

## **Proposal 1**

### **Research Question:**

How does increasing the frequency or quality of social relationships improve overall well-being?

### **Hypothesis:**

Individuals with higher levels of social connection will have higher average well-being scores than those with lower levels of social connection.

### **Variables:**

Well-being Score Variables (Such as but not limited to):

- WELLNESS\_self\_rated\_physical\_health
- WELLNESS\_self\_rated\_mental\_health
- WELLNESS\_subjective\_happiness\_scale\_happy
- WELLNESS\_subjective\_happiness\_scale\_peers
- WELLNESS\_subjective\_happiness\_scale\_always\_happy
- WELLNESS\_subjective\_happiness\_scale\_never\_happy
- WELLNESS\_gad\_anxious
- WELLNESS\_gad\_worry
- WELLNESS\_phq\_little\_interest
- WELLNESS\_phq\_feeling\_down

Social Connection Variables (Such as but not limited to):

- CONNECTION\_activities\_greeted\_stranger\_p3m
- CONNECTION\_activities\_greeted\_neighbour\_p3m
- CONNECTION\_activities\_talked\_day\_p3m
- CONNECTION\_activities\_talked\_family\_p3m
- CONNECTION\_activities\_visited\_friends\_p3m
- CONNECTION\_activities\_visited\_family\_p3m
- CONNECTION\_activities\_community\_p3m

### **Method:**

1. Ensure that the well-being and social connection variables are complete and handle any missing values appropriately.
2. Divide participants into:
  - a. High connection group
  - b. Low connection group

- c. Medium connection group
3. Calculate basic descriptive statistics (mean, median, mode) for average well-being scores across different connection groups.
4. Compare the average well-being score and comparison of means for each group to see if higher levels of social connection are associated with higher well-being scores.

**Visualization:**

Bar Chart of Average Well-being Scores by Social Connection Level:

- Displays the average well-being score for each social connection group, making it easy to see differences in well-being based on connection levels.

Box Plot of Well-being Scores by Social Connection Group:

- Shows the distribution of well-being scores within each social connection group.

**Potential Outcomes and Implications:**

- Positive Correlations: A positive relationship between well-being and social ties may indicate that improving social interaction or support networks can increase well-being.
- Null or Negative Correlations: If no significant associations are discovered, this may imply that well-being is influenced by elements not captured in this data, or that quality is more important than frequency of social encounters.

**Conclusion:**

Understanding the relationship between social relationships and well-being allows us to understand better how social participation affects personal health. This analysis can help people by encouraging specific sorts of social engagement to improve mental health and enhance engagement in groups with lower connection levels.

## **Proposal 2**

### **Research Question:**

Do demographics like age and gender influence community engagement levels?

### **Hypothesis:**

Demographic factors such as age and gender have a substantial impact on community engagement levels, with some groups being more engaged than others.

### **Variables:**

Demographic Variables (Such as but not limited to):

- DEMO\_age
- DEMO\_gender
- DEMO\_gender\_text
- DEMO\_identity\_vetrans
- DEMO\_identity\_indigenous
- DEMO\_identity\_lgbtq
- DEMO\_identity\_disability
- DEMO\_identity\_bipoc
- DEMO\_identity\_pwud
- DEMO\_identity\_newcomers
- DEMO\_identity\_homeless
- DEMO\_identity\_mental\_health
- DEMO\_identity\_none
- DEMO\_relationship\_status

Community Engagement Variables (Such as but not limited to):

- CONNECTION\_community\_involvement\_union\_p3m
- CONNECTION\_community\_involvement\_political\_p3m
- CONNECTION\_community\_involvement\_sports\_p3m
- CONNECTION\_community\_involvement\_hobby\_p3m
- CONNECTION\_community\_involvement\_religious\_p3m
- CONNECTION\_community\_involvement\_civic\_p3m
- CONNECTION\_community\_involvement\_service\_p3m
- CONNECTION\_community\_involvement\_seniors\_p3m
- CONNECTION\_community\_involvement\_youth\_p3m
- CONNECTION\_community\_involvement\_ethnic\_p3m

- CONNECTION\_community\_involvement\_other\_p3m

**Method:**

1. Ensure all demographic and community engagement variables are complete. Handle missing values and, where needed, encode categorical data numerically.
2. Group participants by each demographic variable:
  - a. Separate into meaningful age groups.
  - b. Divide into male, female, and any other available gender categories.
3. Calculate basic descriptive statistics (mean, median, mode) for community engagement scores across different demographic groups.
4. Compare these averages to see if certain demographics have notably higher or lower community engagement.

**Visualization:**

Bar Chart of Average Community Engagement by Age and Gender:

- Displays average engagement scores for each age group, making it easy to see which age brackets show higher or lower engagement, and compares average engagement scores between different gender groups.

**Potential Outcomes and Implications:**

- Higher Engagement in Certain Groups: If younger individuals or different genders show higher community engagement, it could suggest a need for targeted outreach to increase participation among older or other genders.
- No Significant Differences: If engagement levels are comparable across demographics, variables other than demographics may have a greater influence on community participation.

**Conclusion:**

This analysis directly meets the project's goal of better understanding the elements that drive social engagement by detecting patterns in community participation across demographic lines. The findings can inform targeted community-building programs for underserved populations, thus promoting inclusion.

### **Proposal 3**

#### **Research Question:**

Does identifying with a gender different from one's birth gender correlate with differences in mental well-being?

#### **Hypothesis:**

Individuals whose gender identity differs from their birth gender may experience different levels of mental well-being compared to those whose gender identity aligns with their birth gender.

#### **Variables:**

Gender Variable:

- DEMO\_gender
- DEMO\_gender\_trans

Social Connection Variables (Such as but not limited to):

- CONNECTION\_activities\_greeted\_stranger\_p3m
- CONNECTION\_activities\_greeted\_neighbour\_p3m
- CONNECTION\_activities\_talked\_day\_p3m
- CONNECTION\_activities\_talked\_family\_p3m
- CONNECTION\_activities\_visited\_friends\_p3m
- CONNECTION\_activities\_visited\_family\_p3m
- CONNECTION\_activities\_community\_p3m

#### **Method:**

1. Ensure that mental well-being variables are complete for all columns.
2. Group participants by identity match, whether their birth gender is the same as their current gender identity, and calculate the average mental well-being score for each group.
3. Calculate average well-being scores for individuals with aligned gender identity versus those with a different gender identity.
4. Compare the two groups to determine if any difference in well-being scores is statistically significant.

#### **Visualization:**

Box Plot of Mental Well-being Scores by Gender Identity Alignment:

- A box plot depicting the distribution of mental well-being ratings in each group. It displays the range, central tendency, and any outliers in well-being

scores, allowing readers to easily grasp the average difference and variability in well-being between identified groups.

Potential Outcomes and Implications:

- Lower Well-being in the Different Identity Group: Individuals with a gender identification other than their birth gender may report significantly lower well-being, highlighting the mental health issues they confront and allowing us to provide greater support.
- No Significant Differences: If the well-being scores are similar between the two groups, it may indicate that other elements are more important in well-being than gender identity alignment.

**Conclusion:**

This analysis supports the project's goal of better understanding the factors that influence mental well-being by concentrating on the relationship between gender identity and well-being. If a difference is discovered, it may signal that additional help or services for people whose gender identity differs from their biological gender might be useful.