

DSA210 Final Project Report: Analyzing the Effects of Gaming on Sleep and Cigarette Consumption

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DSA 210

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DSA210: Data Science Applications

Spring 2024/2025

Introduction

The project looks at the link between daily gaming and two personal habits: how many hours we sleep and how many cigarettes we smoke. I wanted to better understand my own habits and see what impact recreational activities had on my health which lead to this idea. To find out how gaming may relate to other aspects of life, this study looked at 47 days of data (March 10 to April 26).

When digital entertainment often puts people's well-being second, the report uses data science to learn from self-tracking. The main questions addressed during this project are:

- Does playing more of these games mean I get less sleep?
- Does my smoking while gaming rise if I play more games?

Data Collection and Processing

Variables tracked:

- Date – Day when the event was marked
- Games Played (daily) – How many League of Legends games you play each day
- Total Hours – Total amount of time spent in the games
- Gaming While Smoking – Total number of cigarettes smoked while playing games
- Sleep Hours – Sleep information collected from a wearable gadget

Data Sources:

Game data was retrieved using Riot Games' official match history tools.
My sleep is tracked using Apple Watch.

Cigarette data: Added by hand.

Part of data preparation is cleaning and preprocessing the data.

All the data was cleaned up and put into standard format. There were no outliers detected for the important variables when we used the IQR check.

Exploratory Data Analysis

Based on the correlation heatmap, there was:

There is a fairly strong link between the time people game and the number of cigarettes they smoke ($r = 0.85$)

- There is a weak relationship where more game hours are linked with fewer sleep hours ($r = -0.21$)

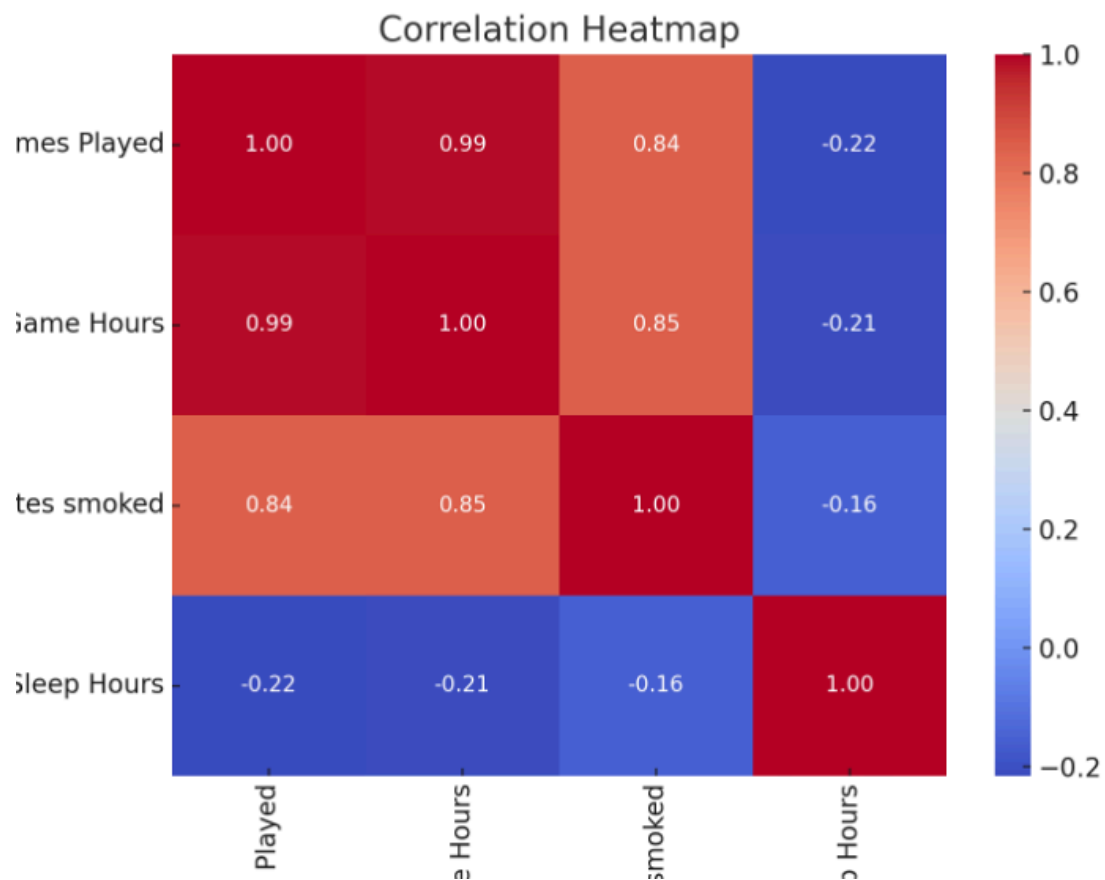


Figure 1: Correlation Heatmap

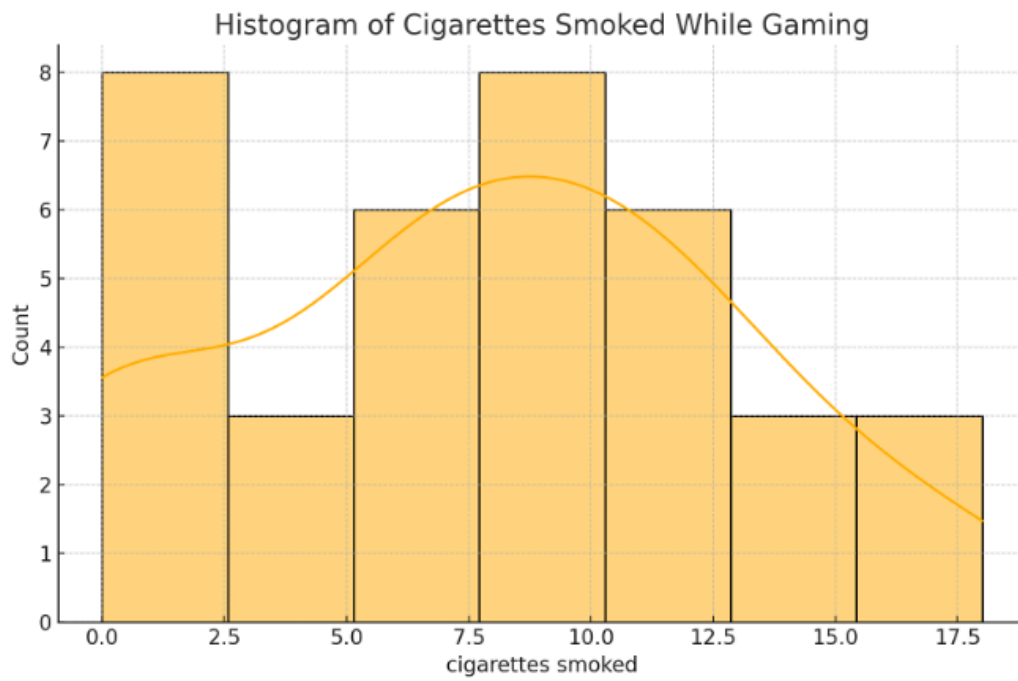


Figure 2: Histogram of Cigarettes Smoked While Gaming

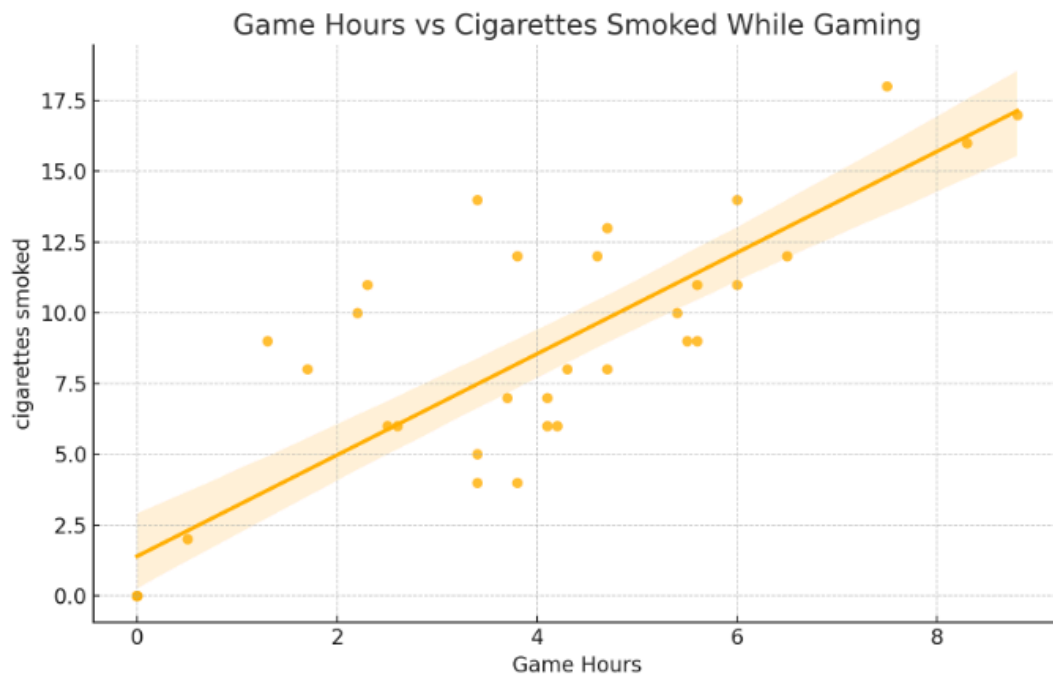


Figure 3: Game Hours vs Cigarettes Smoked

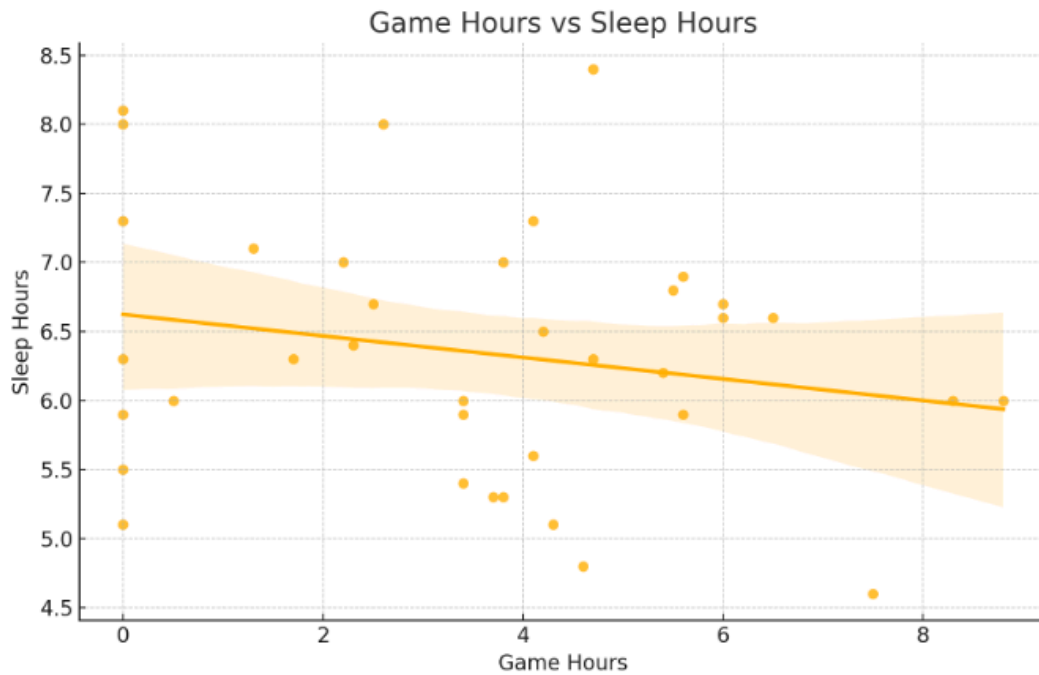


Figure 4: Game Hours vs Sleep Hours

Correlation Analysis

Results from the Pearson correlation matrix indicated:

Gaming Duration and Cigarettes Smoked are both strongly linked in a positive way ($r = 0.85$).

A mild drop in sleep time was identified when time gaming increased, with a weak negative correlation ($r = -0.21$).

Visualizations

Several visualizations were created:

- **Histogram** of Cigarettes Smoked: Most frequent range was 6-10 per session
- **Scatter Plot**: Gaming Duration vs Cigarettes shows a clear upward trend
- **Scatter Plot**: Gaming Duration vs Sleep shows a mild downward slope
- **Correlation Heatmap**: Visually confirms statistical relationships

Hypothesis Testing

Hypothesis 1

Does gaming more reduce the amount of sleep?

- **Method:** Pearson correlation and hypothesis testing
- **Result:** Weak negative correlation ($r = -0.21$), not statistically significant ($p > 0.05$)
- **Conclusion:** Gaming more may slightly reduce sleep, but the result is not strong enough to confirm this relationship.

Hypothesis 2

Does playing more games increase cigarette consumption during gaming?

- **Method:** Pearson correlation and significance test
- **Result:** Very strong positive correlation ($r = 0.85$), statistically significant ($p < 0.0000000001$)
- **Conclusion:** There is a strong and significant relationship. More gaming is clearly associated with more cigarette consumption during gaming sessions.

Modeling

- Two regression models were trained to validate the predictive power of game-related variables:
 - Random Forest Regressor – Used to predict Games Played and Cigarettes Smoked
 - Decision Tree Regressor – Provided clear splits and intuitive structure

Results confirmed that Game Hours is a strong predictor of Cigarettes Smoked.

Discussion

The research showed that how much someone plays games is strongly connected to their smoking habits. Although the results of sleep trends were uncertain, the findings could support future behavior changes and more testing using the same methods.

Limitations

- **Sample Size:** 47 days may be insufficient to generalize conclusions
- **Manual Recording:** Sleep and cigarette data depend on personal logs, introducing human error
- **Scope:** The study is limited to one individual's habits, so findings are not widely generalizable

Conclusion

This project has given us numbers and data about how people may be influenced by gaming. Though little link between gaming and less sleep surfaced, it was clear that more gaming was closely linked to higher cigarette use. The results might guide future behavior and help people keep track of their health habits.

Reducing stress, changing nutrition and including exercise rates in the study could give a better picture of the impact of gaming on lifestyle habits.

Appendix

All visualizations and code used for this analysis are available on GitHub:

[GitHub Repository - SmokingAtGames](#)