

The Impact of Social, Physical and Community Interactions on Mental Wellbeing

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Introduction

- Goal: examining how **verbal interaction, physical interaction, and community interaction** influence **mental wellbeing**
- Course project goal: “to analyze the importance of **social connection** and **community engagement**”
- Based on the **Canadian Social Connection Survey** (genwell & CASCH)
- Data wrangling...

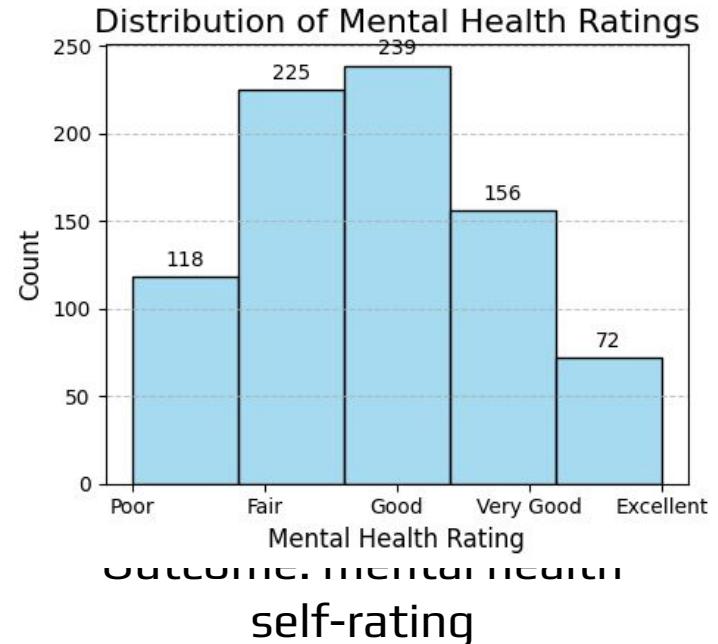
Question 1: How do Social Interactions and Virtual Interactions influence Mental Health

Variables to be examined:

- Three parties receiving face-to-face communication (Categorical)
- Three forms of virtual communication (Categorical)
- Self-rated mental health (Discrete numerical)
- Null Hypothesis: There is no significant effect that virtual interaction and in person interaction on mental health.
- Alternative Hypothesis: There is a significant effect that virtual interaction and social interactions on mental health.

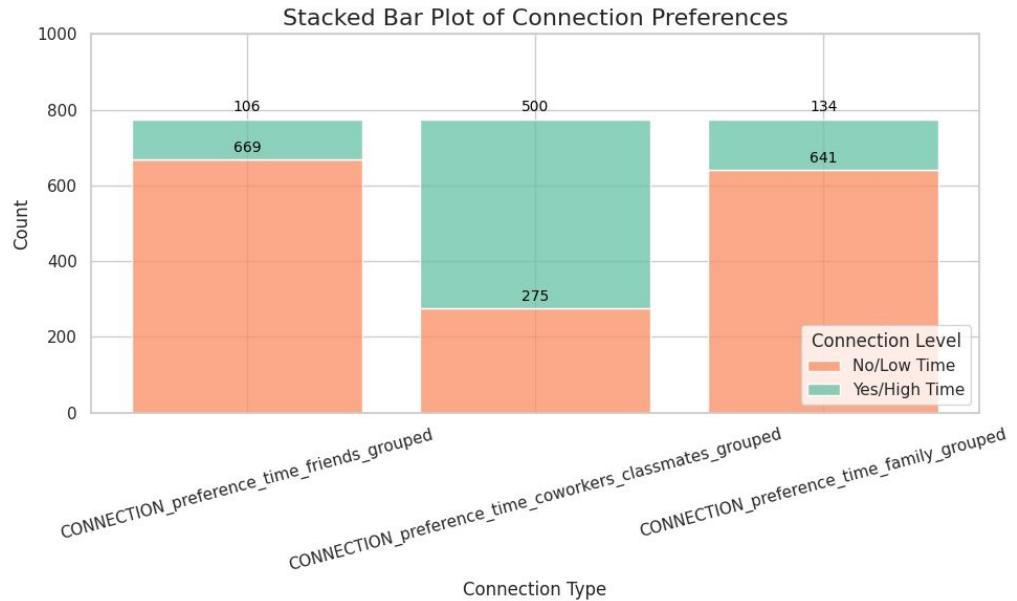
Analysis 1: How do **Social Interactions** and **Virtual Interactions** Influence **Mental Health**

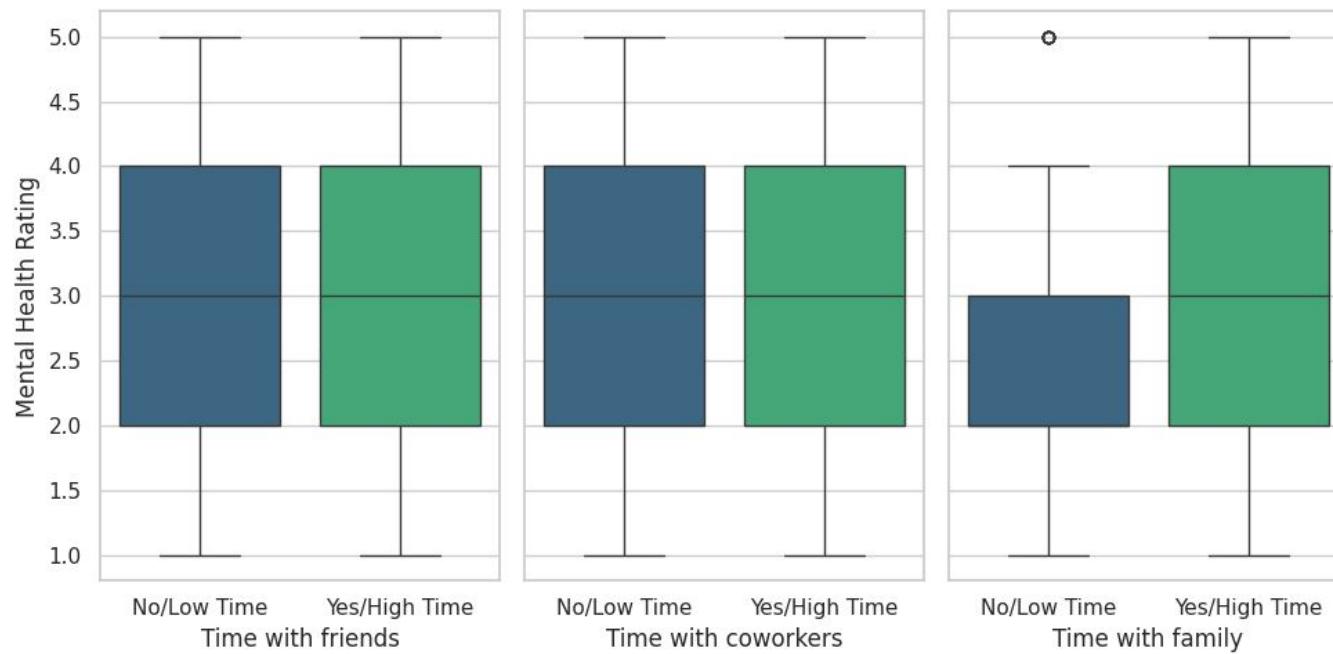
- **Outcome variable: self-rated mental health**
- Categorical Discrete (Poor = 1, Excellent = 5)
- n = 810



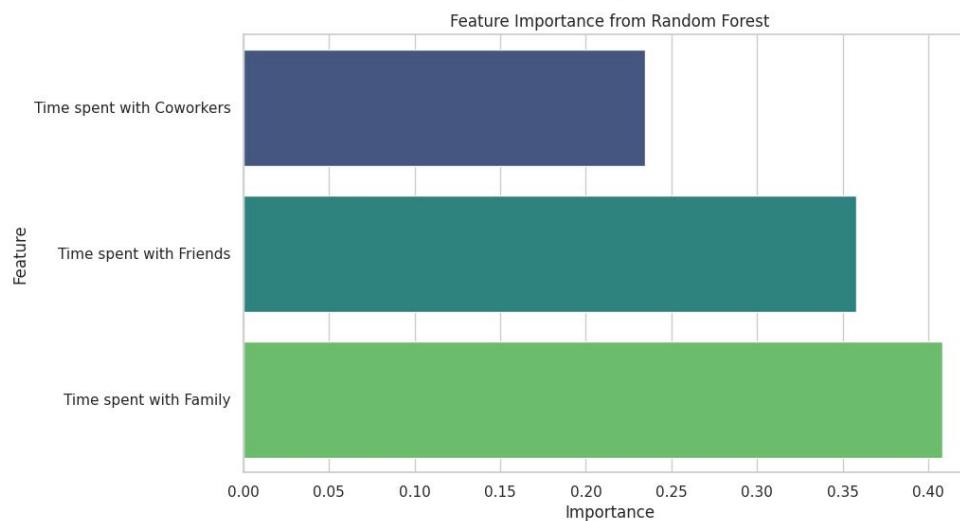
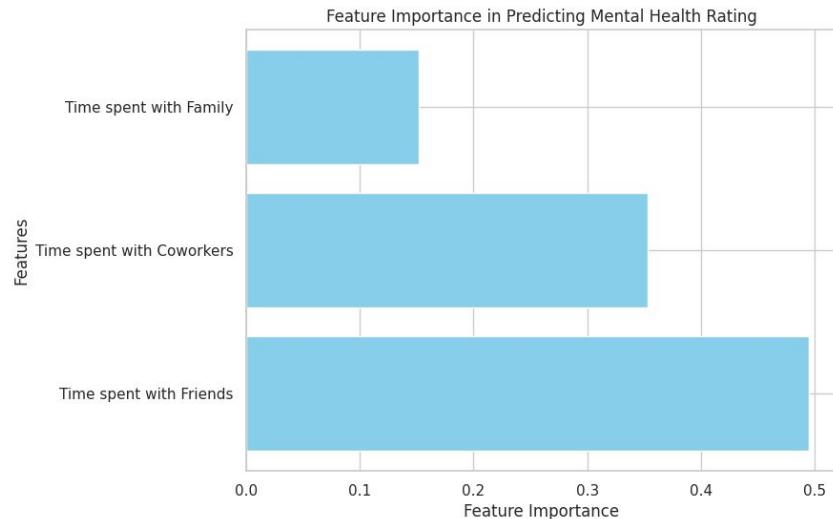
Social Interactions

- **Indicator variable:**
How much people have interacted with friends, coworkers, and classmates in the past day
- Categorical variable Binary (0, 1)
- Mapped "5 or more hours" and "1 to 4 hours" → 1
- Mapped "Less than 1 hour" and "No time" → 0





Variable	P-value	Linear regression coefficients
Spending time with friends per week	0.158	-0.1864
Spending time with coworkers per week	0.694	-0.0351
Spending time with family per week	0.012	0.2990

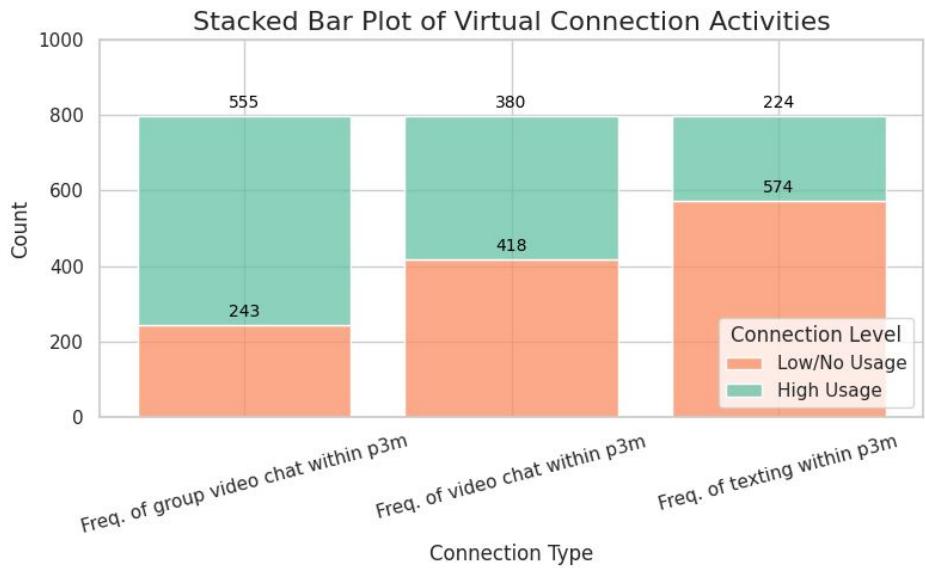


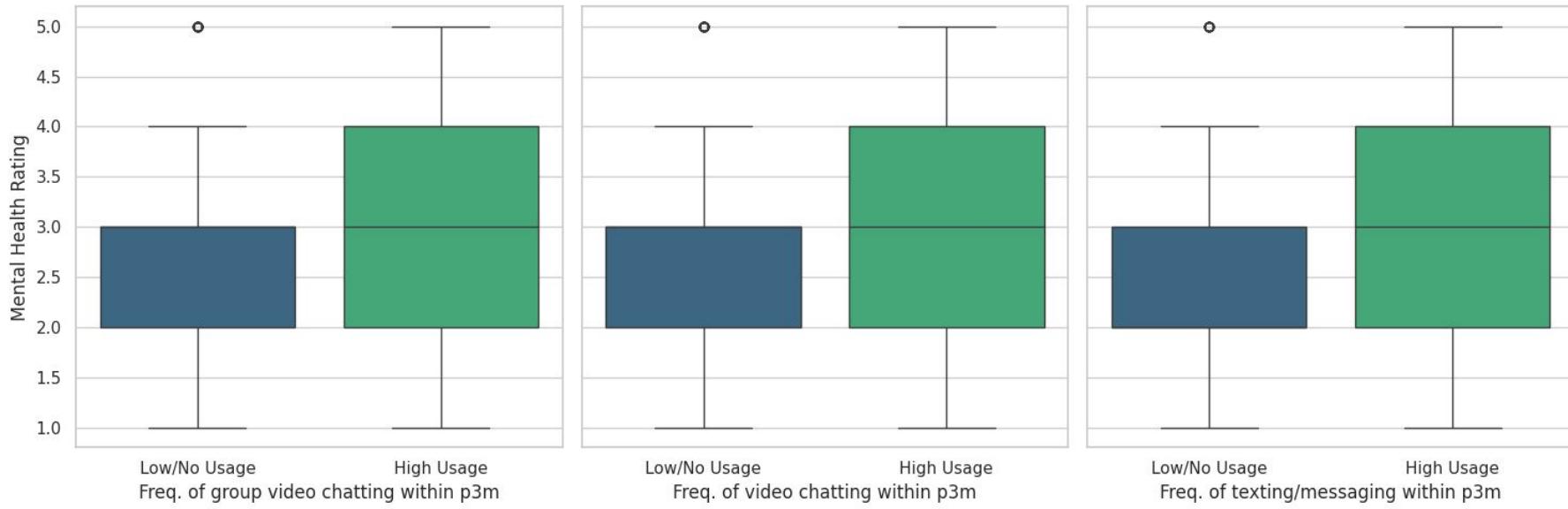
Minimalist Business Slides

Here is where your presentation begins

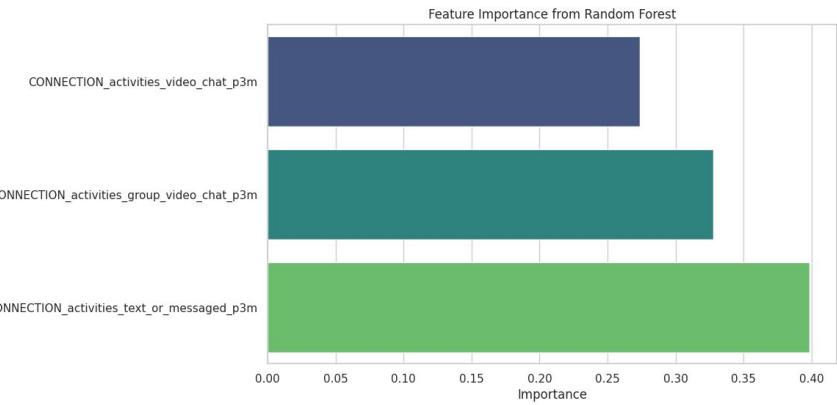
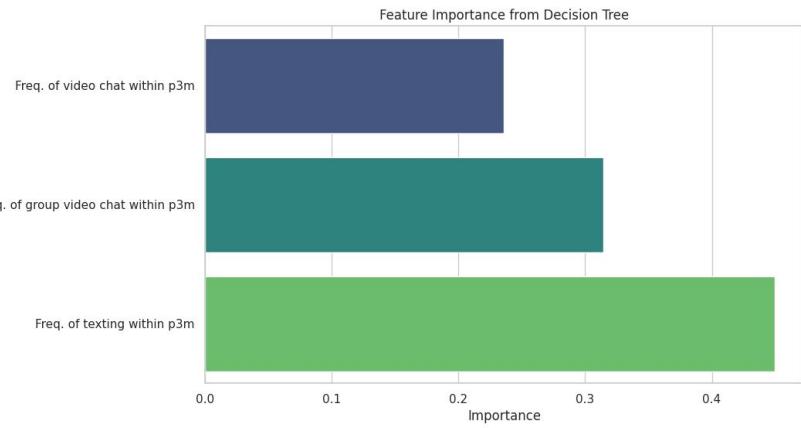
Virtual Interactions

- **Indicator variable:**
How much people have group video chatted, video chatted, and texted within the past three months
- Categorical variable Binary (0, 1)
- Mapped "5 or more hours" and "1 to 4 hours" → 1
- Mapped "Less than 1 hour" and "No time" → 0

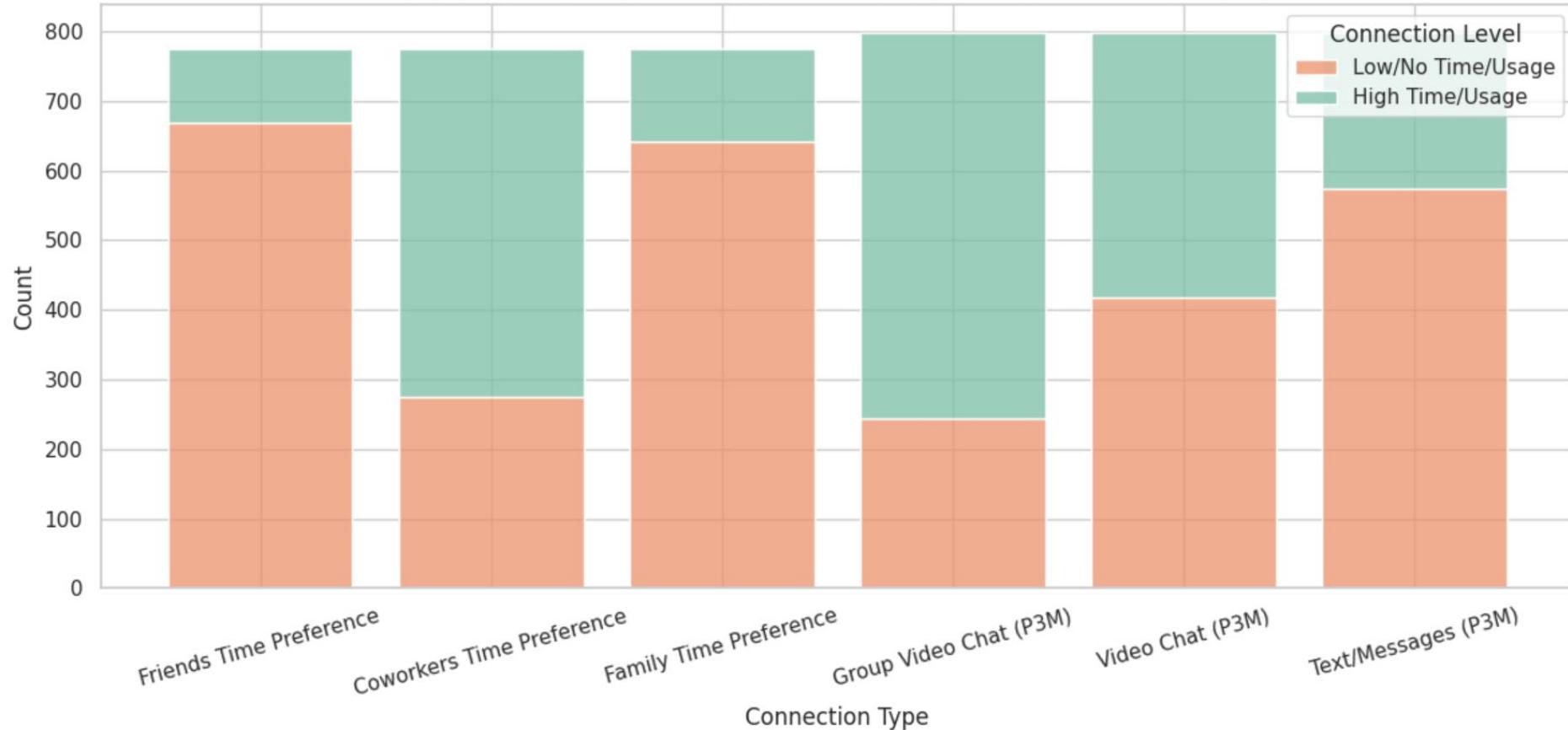




Variable	P-value	Linear regression coefficients
Group video chatting friends in the last three months	0.000	0.384
One-on-one video chats with friends in the last three months	0.952	-0.006
Texting friends in the last three months	0.000	0.334



Stacked Bar Plot: Real-Life vs Virtual Connection Activities



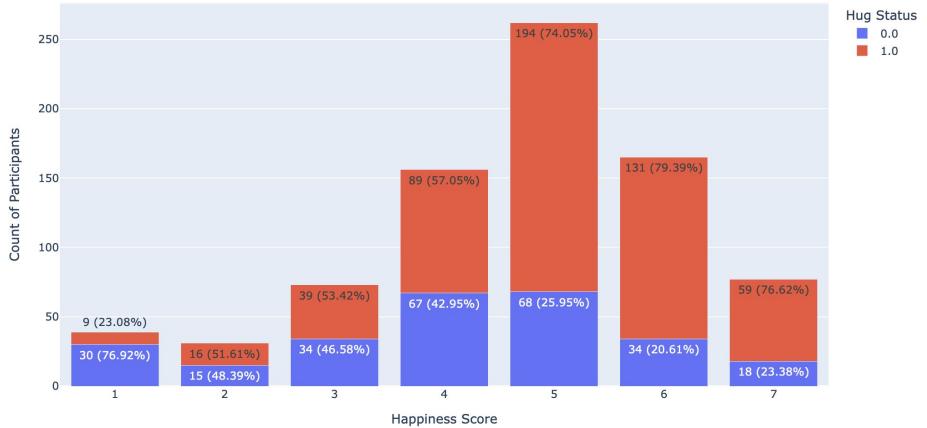
How do hugs influence self-rated happiness?

- Variables to be examined:
 - **Whether they've been hugged within the past month (Binary categorical)**
 - **Self-rated happiness score (Discrete numerical, 1-7)**
- Null Hypothesis: Hugs have no statistical significance on self-rated happiness.
- Alternative Hypothesis: Hugs have significant statistical significance and effect on self-rated happiness.

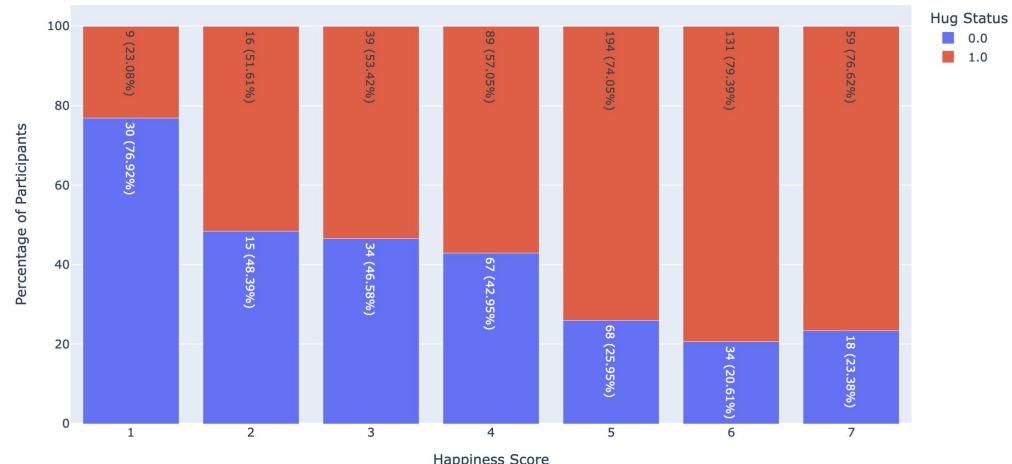
How do hugs influence self-rated happiness?

- Hugs “release serotonin, endorphins, and other happy chemicals” (Healthline)
- Physical touch in the form of hug “associated with lower cortisol levels” (Sumioka et al., 2013)
- Therapeutic touch as a form of physical treatment showed lower feelings of pain in patients with fibromyalgia (Denison, 2004) and cancer (Tabatabaei et al., 2016)

Happiness Score by Hug Status



Happiness Score by Hug Status (Normalized)



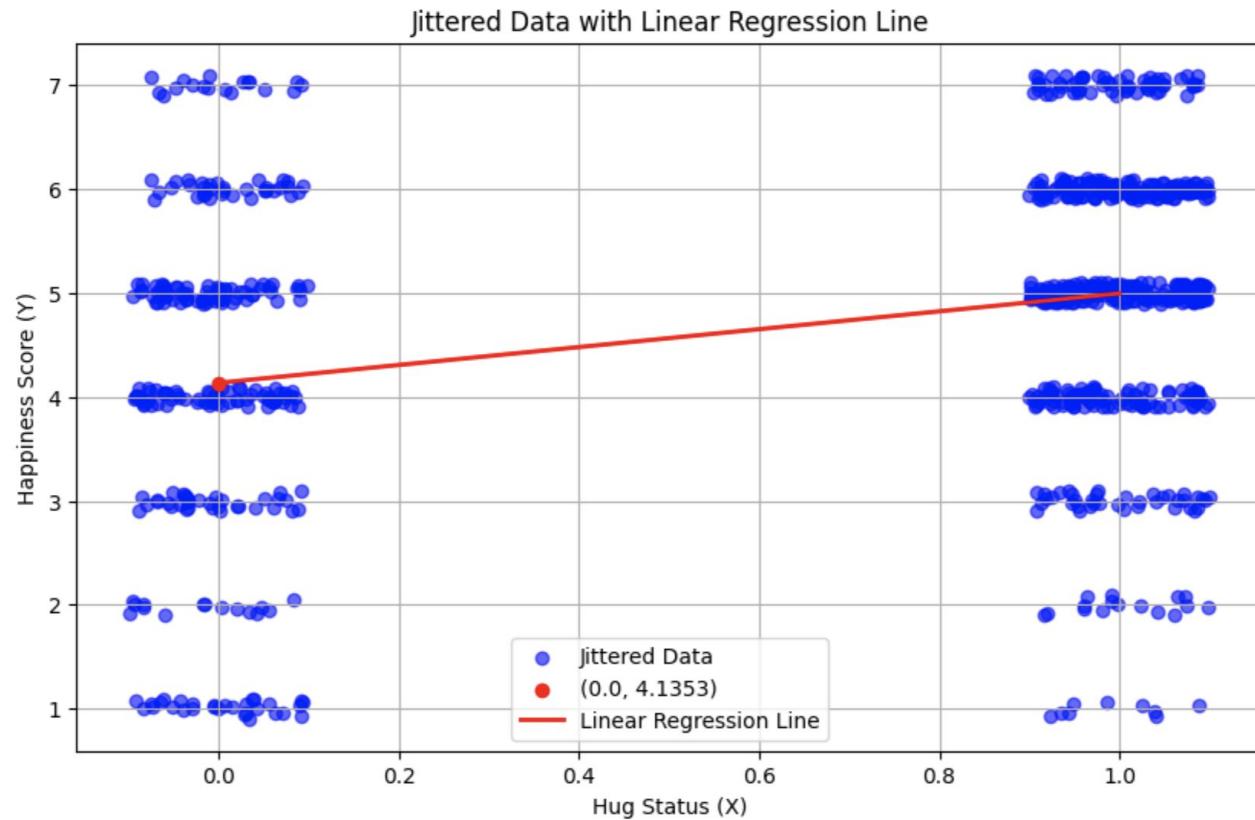
No hugs in the past month:

- Count: 266
- Mean: 4.135
- Standard dev: 1.654

At least one hug in the past month:

- Count: 537
- Mean: 4.996
- Standard dev: 1.296

Methodology



Y-intercept: 4.1353,
[3.964, 4.307] ($p=0.000$)

Slope: 0.8609, [0.651,
1.071] ($p=0.000$)

$R^2 = 0.075$

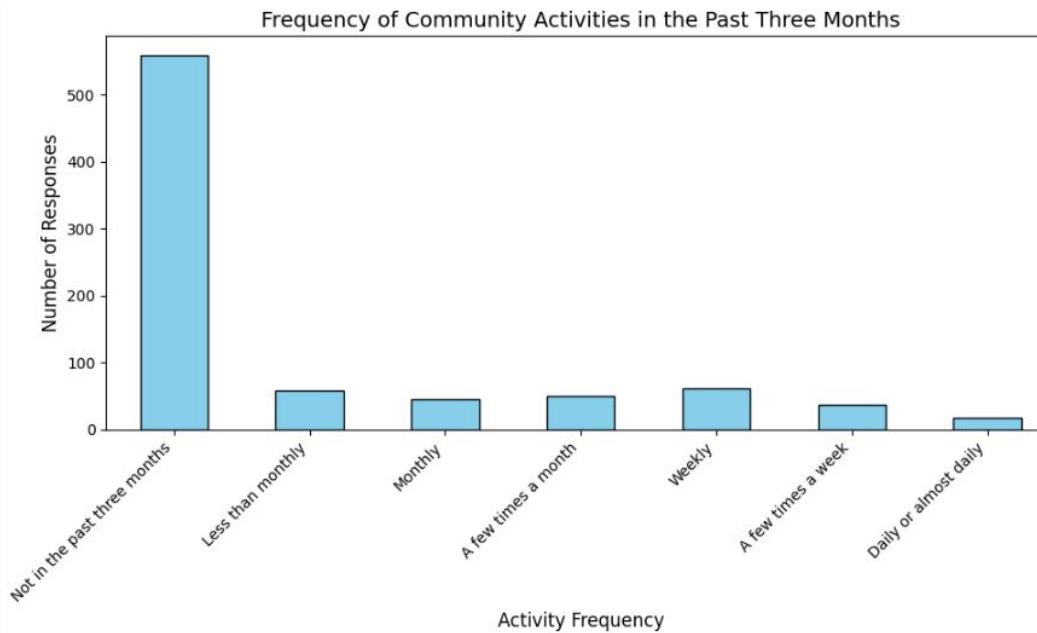
Future steps

- Will add assumptions
(intervals consistent allowing for continuous, linear trend exists etc)

How does community engagement influence life satisfaction?

- Variables to be examined:
 - **Frequency of community engagement (Categorical)**
 - **Life satisfaction (Discrete numerical, 1-10)**
- Null Hypothesis: Community engagement has little to no influence on a person's life satisfaction.
- Alternative Hypothesis: Community engagement has significant effect on a person's life satisfaction.

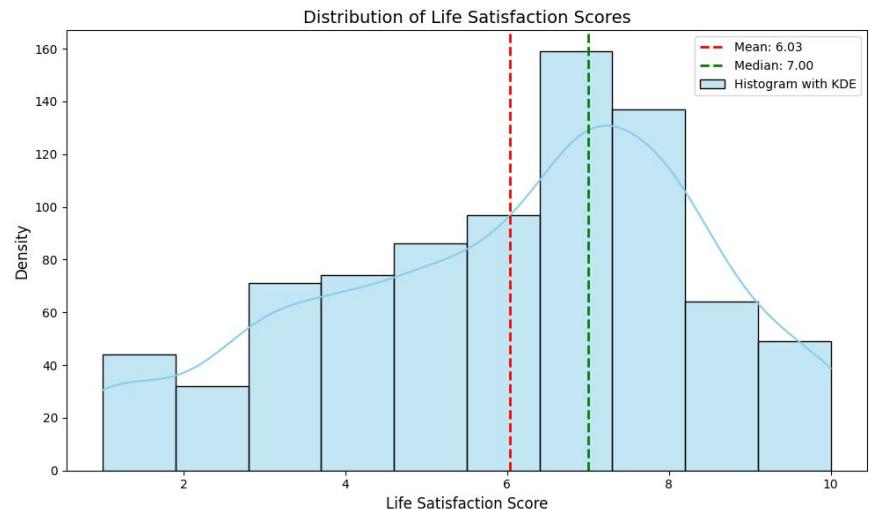
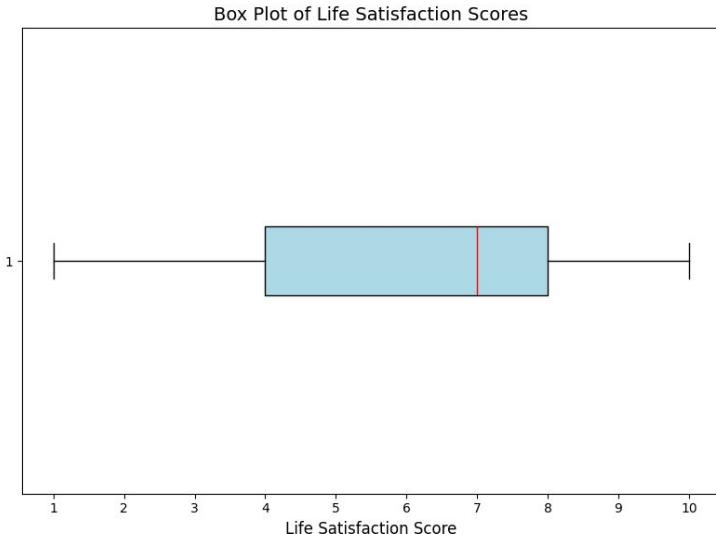
Data Summary (Predictors)



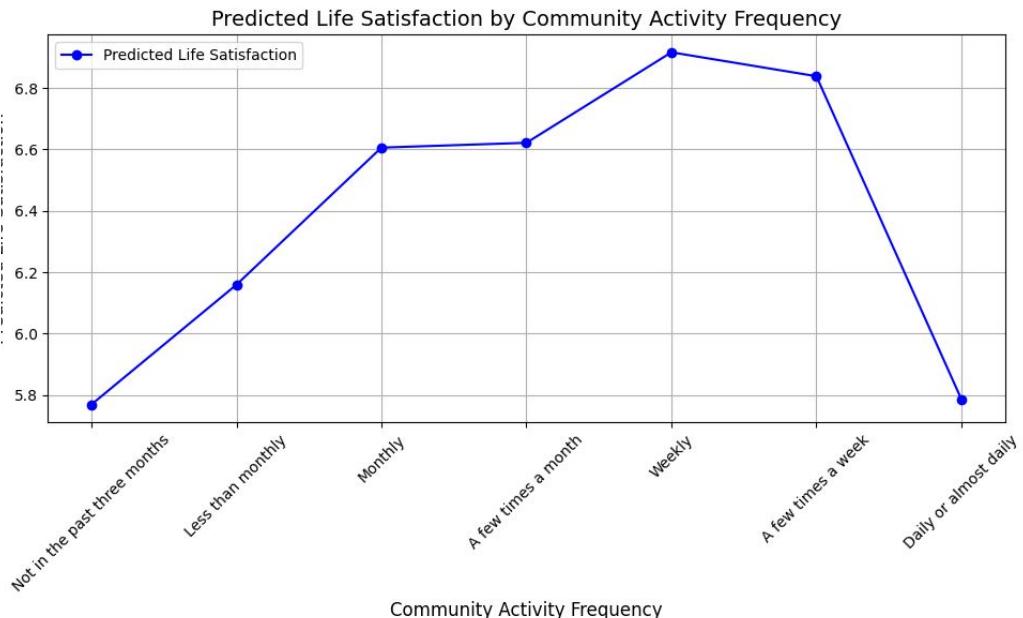
- Majority of sample does not engage in community activities.
- Sample may be biased.
- Sample may not provide enough information for those who do participate in community activities.

Data Summary (Outcome)

- Right Skewed
- High Life Satisfaction compared to previous slide
- Even spread in the quartiles

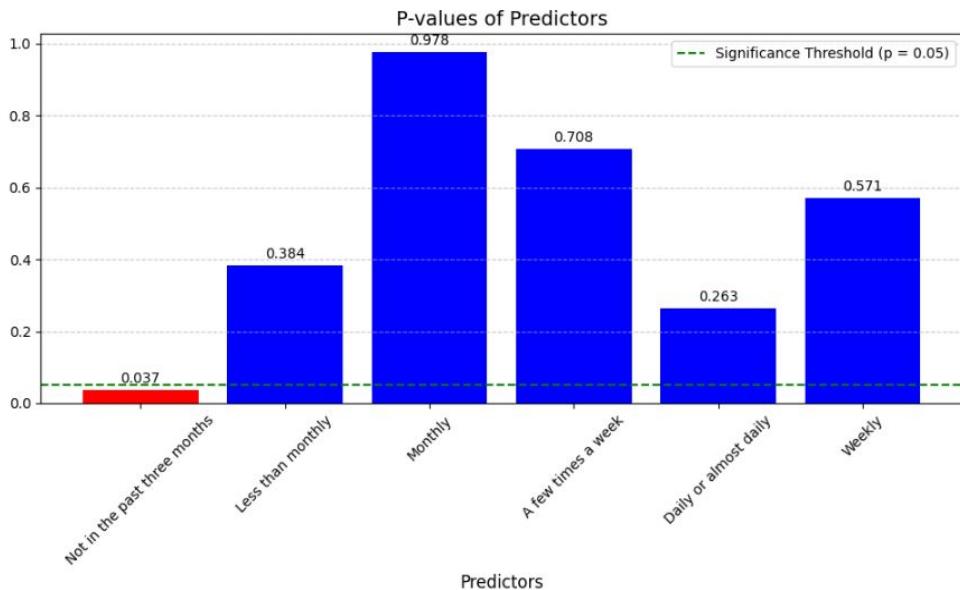


Multilinear Regression



- Peak at weekly community activity
- Shows that too much community engagement may lead to worse mental health
- Possible evidence of effects of burnout and/or poor work-life balance
- Clear indicator that no community engagement is bad for mental health
- Very low spread in outcome variable

Reliability of Data



- Small samples cause high p-values (class imbalance)
- Significance thresholds
- Cannot conclude much from results.

Correlation Between the Two Variables

Categorical

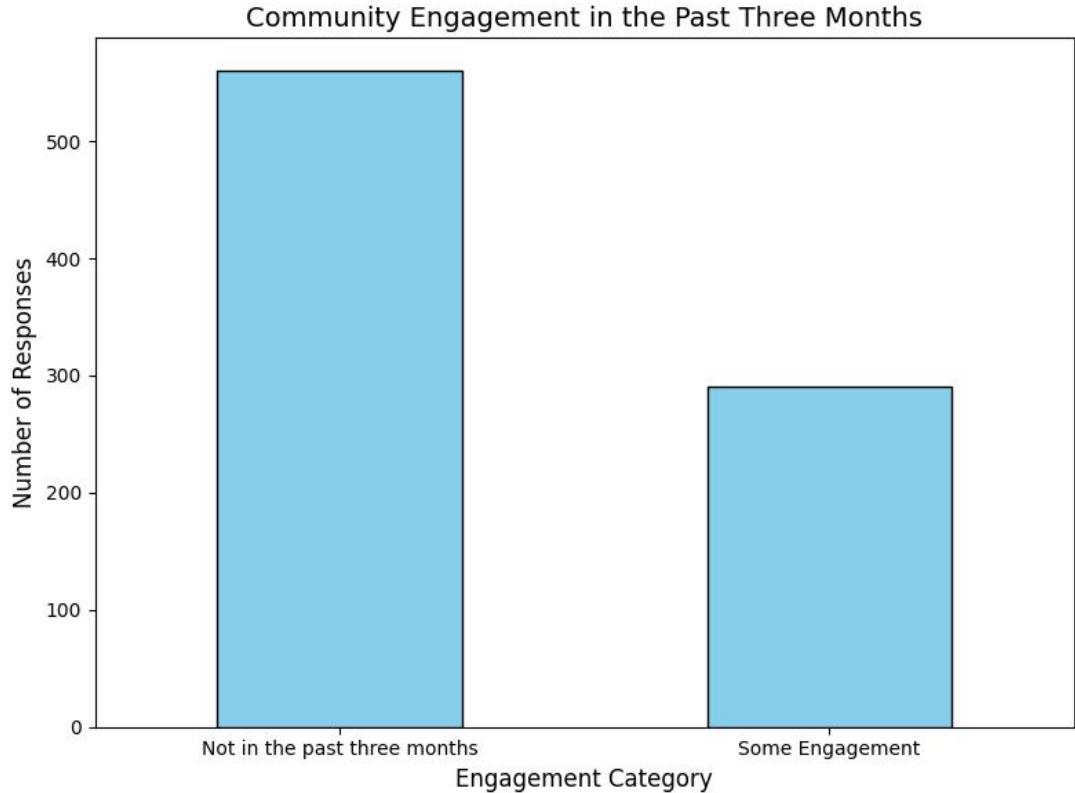
- Training R-squared: 0.0304
- Test R-squared: 0.0292

Numerical Equivalent

- Training Set Pearson Correlation Coefficient: 0.1479
- Test Set Pearson Correlation Coefficient: 0.1883

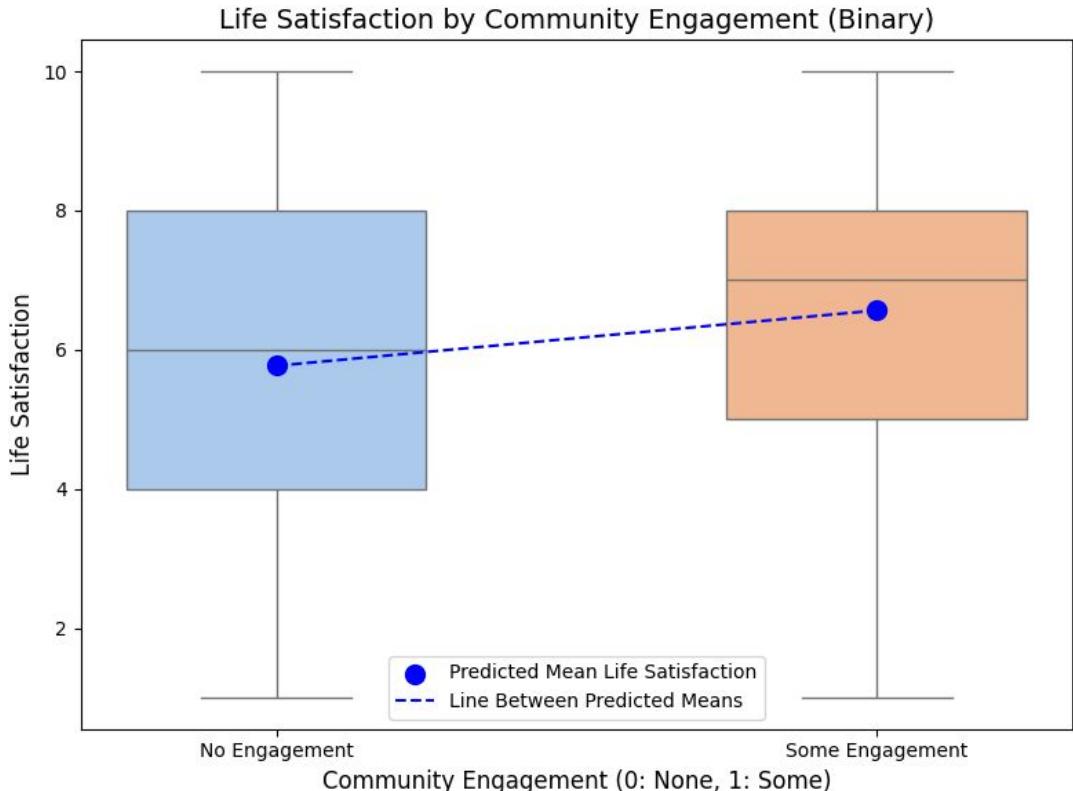
Correction to Class Imbalance

- Group data into two categories.
- Compares participate vs don't participate



Corrected Linear Regression

- 0.7965 Point Difference
- P-value of 0.000
(Statistically Significant)
- In-Sample R-squared (Training): 0.0239
- Out-of-Sample R-squared (Test): 0.0165



Conclusion

- Summary of findings
- Balance between three areas of life
- Thank you for listening!