



Is Your Adolescent Addicted to Their Smartphone?

An Analysis and Predictions of Lifestyle Factors Influencing Teen Phone Addiction

IT ACADEMY



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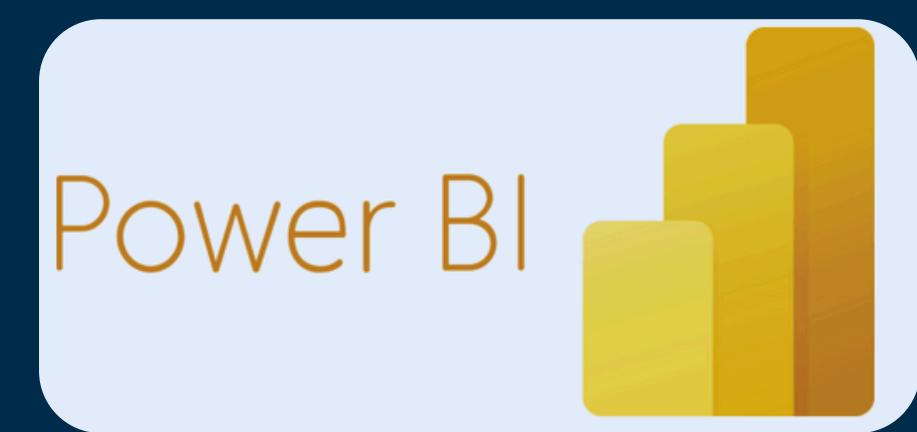
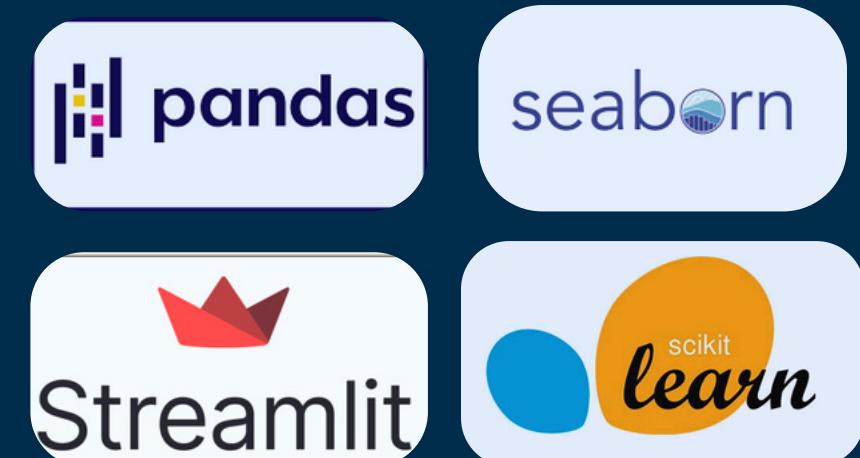
INTRODUCTION

Problem: Teen phone addiction is becoming a global concern, affecting sleep, academic performance, and mental health.

Goals:

- To investigate behavioral and emotional factors influencing teen smartphone addiction.
- Using data-driven analysis, machine learning, and clustering methods, to predict addiction levels (0–10), identify key lifestyle variables, and segment teens into behavioral groups.
- To develop an interactive Streamlit web app that allows users to estimate their addiction risk while raising digital awareness.

Tools:



DATASET

kaggle



Teen Phone Addiction and Lifestyle Survey

3000 ADOLESCENTS

19 Numerical Columns

4 Categorical Columns

Daily_Usage_Hours
Apps_Used_Daily Academic_Performance
Addiction_Level
Screen_Time_Before_Bed Time_on_Education Parental_Control
Self_Esteem
Time_on_Social_Media Weekend_Usage_Hours
Time_on_Gaming
Anxiety_Level
Age Exercise_Hours
Phone_Checks_Per_Day Social_Interactions
Depression_Level

Gender
School_grade
Location
Phone_Usage_Purpose

General Analyze

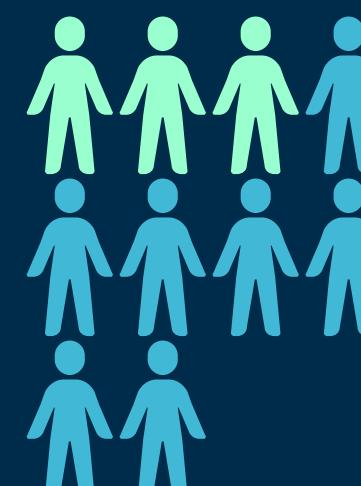
Gender Distribution



33.87%

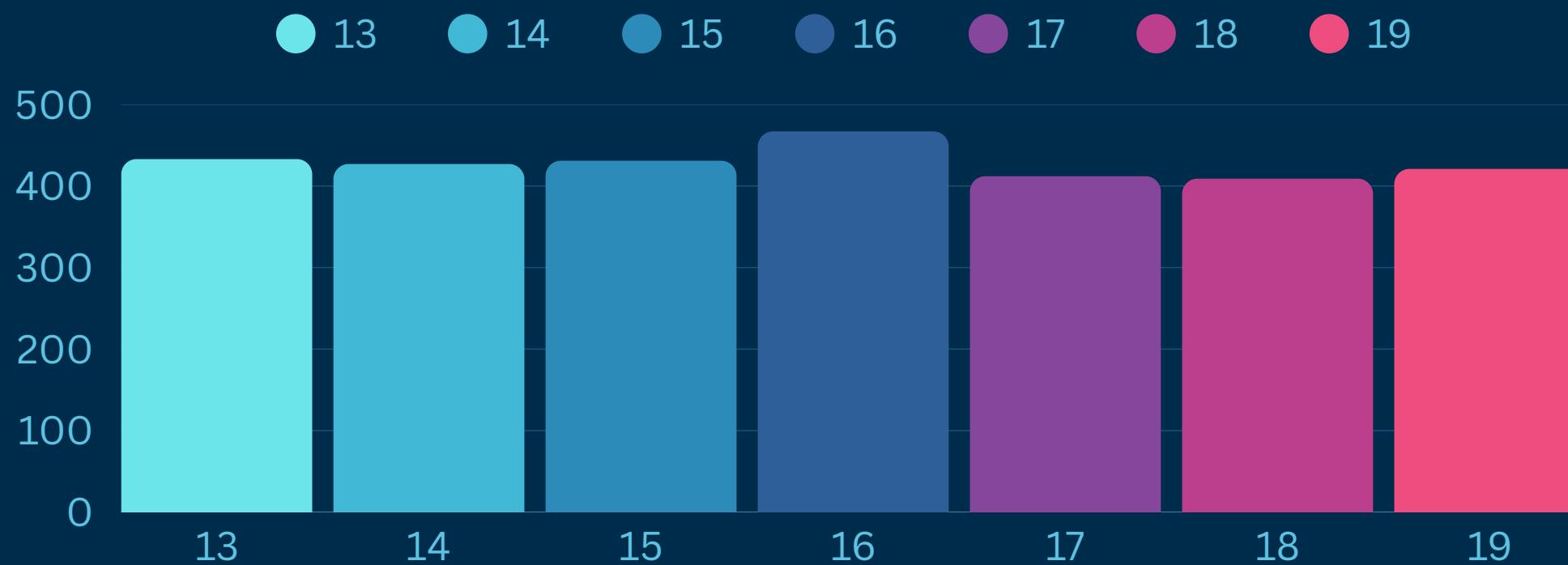


33.57%

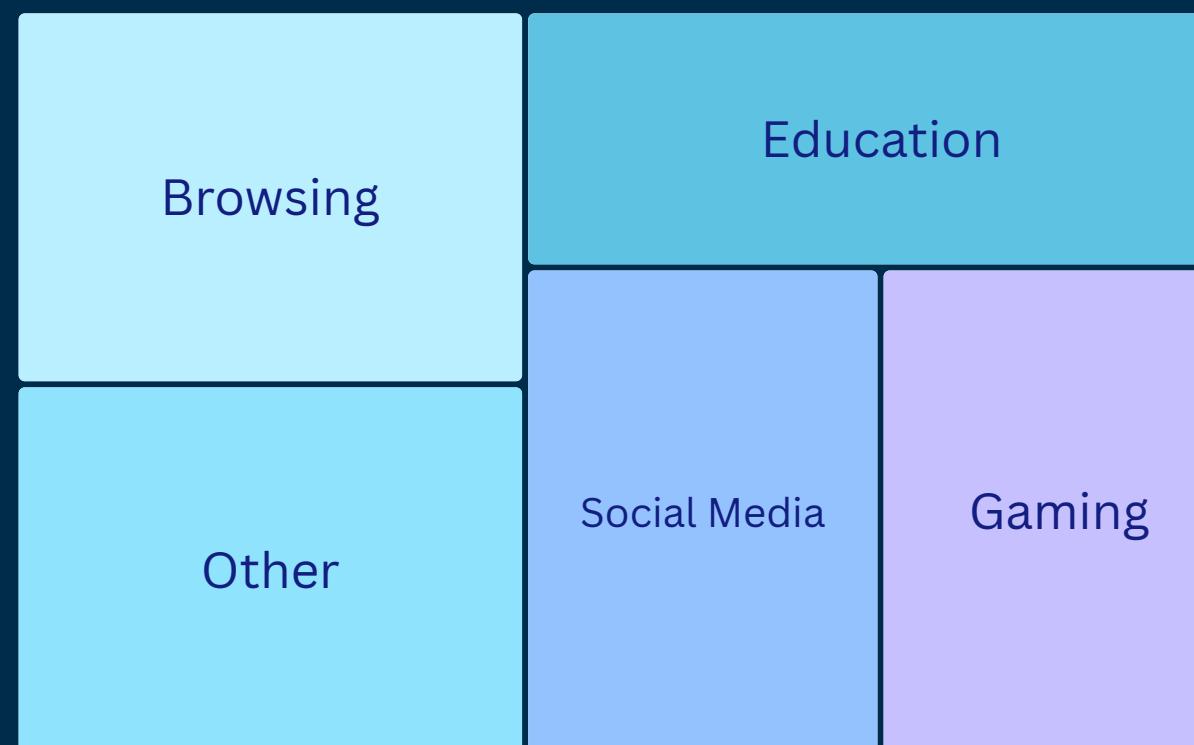


32.57%

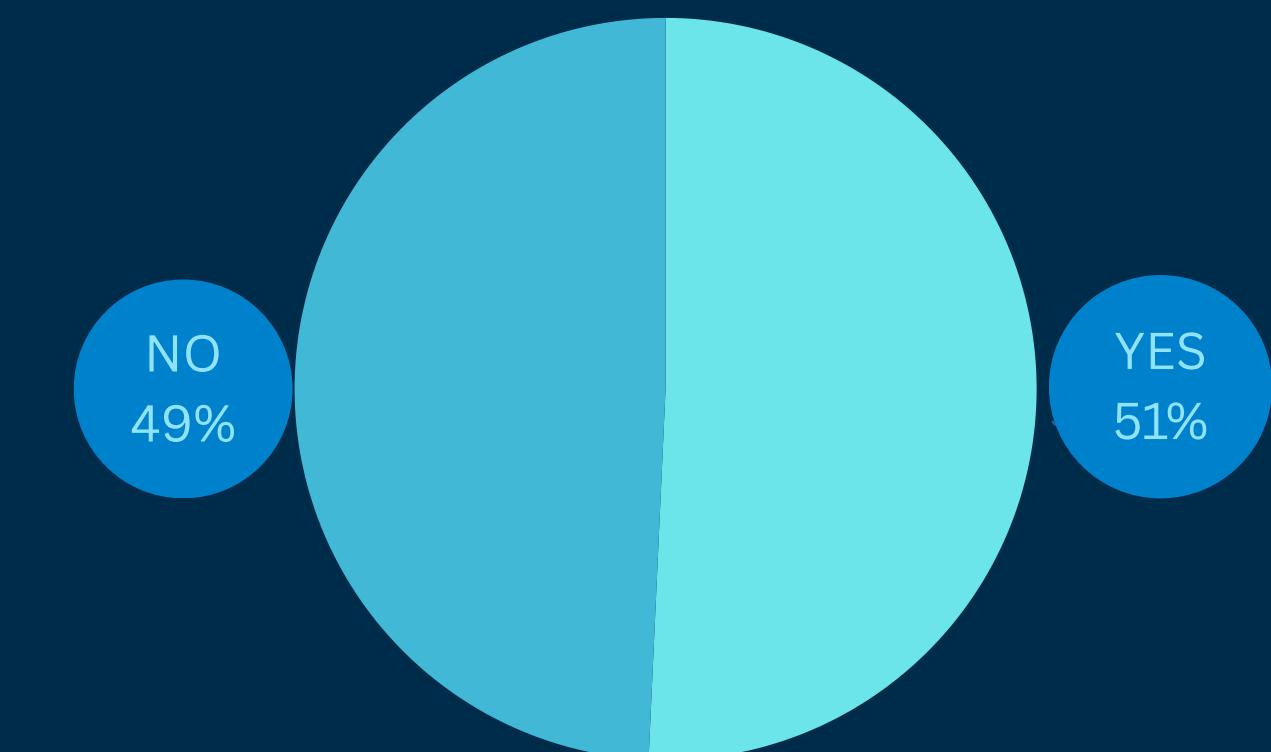
Age Distribution



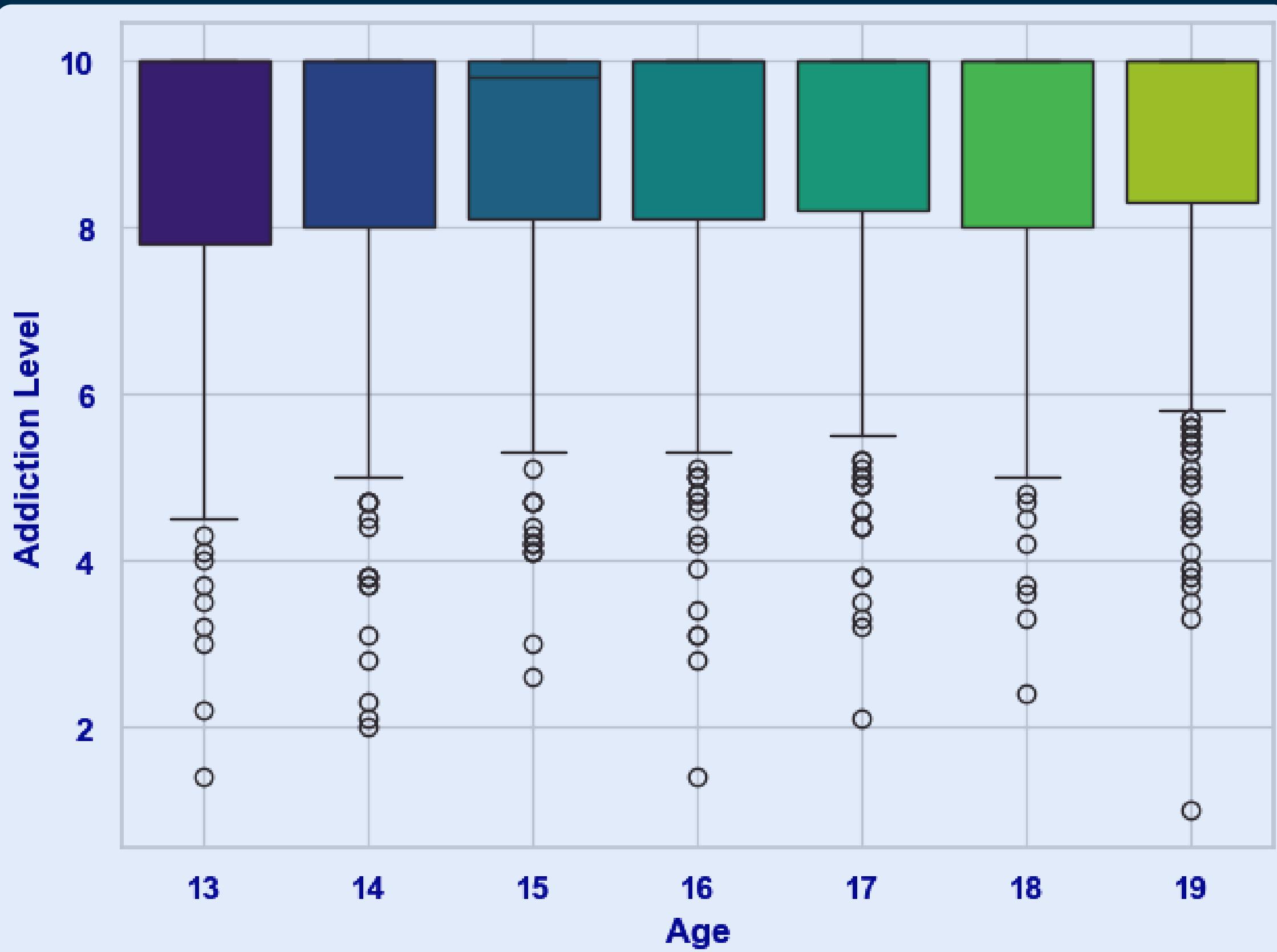
Phone Usage Purpose Distribution



Parental Control Distribution



Addiction Level per Age

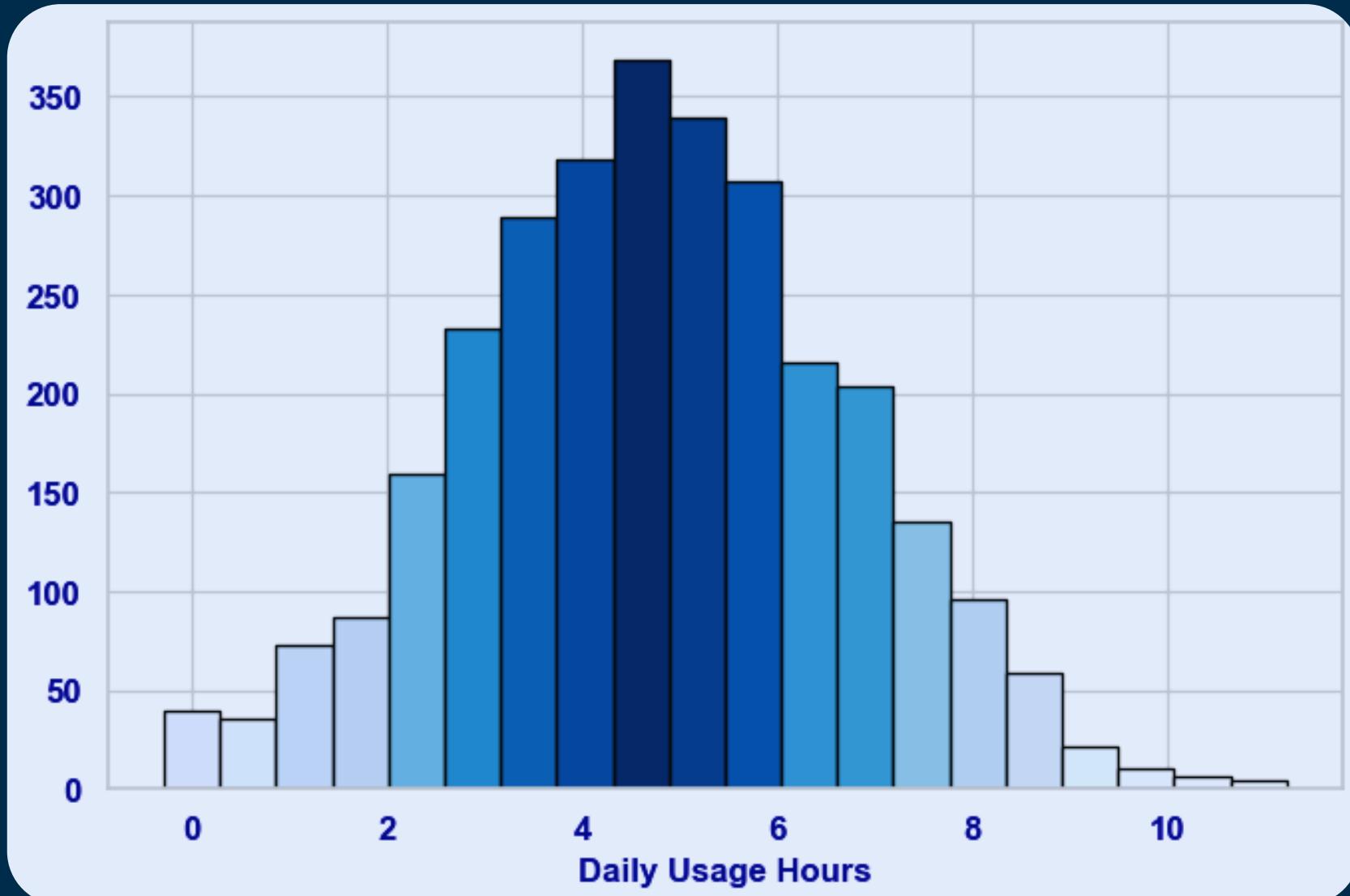


Addiction Level

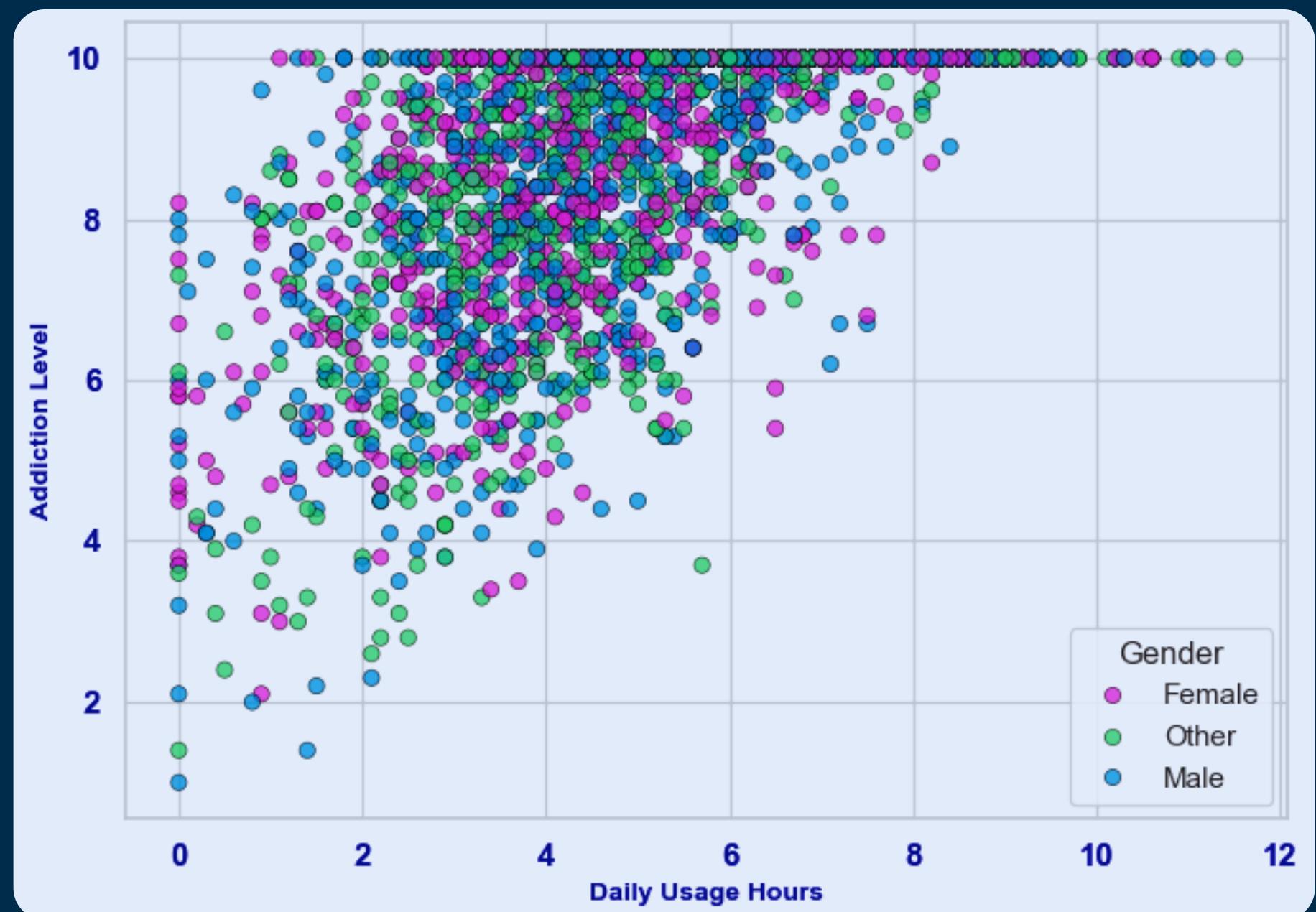
Addiction levels remain consistently high across all ages, with younger teens displaying slightly greater variability.

Daily Phone Usage

Distribution of Daily Usage Hours



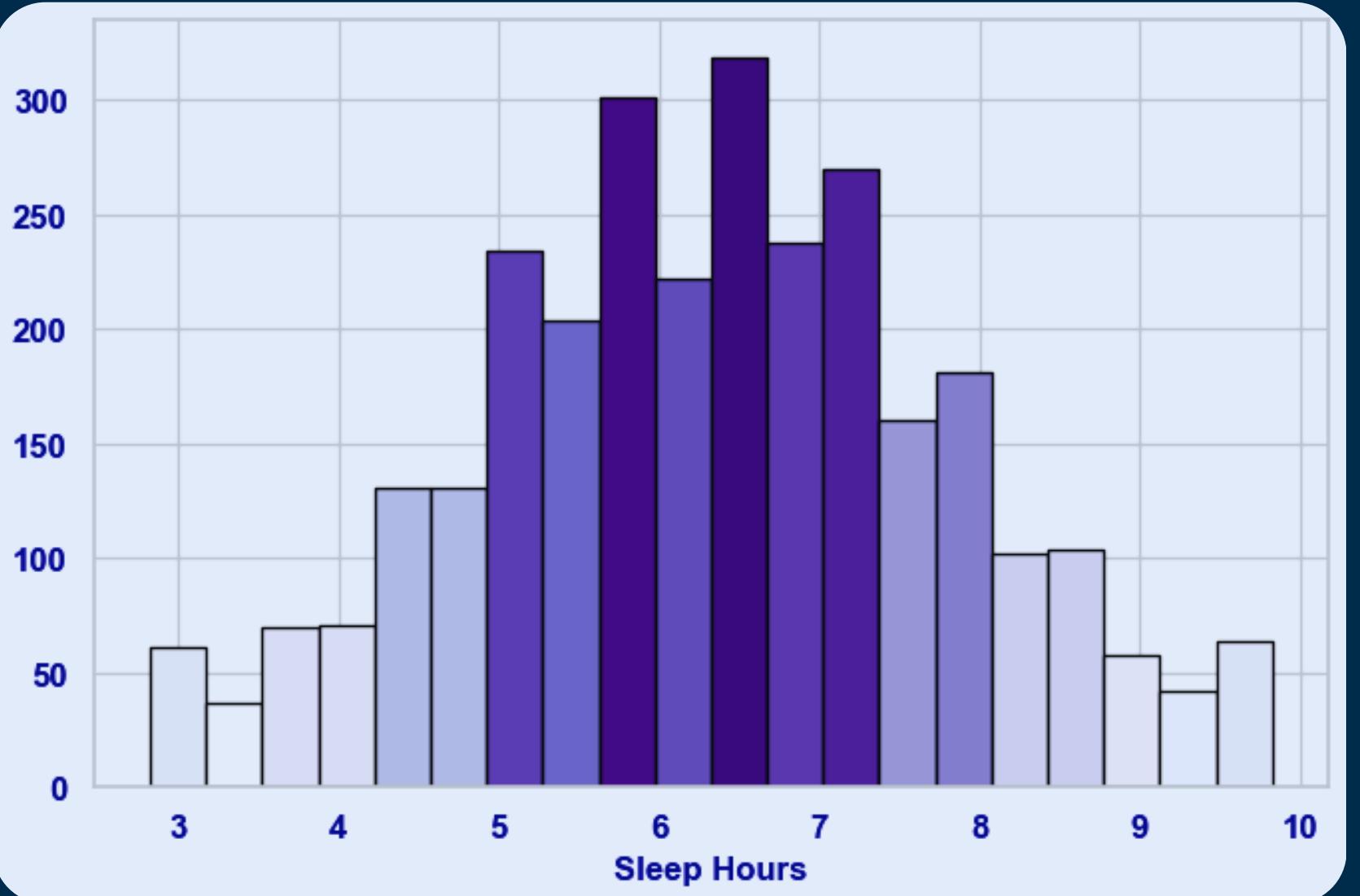
Daily Usage Hours vs Addiction Level



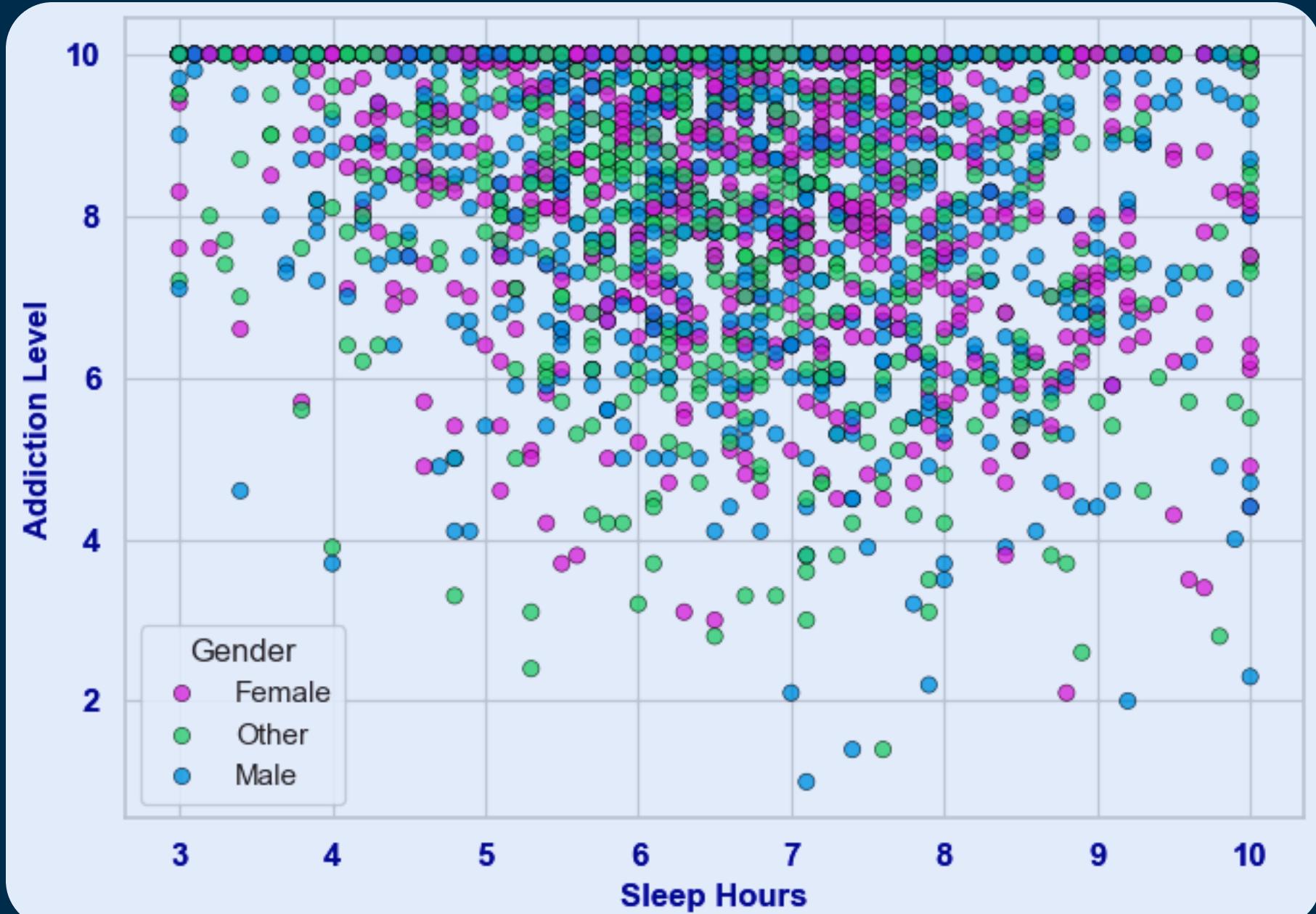
A strong positive relationship between daily screen time and addiction level, with many users clustering at the highest addiction score and no meaningful difference across genders.

Sleep Hours

Distribution of Sleep Hours

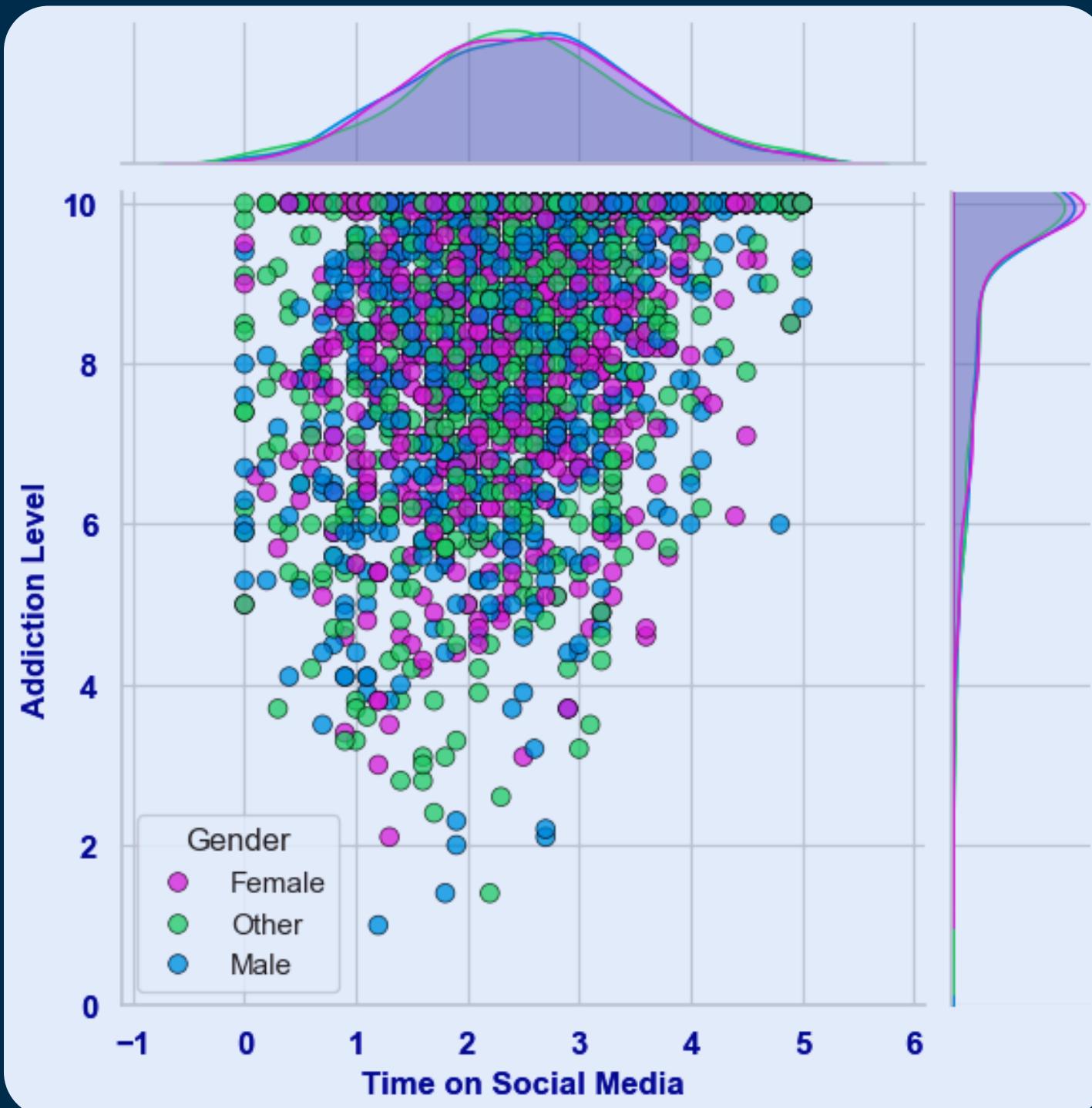


Sleep Hours vs Addiction Level

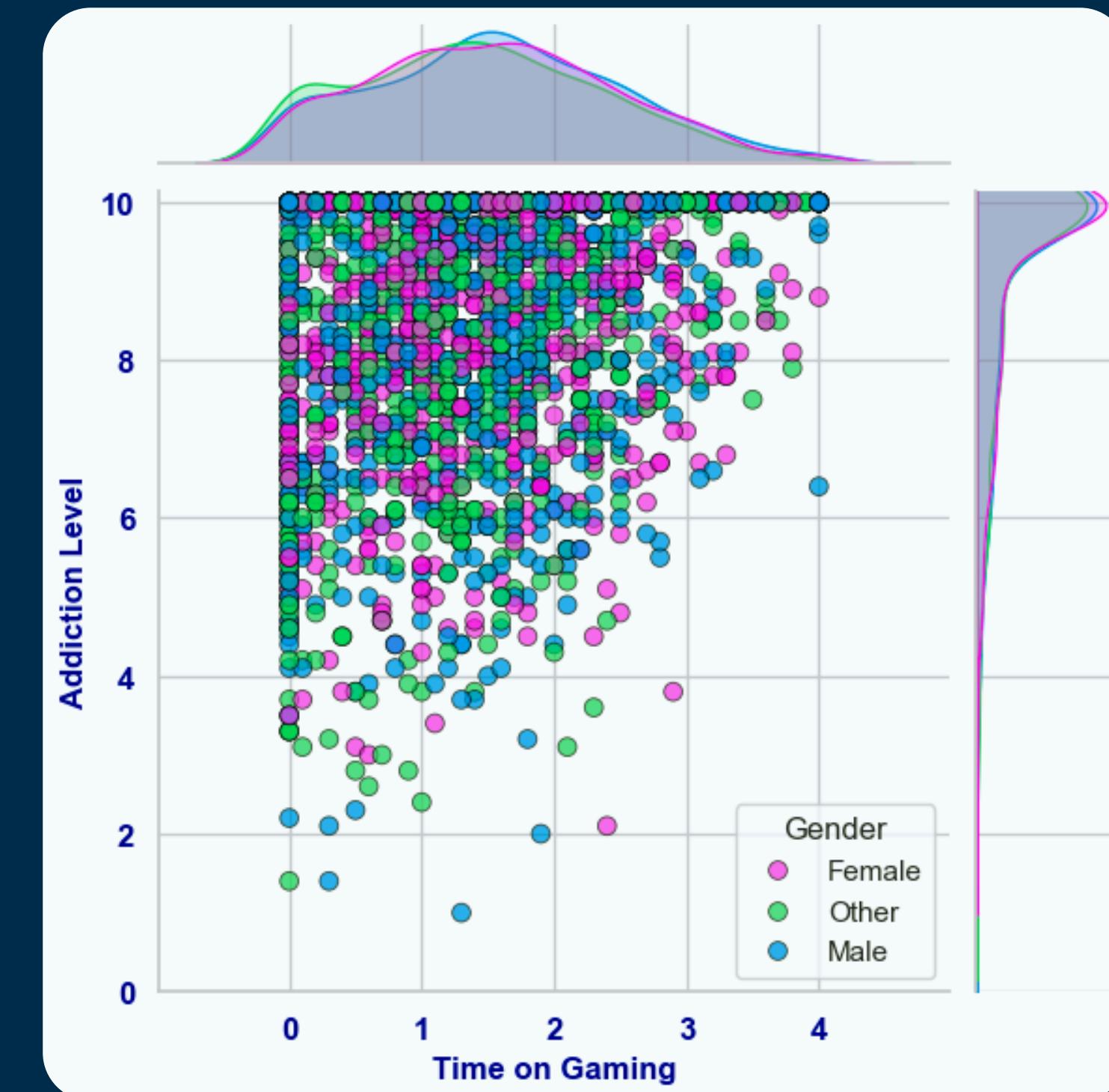


A slight negative correlation between sleep hours and addiction level. Regardless of gender, addiction scores remain generally high even among those with longer sleep durations.

Time on Social Media vs Addiction Level



Time on Gaming vs Addiction Level

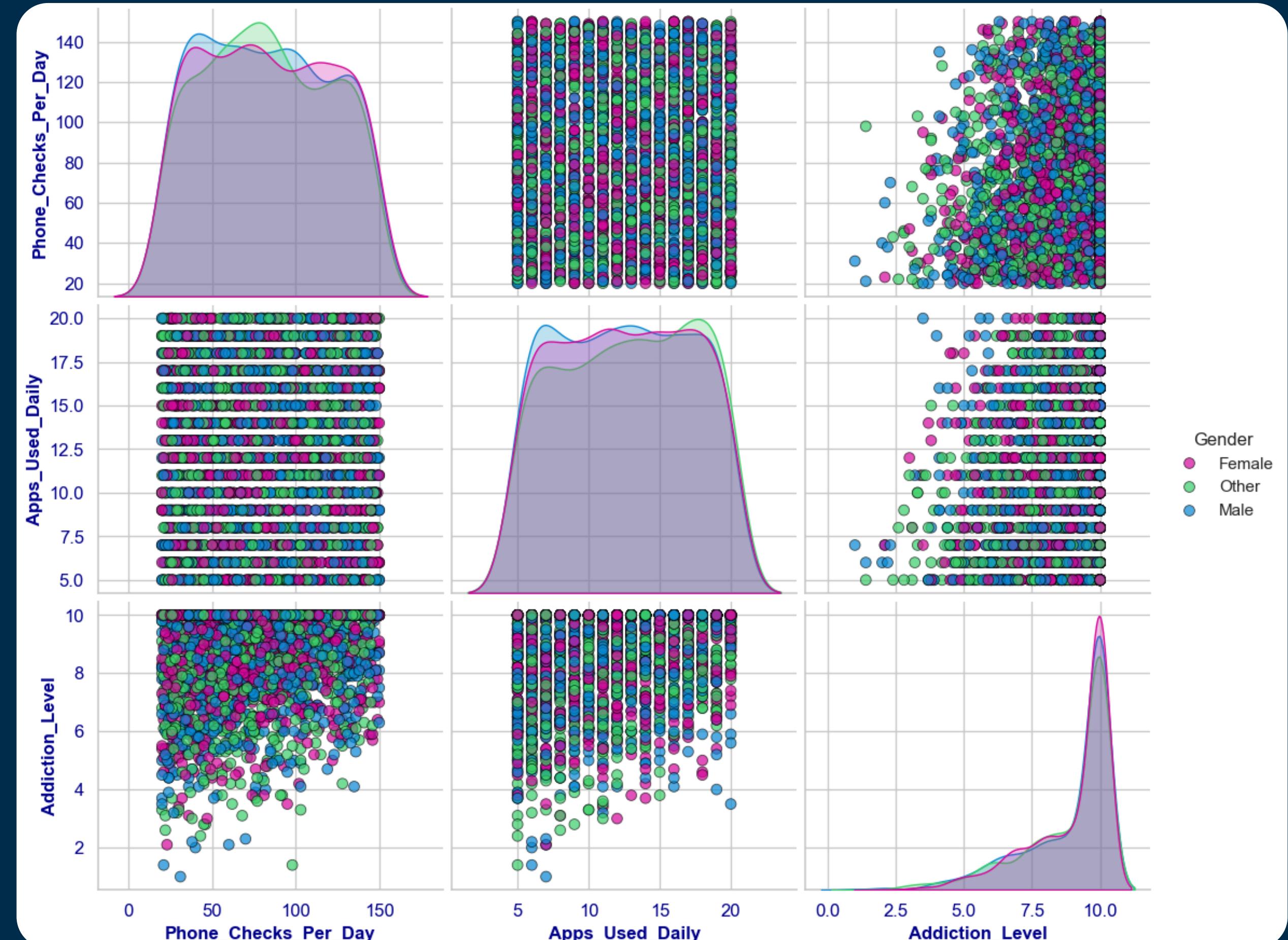


There is a slight upward trend indicating that more time spent on social media and gaming is linked to higher addiction levels, with many users showing consistently high scores across all genders.

Phone Checks Per Day

A positive relationship: as phone checks and apps usage daily increase, addiction levels tend to stay high. Many users reach the maximum addiction level regardless of gender.

APPs Daily Used



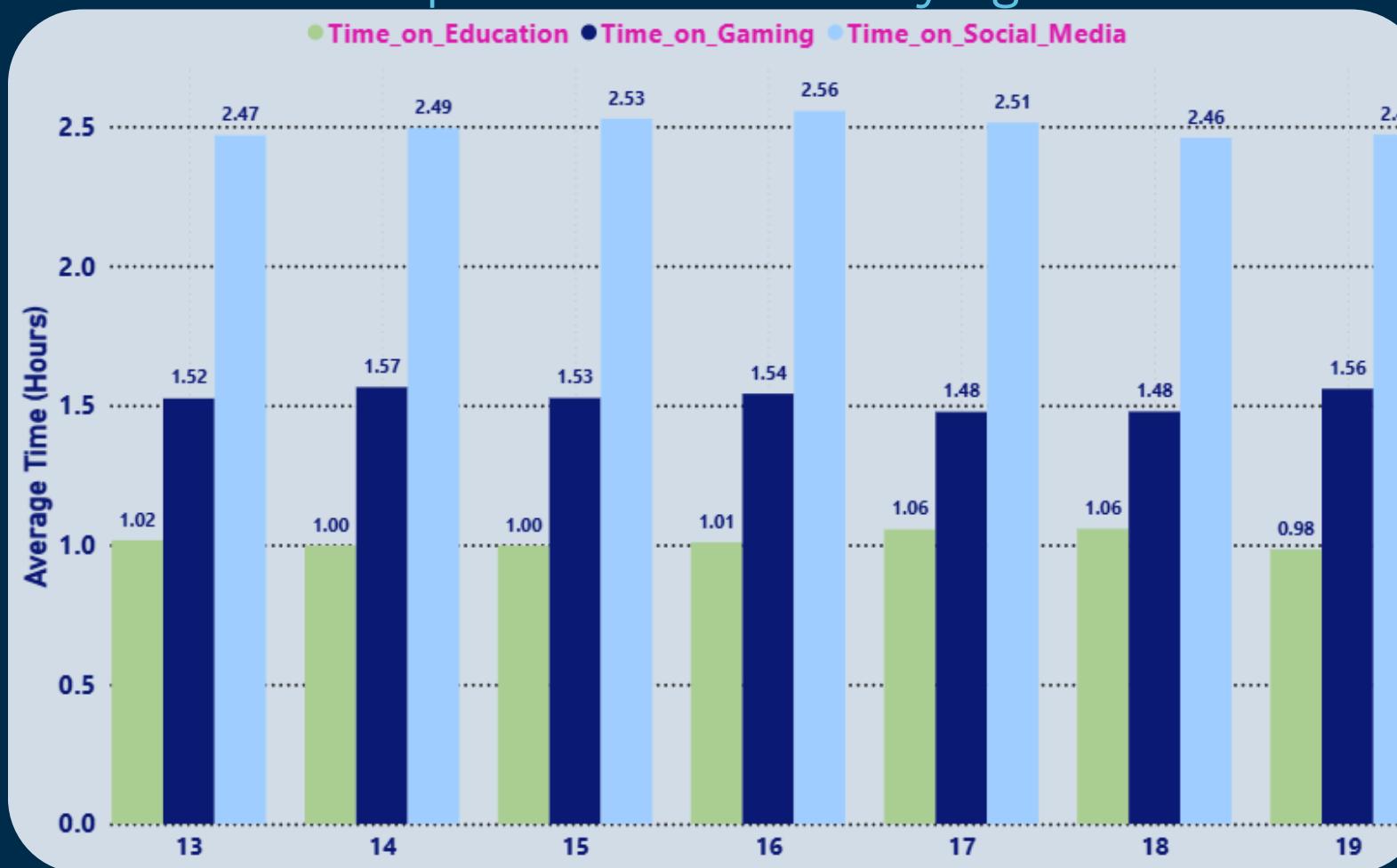
Correlation



Heatmap

Analysis per Age

Time Spend on Activities by Age



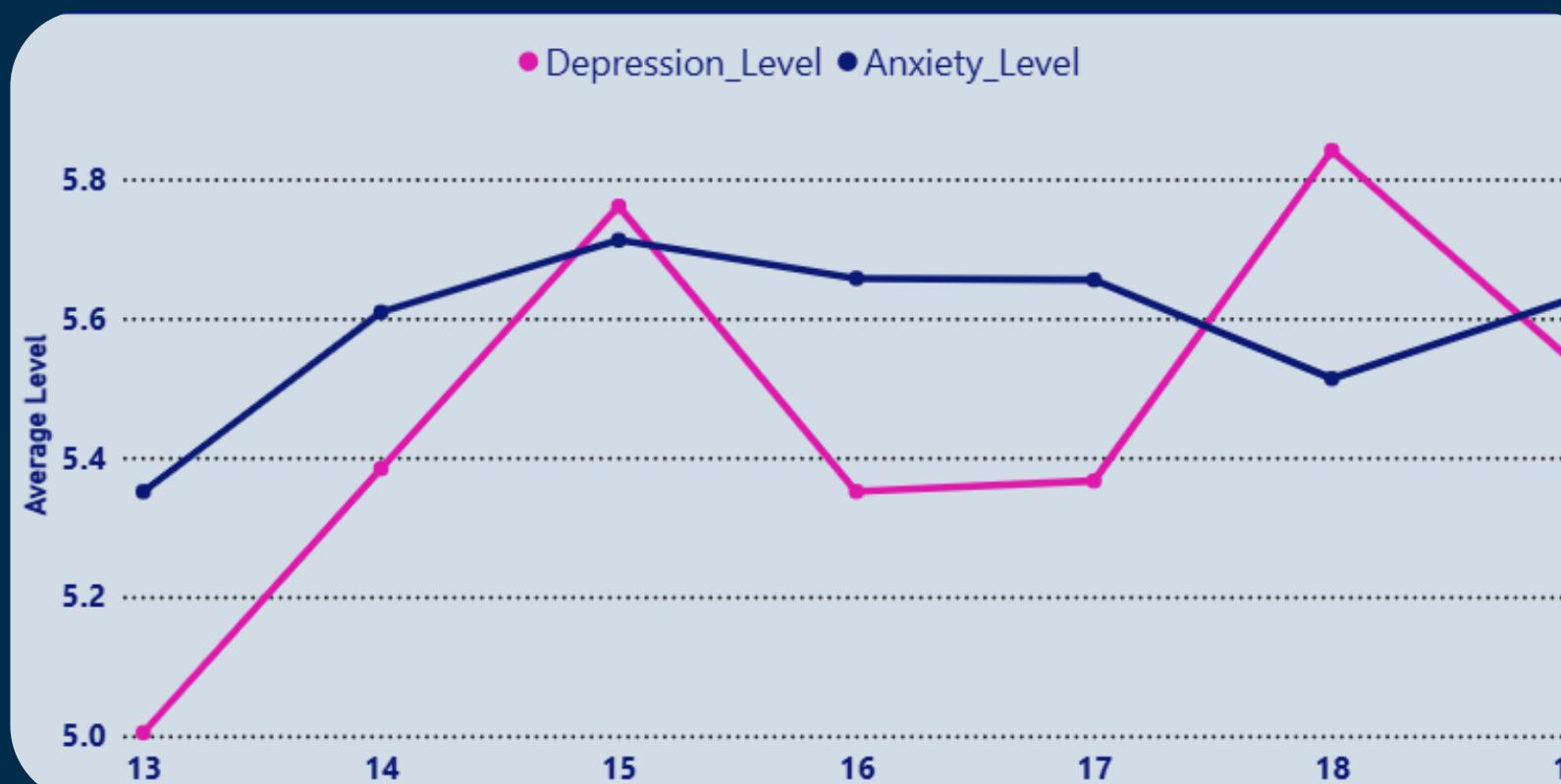
Family Communication by Age



Academic Performance by Age



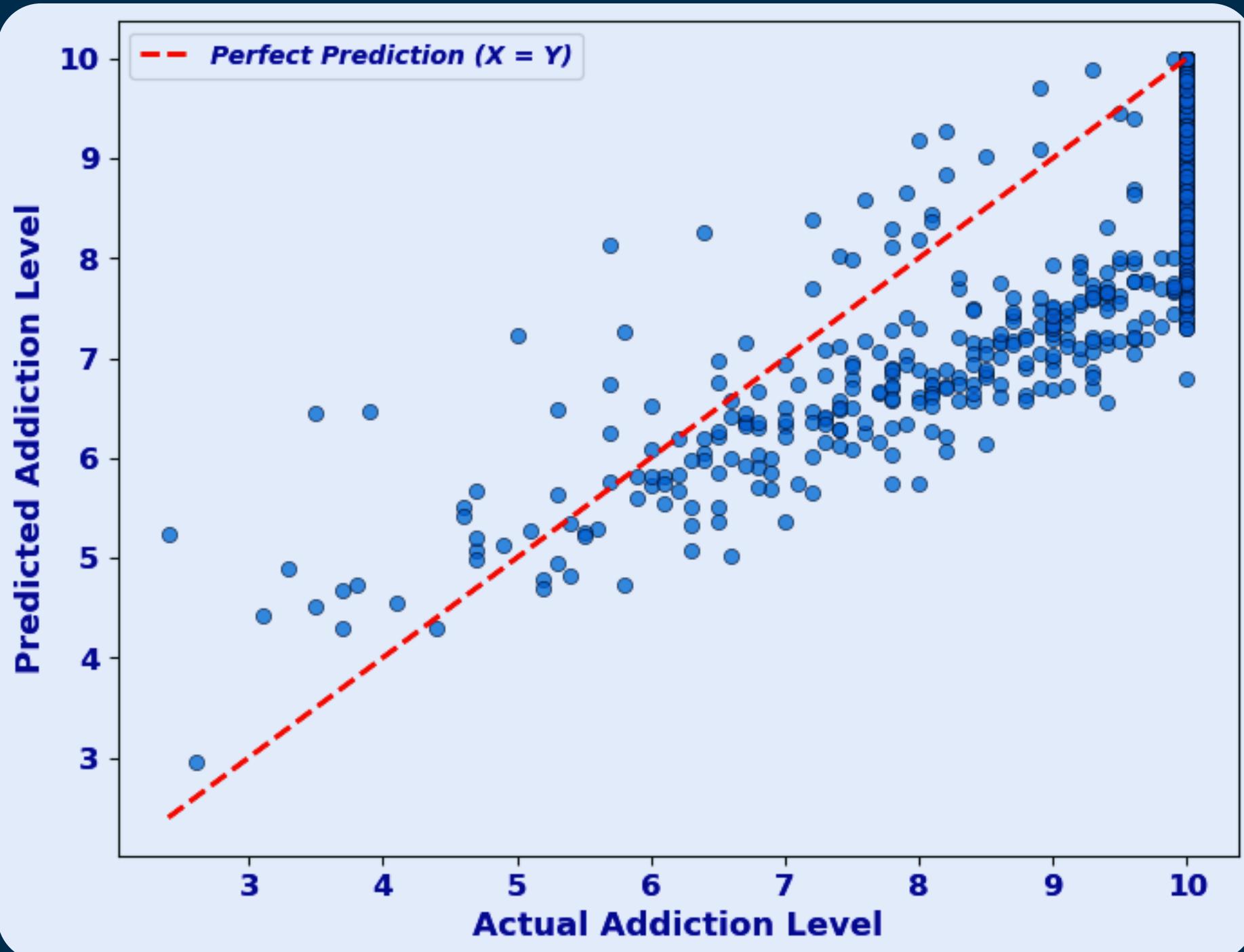
Depression and Anxiety Level by Age



PREDICTION

Model Accuracy Comparison

Linear Regression

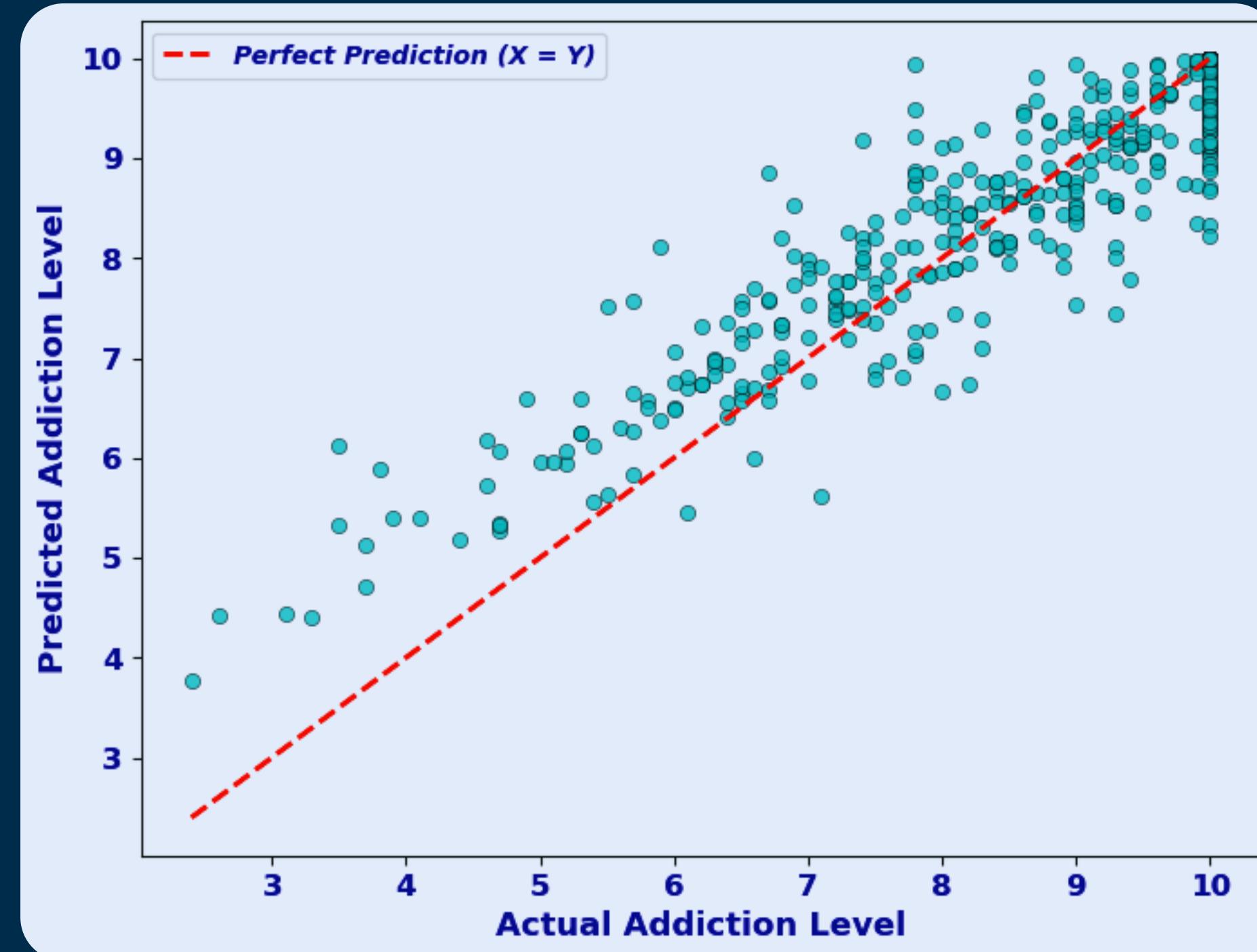


MAE = 1.103

RMSE = 1.340

$R^2 = 0.287$

Random Forest

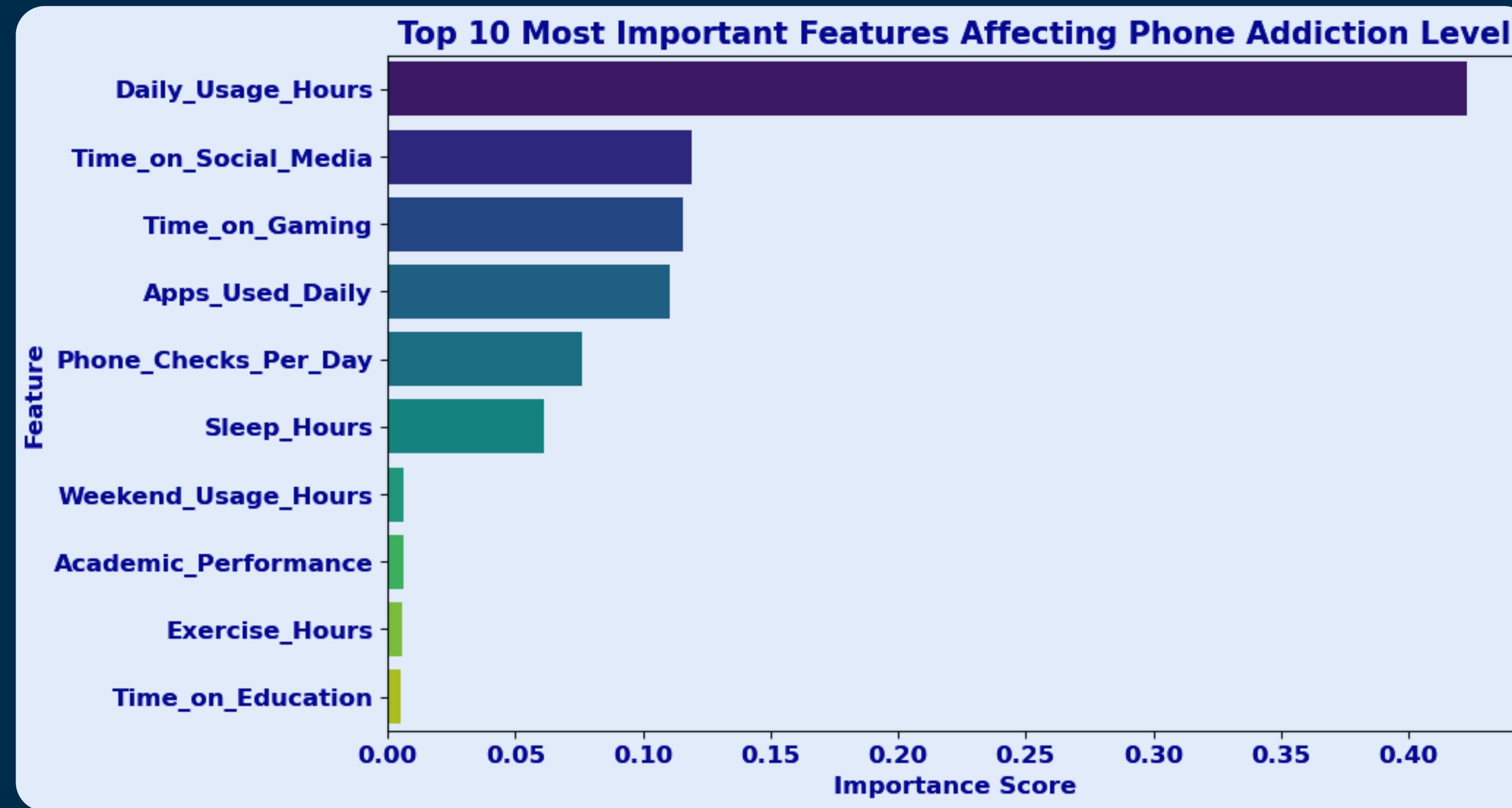


MAE = 0.374

RMSE = 0.586

$R^2 = 0.864$

Which factors most affect phone addiction?

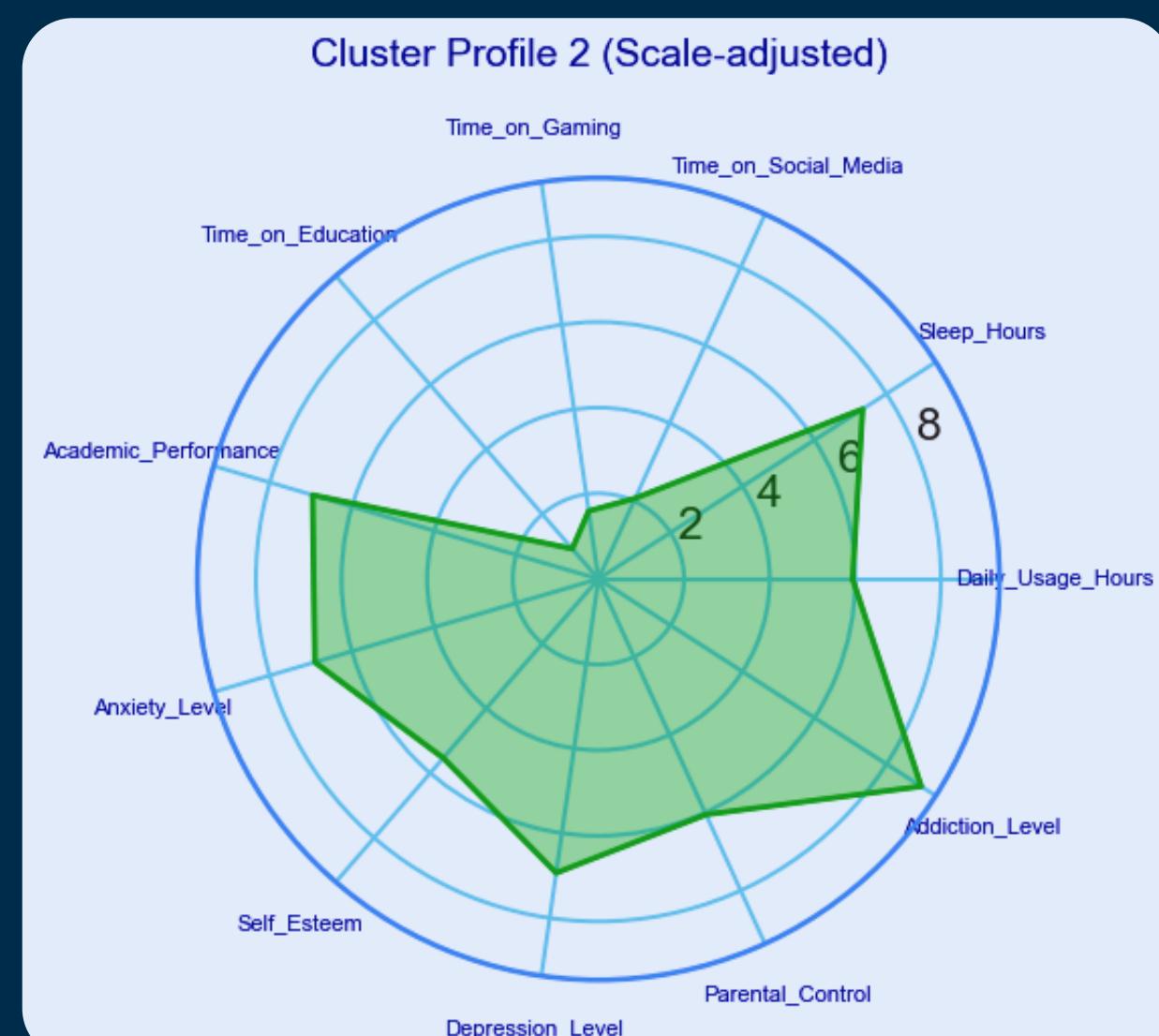
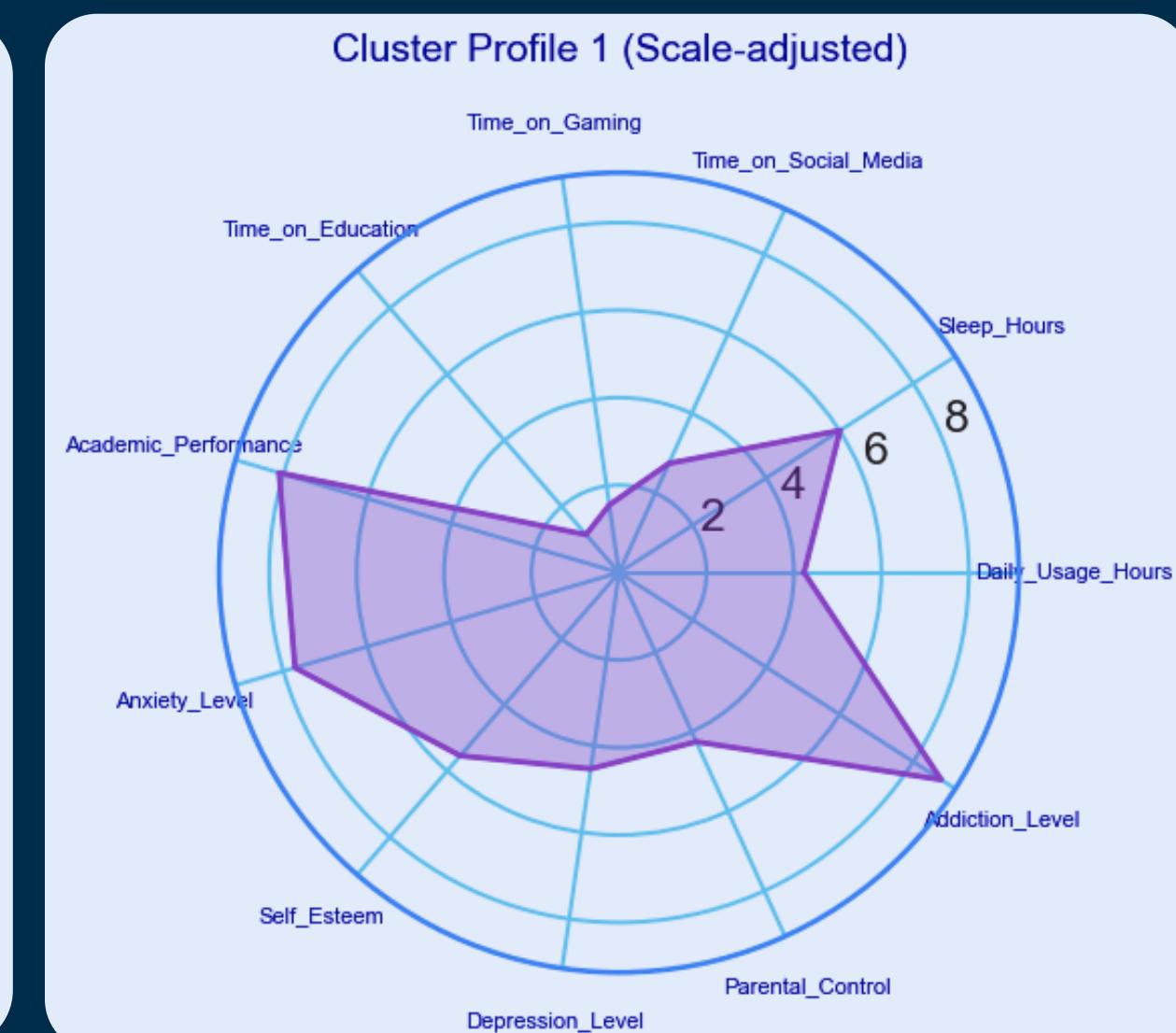
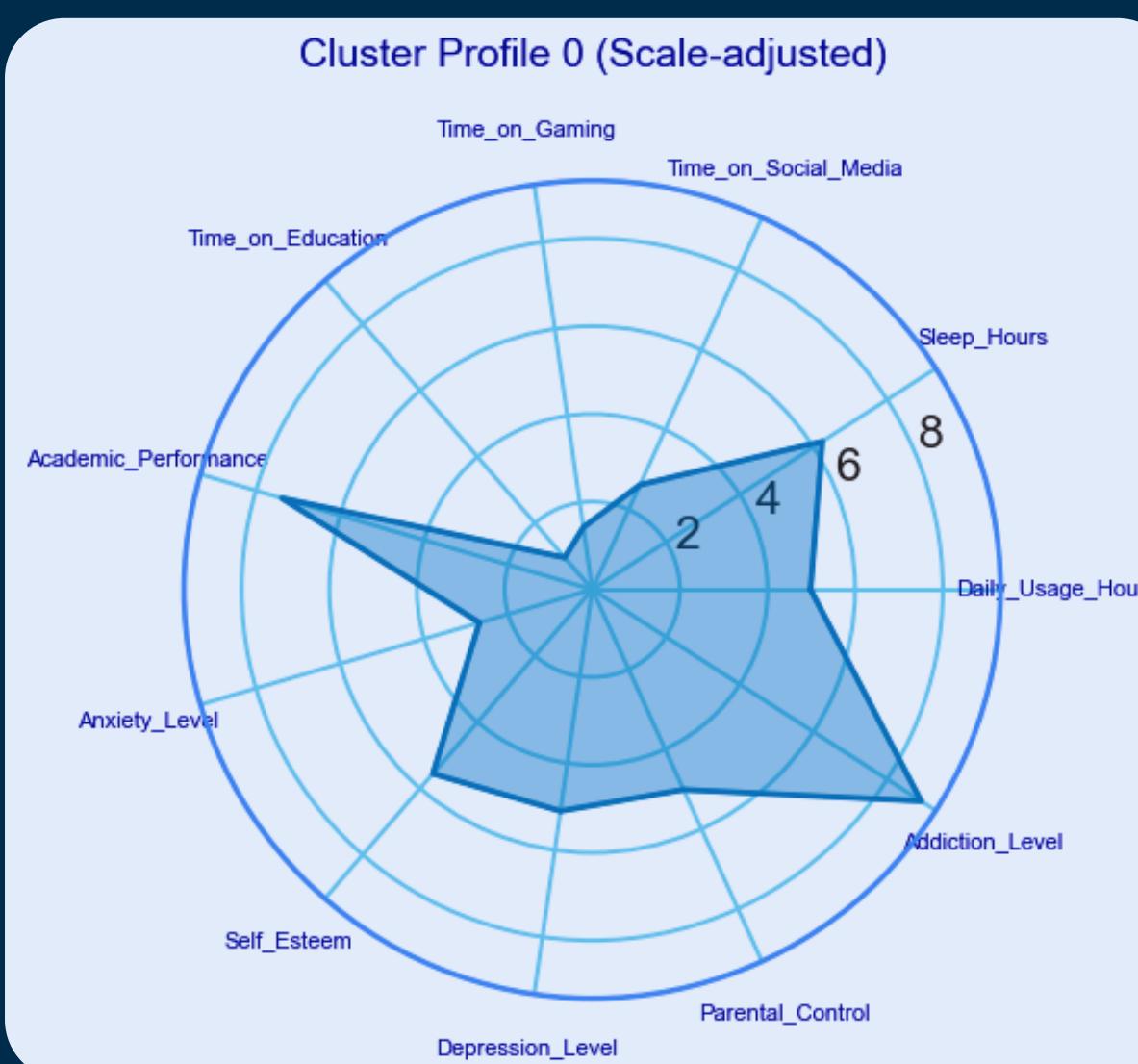


Adolescent Profiles and the Effects of Digital Addiction

A K-Means Clustering Analysis

Cluster	Addiction_Level	Parental_Control	Anxiety_Level	Depression_Level	Sleep_Hours	Daily_Usage_Hours	Academic_Performance
Cluster 0	8.92	0.50	2.69	5.10	6.24	4.98	73.85
Cluster 1	8.76	0.43	7.72	4.53	6.01	4.24	81.03
Cluster 2	8.96	0.61	6.90	6.94	7.34	5.94	69.60

Adolescents Profile based on 3 Clusters



Cluster 0 (Low Risk)

Resilient Adolescents

Profile: Moderate academic performance, balanced parental control, and low anxiety. Stable emotional state despite high digital use.

Key Insight: Adapt well to digital environments; show emotional stability and good self-regulation.

Support Focus: Encourage continued balance through digital literacy programs and healthy usage habits.

Cluster 1 (Medium Risk)

High-Functioning Anxious Adolescents

Profile: Highest academic performance and educational usage. Lower parental control but moderately high anxiety.

Key Insight: Ambitious, achievement-oriented but emotionally strained.

Support Focus: Provide stress-management support and digital wellness programs focusing on emotional regulation and time balance.

Cluster 2 (High Risk)

Vulnerable Adolescents

Profile: Lowest academic performance with high depression and the longest device usage. Highest parental control but poor emotional well-being.

Key Insight: Emotionally fragile, showing excessive screen dependence and disengagement.

Support Focus: Implement mentoring and provide emotional support and guidance, reduce overuse, and restore academic engagement.

📱 Teen Smartphone Addiction Level Predictor

Enter Behavioral & Lifestyle Factors

Daily Usage Hours
4.52

Daily Apps Used
10

Time on Social Media (hours)
1.50

Time on Gaming (hours)
2.50

Phone Checks Per Day (20-150)
50

Sleep Hours
8.00

Weekend usage (Hours)
6

Academic Performance (0-100)
85

Exercise_Hours(0-4)
2.00

Parental Control Enabled?
 Yes
 No

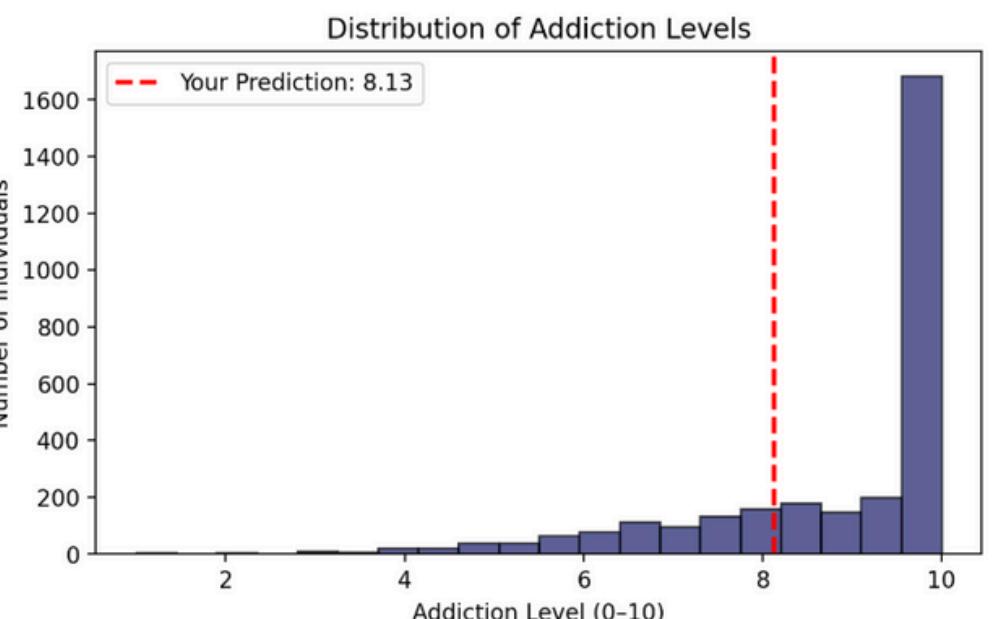
Predict Addiction Level

📱 Teen Smartphone Addiction Level Predictor

This interactive web app estimates a teenager's **Smartphone Addiction Level (0-10)** based on behavioral and lifestyle factors.

Predicted Addiction Level: 8.13 / 10

⚠️ High Risk of Addiction — Signs of digital overuse detected!



Try it yourself!



CONCLUSIONS

- In today's digital environment, teen phone addiction has become an almost unavoidable reality, reflecting the deep integration of mobile technology into everyday life.
- The findings highlight that behavioral patterns—particularly daily phone usage, number of apps used, social media time, gaming time and phone checks per day—are the most influential predictors of addiction.
- The impact of digital addiction depends on adolescents' emotional health, family support, and academic performance—not just on screen time. Emotional resilience and balanced guidance are key to healthy digital well-being.

Future Work

- Move from synthetic to real-world data by collecting actual smartphone usage statistics.
- Conduct surveys and integrate screen-time data for authentic behavioral inputs.
- Further develop the Streamlit app into a mobile, multilingual educational platform.



GRACIAS!

THANK YOU!

GRÀCIES!

TEŞEKKÜR EDERİM!

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