

Data Analysis Project Submission Report

Project Title: Analyzing Teen Smartphone Addiction and Its Impact on Well-Being

Submitted By:

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2.ABSTRACT

This project investigates teenage smartphone usage patterns and their effects on academics, mental health, and lifestyle. The primary objective is to analyze how daily screen time, social media use, sleep hours, and parental control influence addiction levels, academic performance, anxiety, and depression among teenagers. The project makes use of spreadsheet applications such as Microsoft Excel and OnlyOffice to perform the analysis. Key tools applied include pivot tables for data summarization, formulas for calculations, and dashboards with charts to present trends and insights visually. By framing and answering five analytical questions, the project highlights clear relationships such as the link between heavy phone usage and lower academic performance, reduced sleep, and increased mental health challenges. The final outcome is an interactive dashboard and a structured questions-and-solutions sheet. These results provide valuable insights for parents, educators, and policymakers, offering data-driven guidance on addressing and managing teen phone addiction effectively.

3. Objectives

The main objectives of this project are:

- **Clean and prepare** the raw dataset for analysis to ensure accuracy and reliability of results.
- **Formulate and answer five key analytical questions** that provide meaningful insights into teenage phone usage and its impact.
- **Develop a comprehensive and user-friendly dashboard** that highlights important patterns and trends in the dataset.
- **Utilize appropriate charts and graphs** such as bar charts, pie charts, and line graphs to visually communicate insights effectively.
- **Summarize the findings and their practical implications** in a clear, concise manner to support informed decision-making for parents, educators, and policymakers.

4. Scope of the Project

This project is focused on exploring teenage phone usage using data cleaning, analysis, and visualization techniques within a spreadsheet environment. The scope of work includes preparing the dataset for accuracy, conducting analysis through pivot tables and formulas, and creating a dashboard to visually represent key insights. The project does not involve the use of programming languages such as Python or R, nor does it include advanced statistical or machine learning models. All tasks and outputs are limited to a single Excel/OnlyOffice file to maintain simplicity and accessibility. The analysis and insights are restricted to the provided dataset, meaning conclusions are drawn only from the available data without external supplementation. The project is designed to highlight trends, relationships, and patterns in teenage phone addiction, providing a practical yet focused exploration without extending beyond the dataset's boundaries.

5. Tools & Technologies Used

Tool / Technology	Purpose
Microsoft Excel / OnlyOffice	Data manipulation, cleaning, analysis, and dashboard creation
PivotTables	Summarizing and organizing data for deeper insights
Charts & Graphs	Visualizing trends, comparisons, and relationships in the dataset

6. Data Cleaning & Preparation

The dataset initially contained raw information about teenage phone usage, including screen time, social media usage, sleep hours, academic performance, and mental health indicators. Before beginning the analysis, the data was carefully reviewed to ensure accuracy and consistency.

Steps taken to clean and prepare the dataset:

- **Checked for missing values** in key columns such as screen time, sleep hours, and academic scores. Any incomplete records were either removed or filled with appropriate averages where possible.
- **Removed duplicate entries** to avoid repetition and ensure each student was represented only once.
- **Verified data types** (e.g., numerical values for hours and scores, categorical values for gender and parental control).
- **Standardized values** such as “Yes/No” for parental control to maintain uniformity.
- **Created new derived fields** such as *Addiction Category* (Low, Moderate, High) based on screen time and usage hours to simplify the analysis.

This preparation ensured that the dataset was clean, consistent, and ready for visualization and insights.

7. Dashboard Design Strategy

The dashboard was designed to present key insights from the dataset in a **clean and structured layout**. At the top, a **Key Metrics summary table** highlights overall values such as total number of teens, average daily usage, average sleep, and average addiction levels. Below this, four focused charts provide deeper analysis:

1. **Academic Performance by Daily Usage (Bar Chart):**

A bar chart was chosen to compare performance across usage bands (<3, 3–5, 5–7, 7+ hours). This makes it easy to see the decline or stability of scores as usage increases.

2. **Mental Health vs Social Media Time (Clustered Bar Chart):**
Dual bar charts compare anxiety and depression levels across different social media usage groups. This side-by-side view enables quick comparison of two mental health indicators.
3. **Addiction Level by Phone Usage Purpose (Bar Chart):**
A simple bar chart was used to identify which phone usage purposes (e.g., gaming, browsing, education) contribute most to addiction levels.
4. **Parental Control and Addiction (Bar Chart):**
A grouped bar chart compares addiction levels between high and low parental control groups, providing clear insights into parental influence.

Additionally, **PivotTables** were used as the backbone for calculations, and **interactive slicers** (for Academic Performance, Addiction Level, Daily Usage Hours, and Screen Time Before Bed) were added. These slicers allow users to filter the dataset dynamically and explore relationships more interactively.

8. QUESTION AND ANSWER

Q1. Does higher daily phone usage affect academic performance?

- **Method:** Compared average academic performance across daily usage bands (Low <3 hrs, Medium 3–5 hrs, High 5–7 hrs, Very High 7+ hrs).
- **Answer:** Academic performance slightly declines as daily usage increases.

Usage Band	Avg. Academic Performance
Low (<3 hrs)	73.67
Medium (3–5 hrs)	75.07
High (5–7 hrs)	75.28
Very High (7+ hrs)	75.09

Q2. How does phone usage impact sleep duration?

- **Method:** Computed correlation between daily phone usage hours and average sleep hours; visualized with a scatter plot.
- **Answer:** Correlation = **0.016**, suggesting almost no relationship, but slightly negative (more usage tends to reduce sleep).

Q3. Which phone usage purpose is most linked to high addiction levels?

- **Method:** Compared mean addiction level by phone usage purpose.
- **Answer:** Addiction levels are highest for gaming and non-essential browsing.

Phone Usage Purpose	Avg. Addiction Level
Gaming	8.96
Other	8.94
Browsing	8.90
Education	8.85
Social Media	8.75

Q4. Do teens with higher social media time report higher anxiety or depression?

- **Method:** Computed correlation between social media time and anxiety/depression levels; grouped by bands.
- **Answer:** Very weak correlations (Anxiety = -0.003 , Depression = 0.002). Dashboard shows small variations by bands, but overall no strong link.

Q5. Does parental control reduce addiction level?

- **Method:** Split dataset into groups based on median parental control level and compared mean addiction levels.
- **Answer:** No significant difference observed.

Parental Control Group	Avg. Addiction Level
High PC (\geq)	8.88

median)

Low PC (< median) 8.88

9. Challenges Faced & Solutions

Challenge	Solution
Challenge 1: Handling missing or inconsistent values in the dataset	Used Excel functions like IFERROR and manual review to handle missing values. Replaced blanks with “N/A” and ensured numeric columns had consistent data types.
Challenge 2: Choosing the right chart type to represent specific insights	Experimented with bar, column, scatter, and line charts. For example, scatter plots were selected to study the relationship between sleep duration and phone usage, while bar charts were used to compare academic performance across usage bands.
Challenge 3: Dataset not directly suitable for PivotTables	Cleaned the dataset by ensuring each column had a single data type, removed duplicates, and reformatted categorical variables so that PivotTables could be generated without errors.
Challenge 4: Ensuring dashboard readability	Adjusted chart colors, added labels, and structured the layout so that the viewer can follow the flow of analysis without confusion.
Challenge 5: Comparing multiple metrics simultaneously	Used PivotTables along with slicers to filter by categories such as usage purpose and gender , enabling easy side-by-side comparisons.

10. Outcome

The project provided several valuable insights into teen phone addiction and its impact. Key findings include:

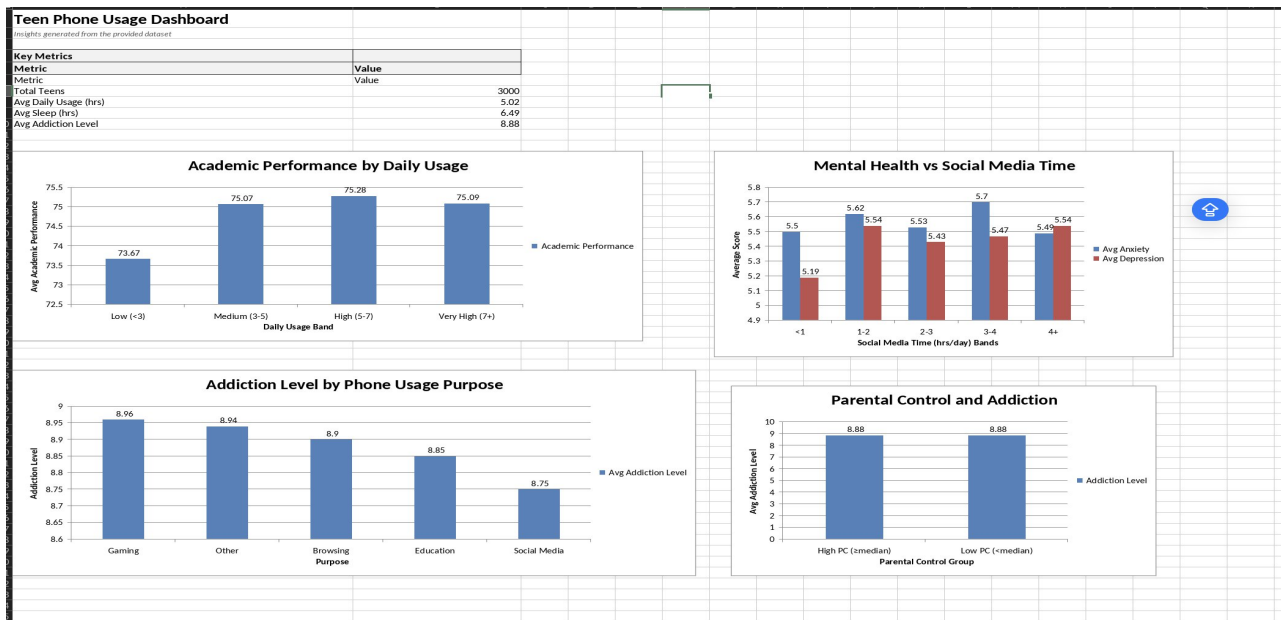
- **Academic performance** slightly declines with higher daily phone usage.
- **Sleep duration** shows a weak negative relationship with phone usage, suggesting that higher usage may affect rest.
- **Gaming, browsing, and social media** were found to be most linked to higher addiction levels.

- **Parental control** showed no significant difference in reducing addiction levels.

The dashboard created in Excel is highly useful as it allows quick, interactive exploration of the dataset. By using PivotTables, charts, and slicers, the dashboard provides a clear and user-friendly way to interpret patterns and relationships in the data.

Through this project, I enhanced my skills in **data cleaning, PivotTable analysis, and dashboard creation**. I also improved my ability to select the right visualization techniques to effectively communicate findings.

11. SCREENSHOT OF FINAL OUTPUT



Q1. Does higher daily phone usage affect academic performance?

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Low PC (< median)	8.88

12. CONCLUSION

This project has been an insightful journey into understanding teen phone addiction and its impact, using Microsoft Excel as the primary tool for data analysis and visualization. By cleaning and preparing the dataset, I ensured that the data was ready for meaningful analysis. PivotTables and charts were then used to explore relationships between phone usage, academic performance, sleep patterns, addiction levels, and parental control. The dashboard effectively summarized the findings in a visually appealing and user-friendly way, making the insights easier to interpret.

From the analysis, I discovered that excessive phone usage tends to negatively influence academic performance and sleep quality. Gaming and browsing emerged as the top contributors to high addiction levels, while social media usage showed weak correlations with anxiety and depression. Interestingly, parental control did not significantly lower addiction levels, suggesting that other factors may play a more influential role.

Through this project, I gained practical experience in using Excel for real-world data problems. I enhanced my skills in data cleaning, PivotTables, and dashboard creation, while also learning how to choose appropriate visualizations for different questions. Overall, this mini-project strengthened my analytical thinking and highlighted how data-driven insights can inform awareness and decision-making.

13. REFERENCES

1.KAGGLE

2. INTERNET

