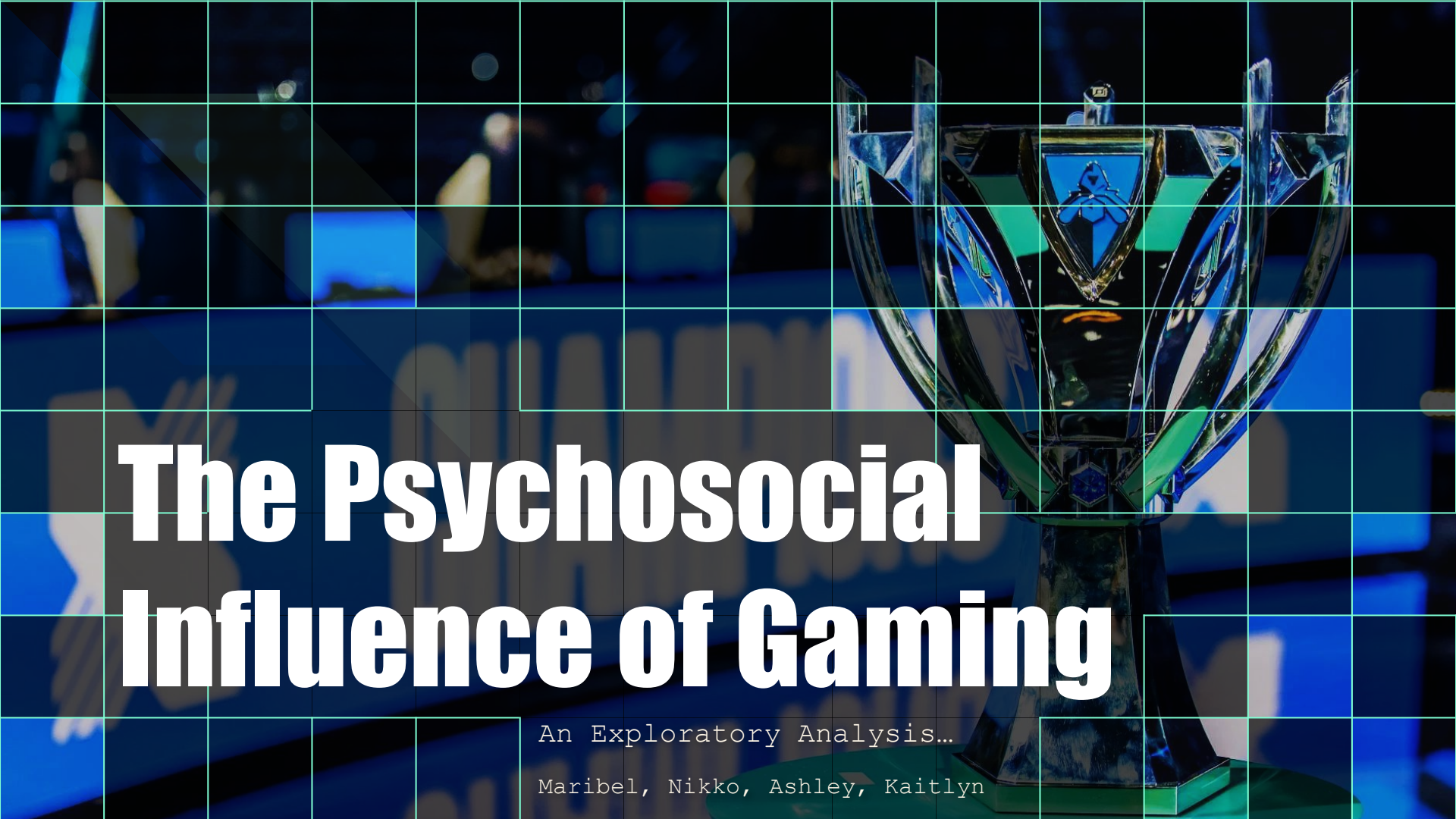


The Psychosocial Influence of Gaming

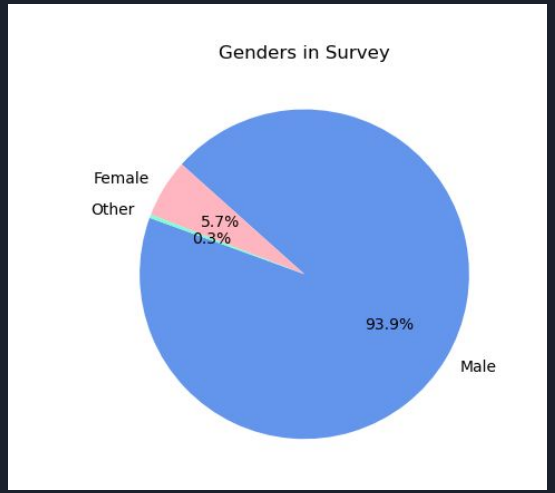
An Exploratory Analysis…

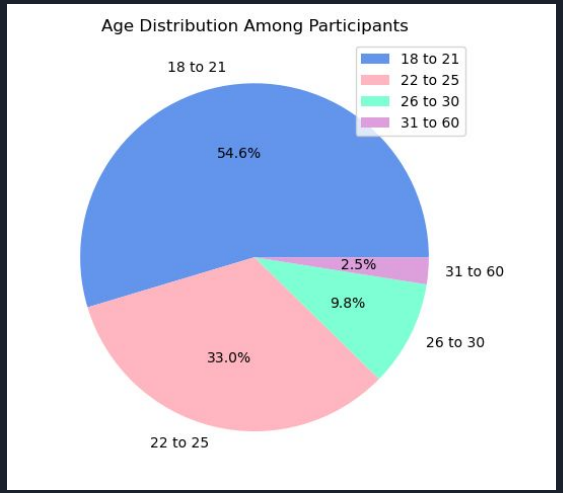
Maribel, Nikko, Ashley, Kaitlyn

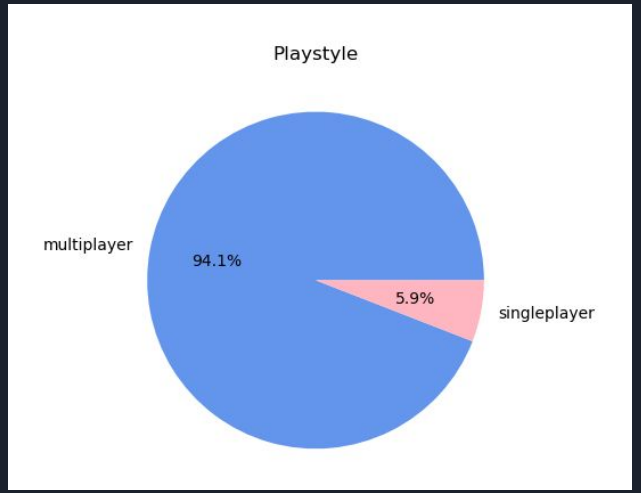
How do gamers compare to one another in different areas of mental health?

Demographics

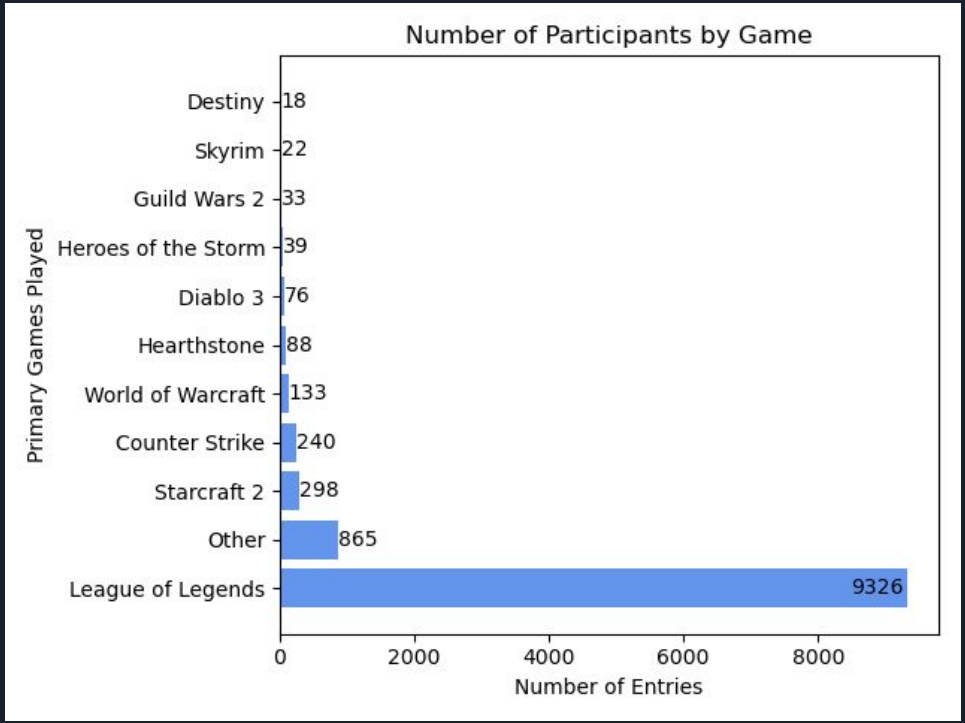
- Surveyed over 13,000 individuals who play video games
- Most common player profile:
  - *18 to 21 year old male that typically plays multiplayer games (ex: League of Legends)*







Demographics



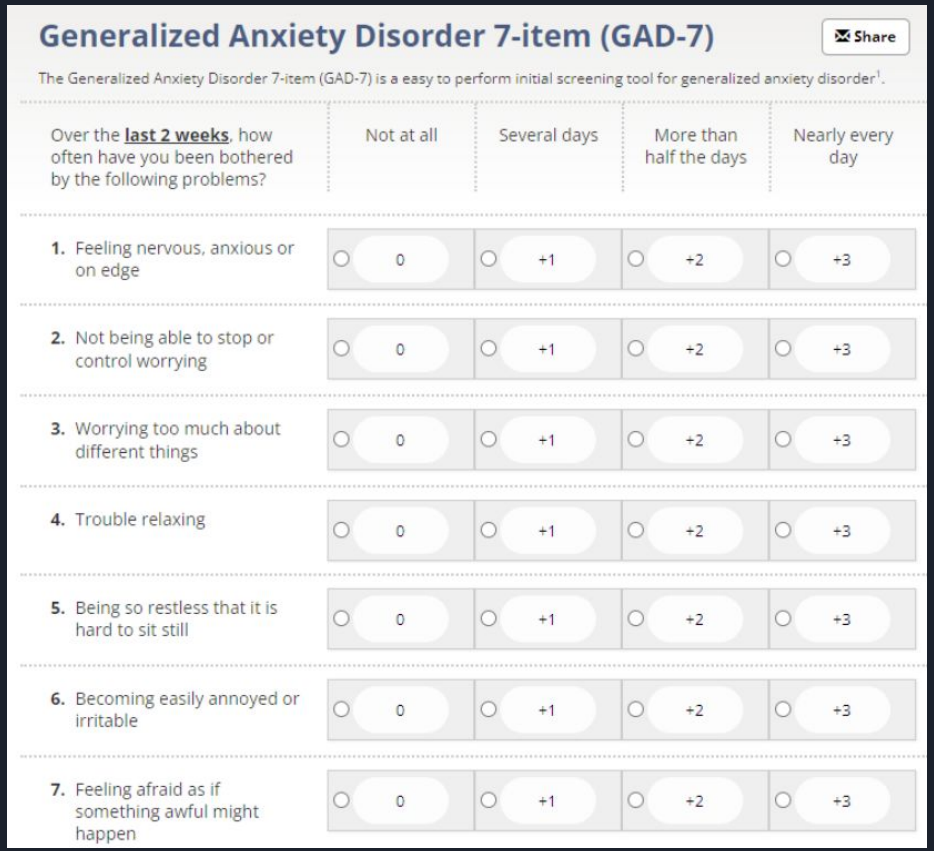
How Mental Health Was Measured

Psychological rating scales (self-reported) :

- **Generalized Anxiety Disorder 7 (GAD-7)**
  - Score range: 0 to 21
    - The ***higher*** the score, the ***more severe*** the anxiety
- **Satisfaction with Life (SWL)**
  - Score range: 5 to 35
    - The ***lower*** the score, the ***more dissatisfaction*** with life
- **Social Phobia Inventory (SPIN)**
  - Score range: 0 to 68
    - The ***higher*** the score, the ***more severe*** the social phobia

Helps to quantify different areas of mental health!

Example: GAD-7



Generalized Anxiety Disorder 7-item (GAD-7)

Share

The Generalized Anxiety Disorder 7-item (GAD-7) is a easy to perform initial screening tool for generalized anxiety disorder[1].

Over the **last 2 weeks**, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	+1	+2	+3
2. Not being able to stop or control worrying	0	+1	+2	+3
3. Worrying too much about different things	0	+1	+2	+3
4. Trouble relaxing	0	+1	+2	+3
5. Being so restless that it is hard to sit still	0	+1	+2	+3
6. Becoming easily annoyed or irritable	0	+1	+2	+3
7. Feeling afraid as if something awful might happen	0	+1	+2	+3

Source:

Motivations

Strong relevance to our group on a personal level

- All of us play video games and take interest in mental health

Are there any target areas in mental health that are most relevant in the gaming population?

- Want to use our data analysis to see how we can relate it back to ourselves

Where and How Data was Found

- Dataset found via Kaggle
- Collected via Google Forms
- Advertised on multiple platforms including:
  - TeamLiquid.net
  - Reddit
  - CrowdFlower
- Surveyed:
  - Demographic Information such as age, gender, country, employment
  - Gaming Habits such as main game played, hours played per week, and motivation for playing
  - Psychological Rating Scales such as Social Phobia Inventory (SPIN), Satisfaction With Life Scale (SWL), and Generalized Anxiety Disorder Screening (GAD)

APA Citation: Sauter, M., & Draschkow, D. (2017, November 18). Gaming Habits and Psychological Well-being: An international dataset about the Anxiety, Life Satisfaction and Social Phobia of over 13000 gamers. Retrieved from osf.io/vnbxk

Data Clean Up

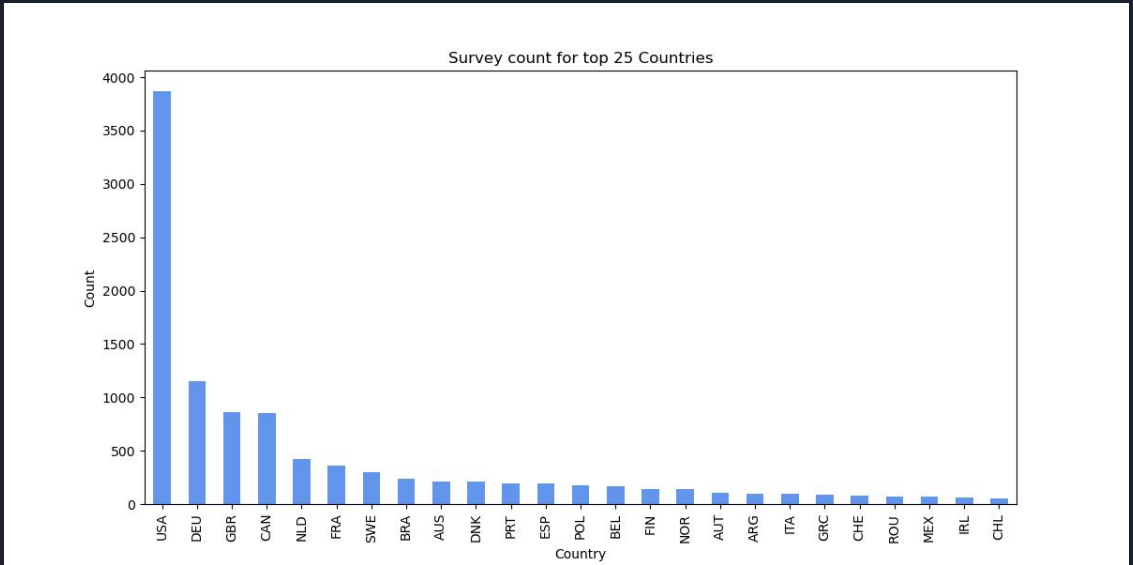
0. Encoding = “Windows-1252” due to <0xa0> (non-breaking space) character
1. Dropped rows with empty values, bringing row count from 13,464 to 11,138
2. Dropped most freeform columns - difficult to quantify
    - Earnings (non-numerical data), ranking (many joke responses)
3. Changed rating scale values from float to int (discrete values)
4. Further cleaned freeform data to quantify
    - Categorized *Gaming Motivations* through keywords
        - Having fun, improving, relaxing, winning, mixed motivation
    - Reduced *Playstyle* into 2 buckets
        - Multiplayer or singleplayer

How many countries participated in the survey? Which country has the **highest**/**lowest** psychological test scores?

Findings:

A significant amount of data was taken from the USA

- graph shows the top 25 participating of the total 140



Minimum/Maximum

Interesting to notice how many countries out of the top 25 had participants that scored at the minimum and maximum levels.

- Over half of the 25 countries had high GAD scores
- A little over half of the 25 countries had high SWL scores
- Only 4 countries had high SPIN scores - GBR, USA, NLD, POL

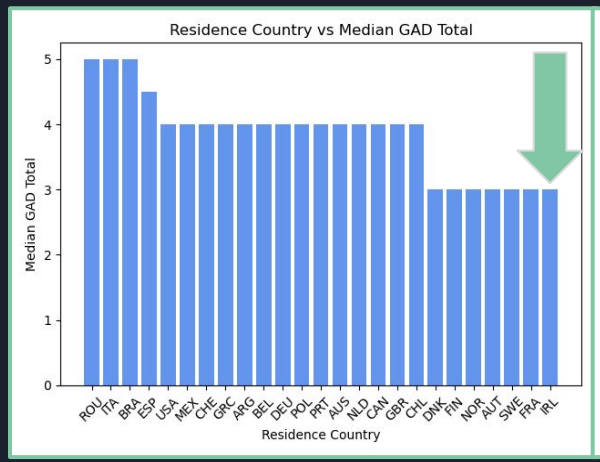
GAD Minimum	SWL Minimum	SPIN Minimum		GAD Maximum	SWL Maximum	SPIN Maximum
All countries 25 score 0	22 countries score 5	22 countries score 0		16 countries score 21	14 countries score 35	4 countries score 68

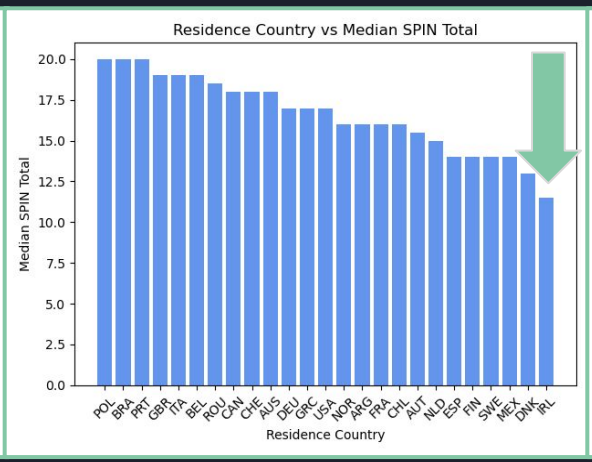
Medians

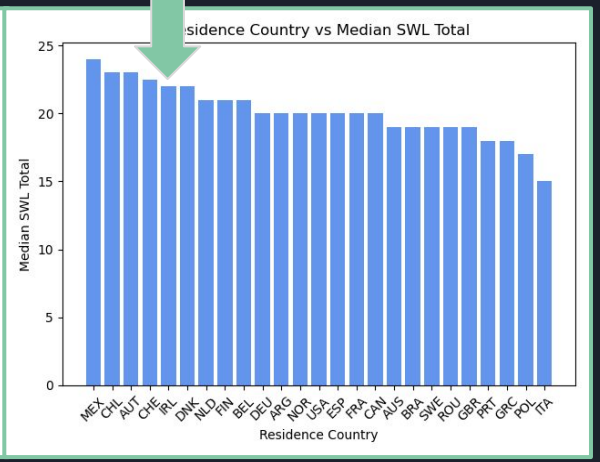
Example: IRL - Ireland

- low GAD total
- low SPIN total
- high SWL total

May be indicative that values in a certain country affect test scores







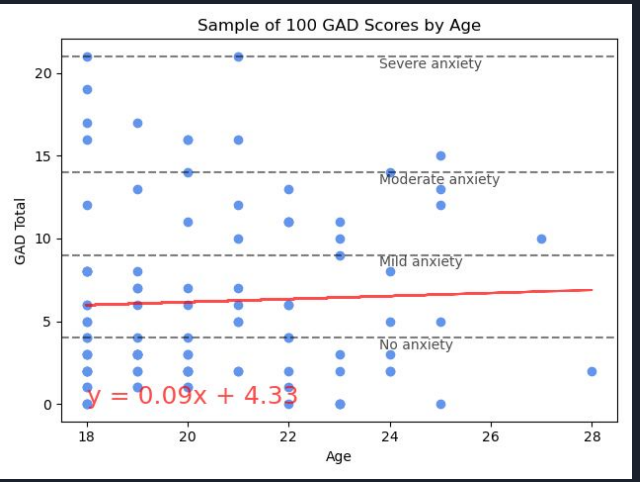
Is there a relationship between age, gaming, and mental health?

Question 1: Does age correlate with:

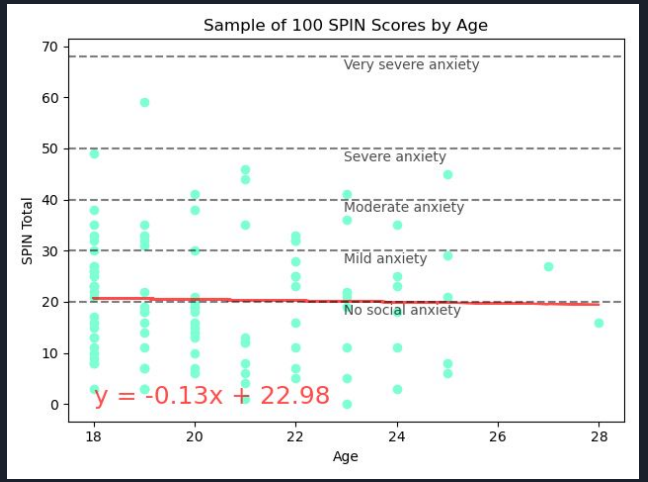
1. SWL Scores?
2. SPIN Scores?
3. GAD Scores?

Not searching for a specific correlation, i.e. positive or negative, but rather *any* correlation.

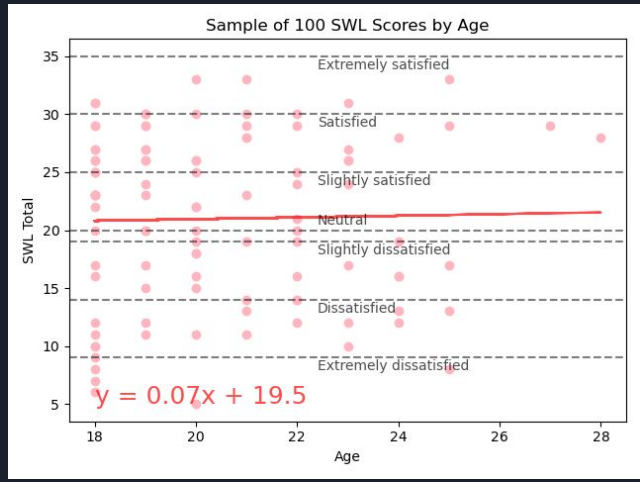
Question 1



r-value: 0.04

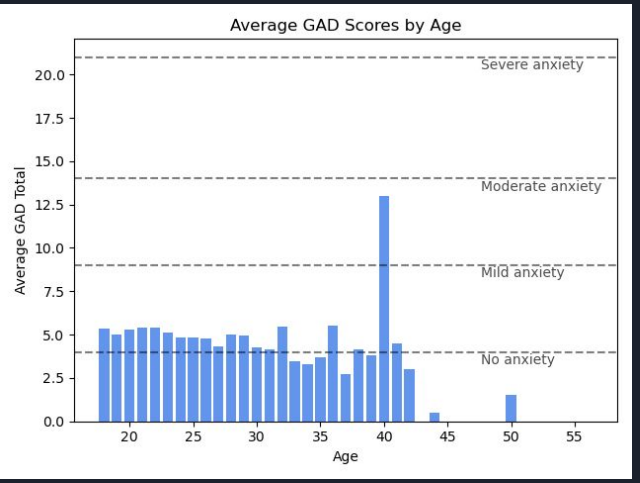


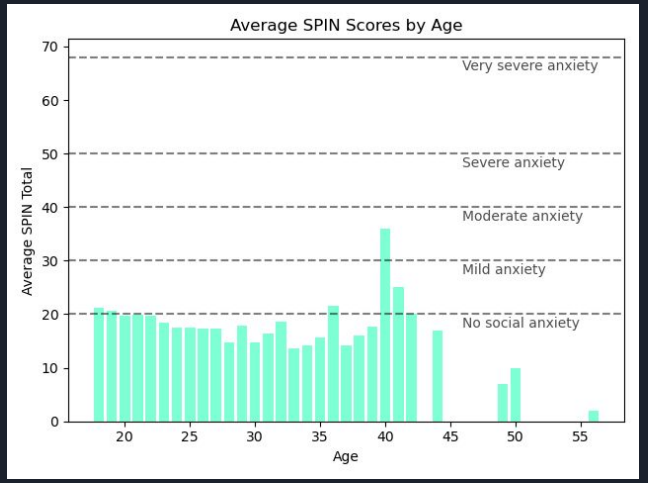
r-value: 0.02

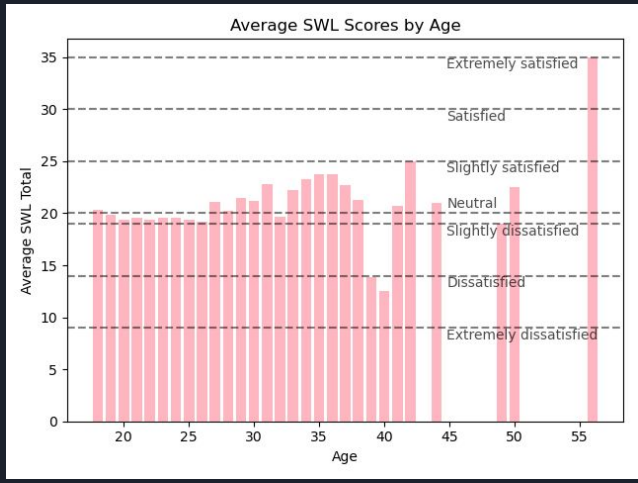


r-value: 0.02

Question 1







In addition to the pearson correlation coefficient analysis, by plotting the average test scores for SWL, GAD, and SPIN, it is clear that there is no correlation between age and these psychological tests.

Question 2: Are League of Legends players proportionately more affected by poorer mental health than other players?

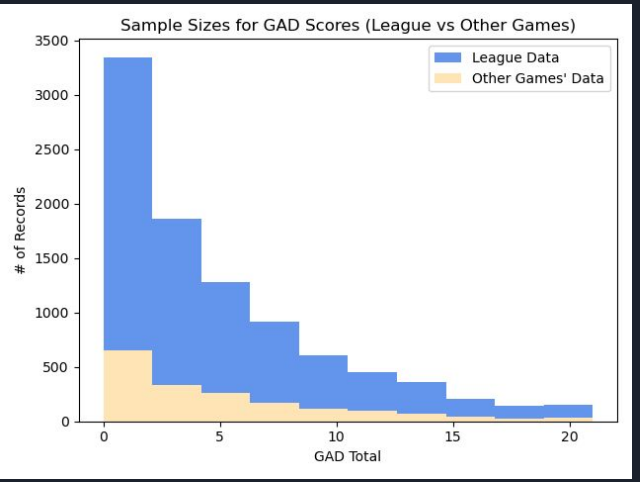
Hypotheses:

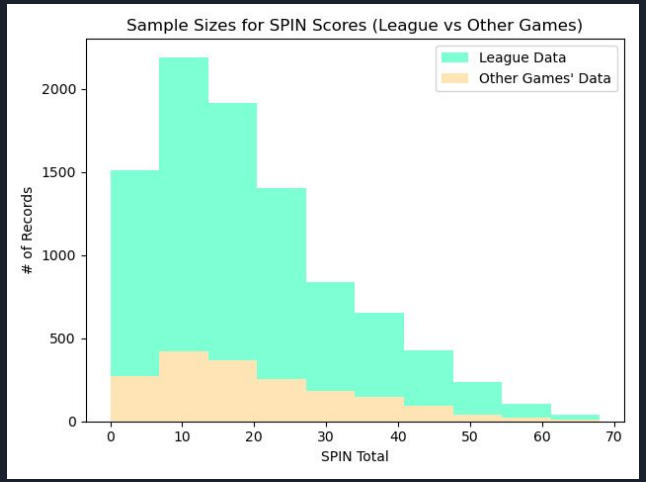
- League of Legends players are more likely to have moderate to severe Generalized Anxiety (GAD Scores between 10-21) compared to other gamers

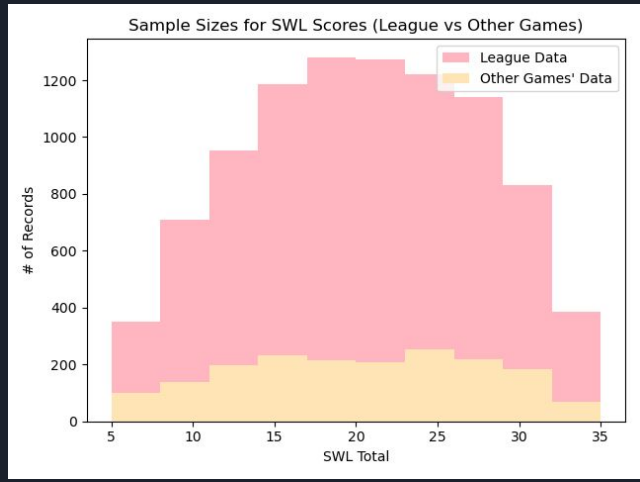
- League of Legends players are more likely to have moderate to severe Social Anxiety (SPIN scores between 31-38) compared to other gamers

- League of Legends players are more likely to be dissatisfied with life (SWL scores between 5-19) compared to other gamers

Question 2







Data plotted to compare shape of League player data vs Non-League player data for each of the psychological rating scales.

Question 2

```
The statistical significance values (p-values) between League and Non-League Players are:
        SWL p-value: 0.28
        GAD p-value: 0.48
        SPIN p-value: 0.09
Because the p-values for each of the tests are greater than 0.05,
we cannot reject the null hypothesis that there is no difference between these two populations.
```

Is there a relationship between **anxiety** and **gaming motivation**?

Finalized Data Overview

Analysis Process:

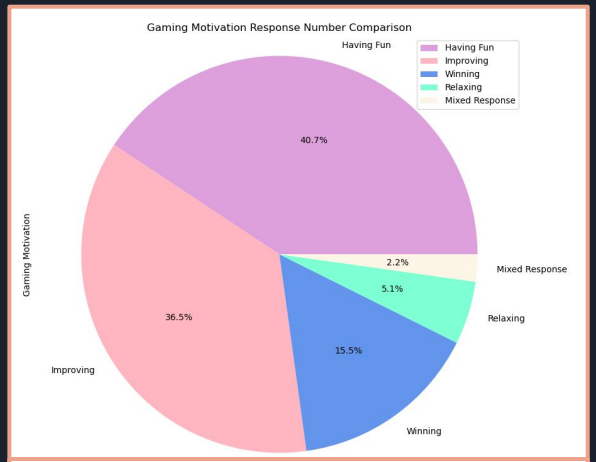
- Cleaned freeform data- only included GAD scores and game motive keywords
- Checked response numbers, outliers, then conducted independent t-tests

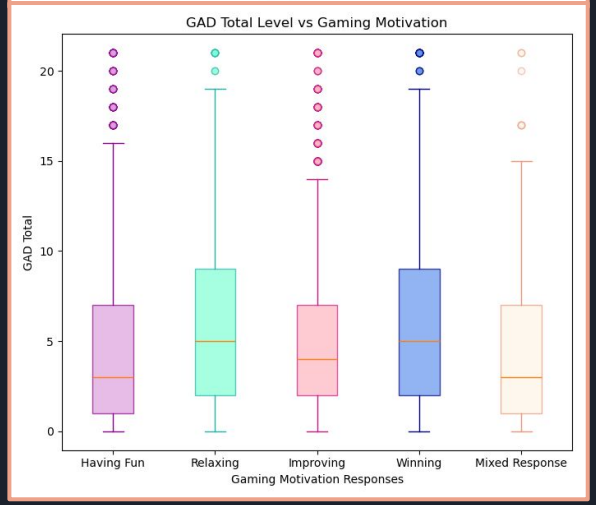
Results:

- 11,019 total responses remaining after cleaning
- Having Fun: 105 potential outliers out of 4,485 responses.
- Relaxing: 10 potential outliers out of 566 responses.
- Improving: 208 potential outliers out of 4,020 responses.
- Winning: 31 potential outliers out of 1,704 responses.
- Mixed Response: 7 potential outliers out of 244 responses.

Analysis:

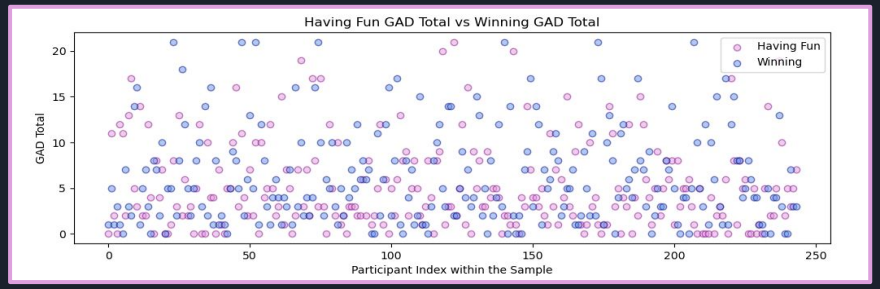
- Potential outliers consisted of max GAD scores per motivation- likely genuine

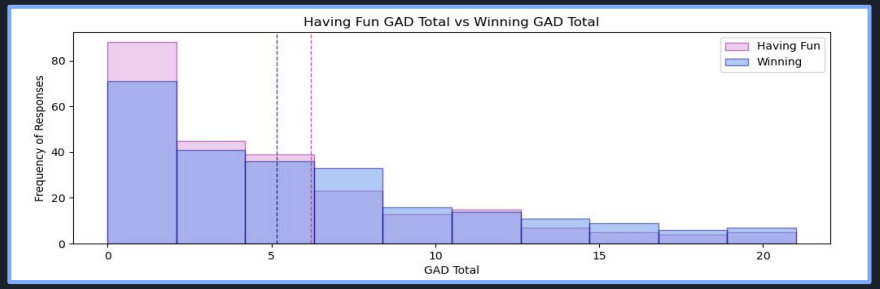




Initial Exploration & Hypothesis

If there is a relationship between **anxiety** and the **motivation for gaming**, then playing for fun should result in significantly different GAD-7 scores when compared to playing to win.





Results:

- We reject the null hypothesis. "Having Fun" had significantly lower GAD totals than those listed as "Winning", $t(6187) = -2.336$, $p = 0.0199$.

Analysis:

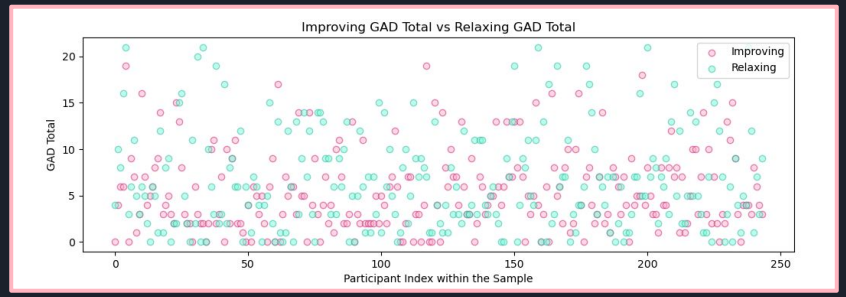
- “Winning” may have more factors leading to anxiety, e.g. needing to perform well for income

Secondary Exploration:

Is there an order to which gaming motivation categories associate with high/low GAD totals?

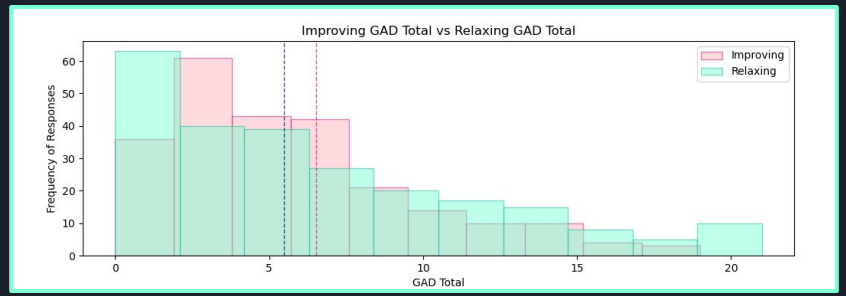
Results:

- "Improving" had significantly lower GAD totals than "Relaxing", $t(4584) = -2.395$, $p = 0.017$.
- "Winning" > "Improving" ($t(5722) = 2.112$, $p = 0.0352$) and "Having Fun"
- *"Having Fun" < "Improving" ($t(8503) = -2.451$, $p = 0.0146$), "Winning", and "Relaxing" ($t(5049) = -4.435$, $p = 0.0$)



Analysis:

- Vague gaming motivation spectrum of GAD Totals
  - Winning > *Relaxing > Improving > Fun
- Higher GAD totals may be drawn to playing games in order to relax



Does Playstyle and Hours Player per Week correlate with Mental Health?

Question 1: Does the **preferred playstyle** of a player have an influence on their anxiety, satisfaction with life, or social phobia?

Null Hypothesis

Preferred playstyle does not have an effect on levels of anxiety, satisfaction with life, or social phobia for an individual who plays games.

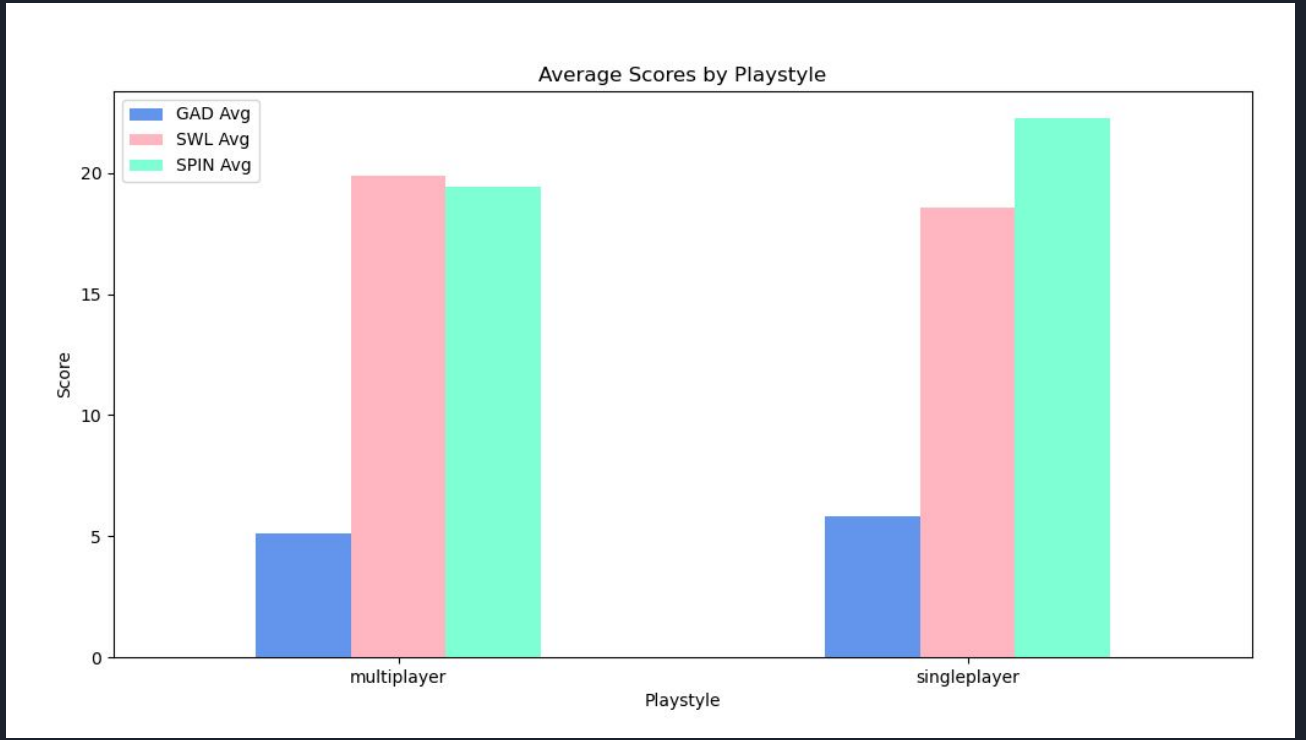
Alternate Hypothesis

Preferred playstyle does have an effect on levels of anxiety, satisfaction with life, or social phobia for an individual who plays games.

Playstyle Findings

Analysis process:

- Playstyle was narrowed down to *only* singleplayer and multiplayer
- Rows containing neither were dropped
- 11,003 entries contained either singleplayer or multiplayer



Statistical Significance of Playstyle

GAD-7:

```
Statistical significance of GAD scores between playstyles:
t-stat: 3.722876942234274
p-value: 0.00019794829345995884
degrees of freedom: 11001.0
The data is statistically significant. We may reject the null hypothesis.
```

SWL:

```
Statistical significance of SWL scores between playstyles:
t-stat: -4.539017878181439
p-value: 5.71164488290868e-06
degrees of freedom: 11001.0
The data is statistically significant. We may reject the null hypothesis.
```

SPIN:

```
Statistical significance of SPIN scores between playstyles:
t-stat: 5.2192145532734475
p-value: 1.829569817520145e-07
degrees of freedom: 11001.0
The data is statistically significant. We may reject the null hypothesis.
```

Conclusion:

Preferred playstyle does have an effect on levels of anxiety, satisfaction with life, or social phobia for an individual who plays games.

Question 2: Does a player's **hours played per week** have an influence on their anxiety, satisfaction with life, or social phobia?

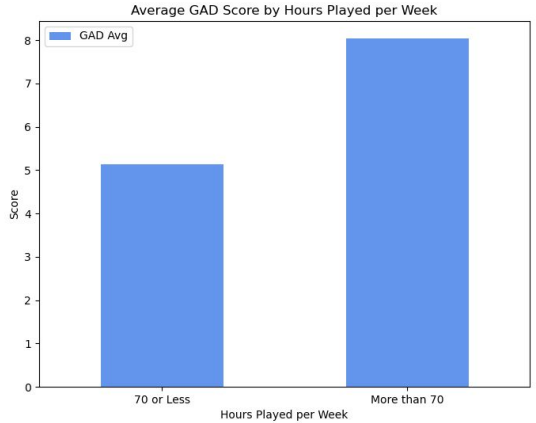
Null Hypothesis

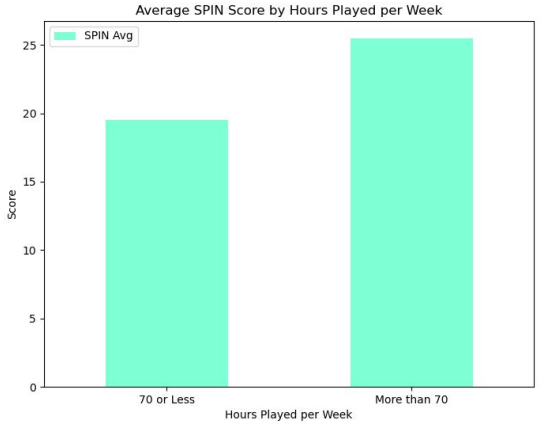
Hours played per week does not have an effect on levels of anxiety, satisfaction with life, or social phobia for an individual who plays games.

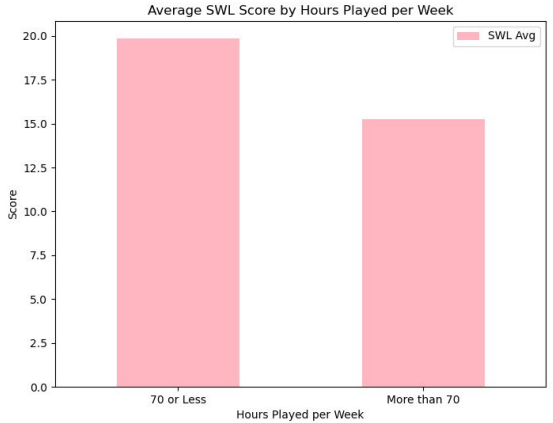
Alternate Hypothesis

Hours played per week does have an effect on levels of anxiety, satisfaction with life, or social phobia for an individual who plays games.

Hours Played per Week Findings







<u>Analysis process:</u>

- Hours were binned in half based on min and max hours reported
- Minimum and maximum hours reported were found
  - Min: 1 hour/week, Max: 140 hours/week
- Entries with 0 hours were dropped
- 11,128 entries had at least 1 hour reported per week

Statistical Significance of Hours Played

GAD-7:

```
Statistical significance of GAD scores between hours played:
t-stat: -5.440184563237311
p-value: 5.435262531747837e-08
degrees of freedom: 11126.0
The data is statistically significant. We may reject the null hypothesis.
```

SWL:

```
Statistical significance of SWL scores between hours played:
t-stat: 5.653977577806831
p-value: 1.6063865250603278e-08
degrees of freedom: 11126.0
The data is statistically significant. We may reject the null hypothesis.
```

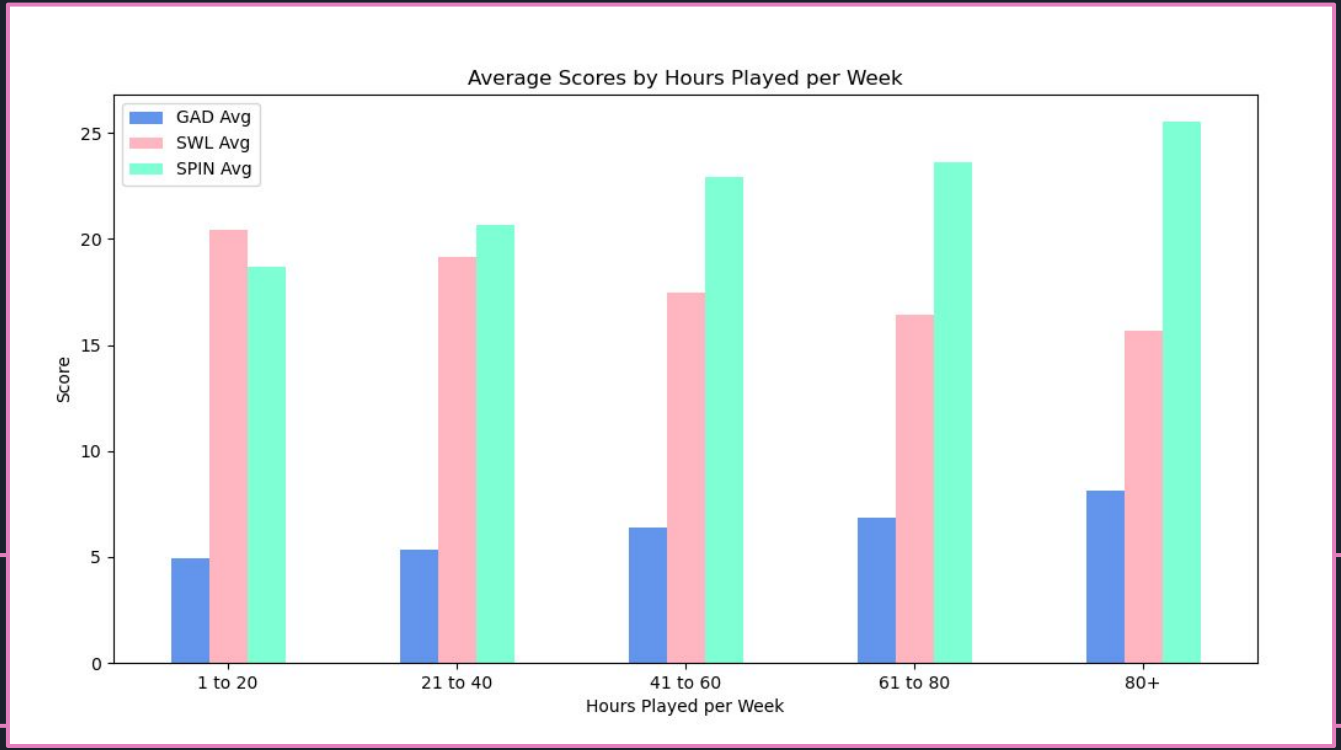
SPIN:

```
Statistical significance of SPIN scores between hours played:
t-stat: -3.895590838898919
p-value: 9.853311266971915e-05
degrees of freedom: 11126.0
The data is statistically significant. We may reject the null hypothesis.
```

Conclusion:

Hours played per week does have an effect on levels of anxiety, satisfaction with life, or social phobia for an individual who plays games.

Supplementary Graph: Hours Played per Week



Conclusion

Compilation of findings:

- Participant majority: Male U.S. resident, aged 18-25, playing League of Legends multiplayer for fun or improvement
- Statistical significance between gaming motivation and GAD
- Statistical significance between preferred playstyle and GAD, SWL, and SPIN
- Statistical significance between hours played and GAD, SWL, and SPIN

Implications:

- Demographics such as country of residence can impact GAD, SWL and SPIN scores
    - Certain countries values differ from others
- The type of motivation that a player has impacts their overall psychosocial test scores
    - There could also be underlying motivations such as earnings, sponsorship titles, and clout
- Multiplayer games associated with lower anxiety, higher satisfaction of life and lower social phobia
    - Multiplayer games usually include collaboration, synchronization, and socialization

Conclusion cont.

Player Profile (Ideal Mental Health)

- Playings 10 hours a week
- Plays for fun
- Plays multiplayer (with friends)
- Regularly socializes

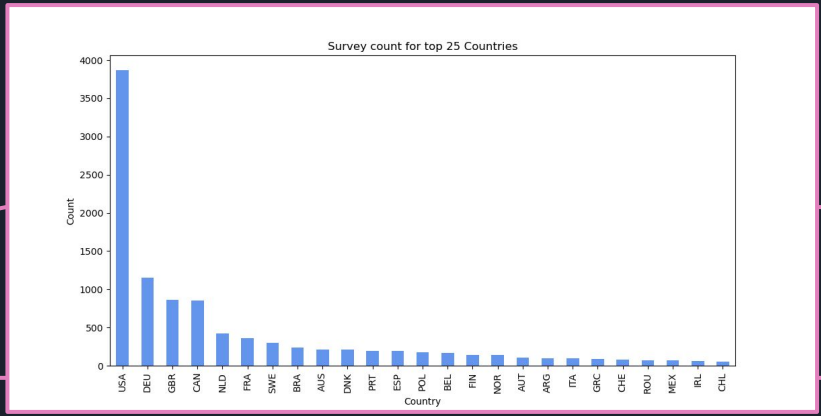
Player Profile (Not Ideal Mental Health)

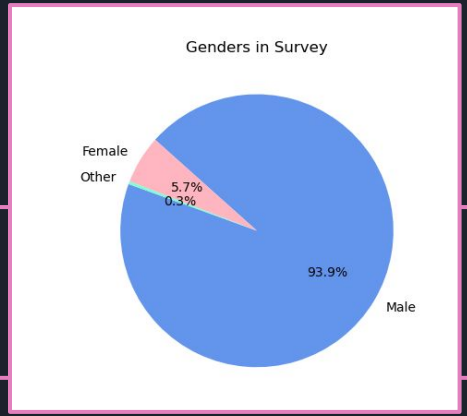
- Plays 80 hours a week
- Is motivated by winning (e.g. elo-boosting)
- Plays more single player games
- Stays home

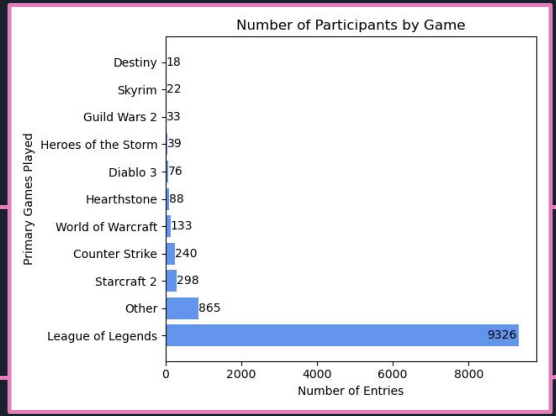
Conclusion cont.

Data Limitations:

- 2017 dataset greatly focused on previous participant majority (Male U.S. resident, aged 18-25, playing League of Legends multiplayer for fun or improvement)
- Restricted game distribution- mainly competitive or stressful games (no sandbox/farming/simulation)
- Unclear and inconsistent responses (e.g. gaming motivation category and earnings category)







Conclusion cont.

Recommendations:

- Overall updating dataset
  - Run survey for longer period of time and through more platforms
  - Adding more games and game categories
  - Keep data more uniform and clear (e.g. ‘earnings’ column)- providing set options

Further areas of research: (based off of findings)

- Exploring cultural differences effects on psychological test scores
- Exploring gaming aspects that benefit mental health
  - Exploring relationship between winning, earning, and psychological test scores

Questions?