

STA130 Project Proposal

Overview

I plan to explore the relationship between human interaction and quality of life. Indicators of human interaction include how many friends a participant has and how often they attend community events or exercise. Quality of life will be measured by both participant's self-reported life satisfaction score and mental health diagnoses.

Variables

- ❖ Life satisfaction (ordinal)
 - Measured from 1 to 10 (can be visualized using a bar graph because it is easy to compare counts)
- ❖ Depression diagnosis (categorical)
 - Yes or no question (can be visualized using a pie chart because it is best to represent it as a proportion)
- ❖ Sense of Community (categorical)
 - Strongly disagree, disagree, agree, strongly agree (can be visualized using a bar graph because it is easy to compare counts)
- ❖ Number of friends (quantitative)
 - Quantitative (can be visualized by histogram because we see shape of data)
- ❖ Frequency of church-going (categorical)
 - Last 1-3 days, last week, last two weeks, last 1-3 months, not in last 3 months (can be visualized using a bar graph because it is easy to compare counts)
- ❖ Walking Activity, (categorical)
 - Yes or no question of did participant go for a walk in the last month (can be visualized using a pie chart because it is best to represent it as a proportion)

Research Questions

1. Is walking in the past month associated with lower frequencies of depression diagnoses?
2. Can a participant's number of friends be used to predict self-reported life satisfaction, suggesting they are connected?
3. Does regular church attendance impact a participant's sense of community?

Analyses

1. Occurrence of depression diagnoses among “walkers” and “non-walkers”
 - a. Chi squared test of independence of proportion of participants with mental health diagnoses who went on walks in last month vs proportion of participants with diagnoses that did not (Null hypothesis: they are independent, alternative: they are associated)
 - b. I can do this because the data is independent, categorical, and we have a large enough sample size (so that expected counts are at least 5)
 - c. A successful analysis #1 could show the association of going on walks is associated with lower occurrences of mental health disease, potentially shedding light on the positive effects of physical activity on mental health.
2. Life satisfaction vs number of friends
 - a. A ordinal logistic regression with life satisfaction as potential dependent variable and number of friends as potential independent variable (null hypothesis: predictor coefficient is zero. alternative hypothesis: predictor coefficient is nonzero.)
 - b. I can do this because the data is independent, life satisfaction is ordinal, I have sufficient sample size, and I don’t need to worry about multicollinearity because I have only one predictor
 - c. A successful analysis #2 could show the correlation between the quantity of friends and life satisfaction, possibly showing the effects of social connections on quality of life
3. Church-going and sense of community
 - a. Chi squared test of independence can be used to compare the proportions of the church going categories and sense of community categories (Null hypothesis: they are independent, alternative: they are associated)
 - b. I can do this because the data is independent, categorical, and we have a large enough sample size (so that expected counts are at least 5)
 - c. A successful analysis #3 could establish a connection between community engagement and a sense of belonging, showing that participating in community events could improve quality of life

Objective

The purpose of this course project is to explore if certain social or community factors have any effect on a person’s health whether it be physically, mentally, or emotionally. All three of the analyses take these kinds of factors, like walking activity, number of friends, and frequency of church-going, and see if they have connections to quality of life indicators like mental health, a self-rated life satisfaction score, and sense of community. I predict that “walkers” will have a lower proportion of depression, the number of friends will be positively correlated with life satisfaction, and church-going will be linked with a higher sense of community.