other mainstream plotting libraries, `PyQt5` provides a fast refresh speed for rapid plot updates, making navigation between the graphs of different identity groups efficient. We will potentially be using the `pyqtgraph.PlotWidget().plot(x, y)` function to create the required graphs.

## References

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