Name: Harshit Pandey
Email: pandeyharshit7277@gmail.com

WEEK 5 & WEEK 6 DOCUMENTATION

WEEK 5: COHORT AND SEGMENT ANALYSIS

1. Overview

Week 5 focused on understanding screen time behavior across different demographic groups by forming **cohorts** (Age Band × Device Type). Using heatmaps, stacked charts, and cohort-level comparisons, the goal was to identify high-usage segments, device dependency patterns, and groups that frequently exceed recommended screen limits.

2. Objectives

- Identify top screen time cohorts using Age Band × Device combinations
- Compare device usage intensity across segments
- Analyze which age groups exceed recommended screen time limits
- Understand device dependency patterns within each cohort
- Highlight high-risk or high-consumption user groups

3. Tasks Performed

- Created Age_Device_Cohort column for segment analysis
- Built heatmaps for device usage and exceeded-limit patterns
- Built stacked column charts to show screen time distribution by device
- Created cohort-level bar chart to compare average screen time
- Analyzed segment-wise variations for rural/urban and activity share
- Added risk segmentation visual (Low, Moderate, High risk)

4. Visuals & Explanation

1. Device Usage Distribution by Age Band (Heatmap)

Shows how frequently each device (Laptop, Smartphone, Tablet, TV) is used within each age band. Smartphones have the highest usage across all groups, especially 11–13 and 16–18.

2. Exceeded Recommended Limit by Age Band (Heatmap)

Displays how many students in each age group exceed recommended screen limits.
11–13 and 16–18 age groups show the highest violations.

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3. Cohort Screen Time Distribution by Device (Stacked Chart)

Shows the proportion of screen time contributed by each device type within age groups.
Smartphones and TVs contribute heavily to total daily hours.

4. Average Screen Time by Age–Device Cohort (Bar Chart)

Ranks age-device cohorts by average daily screen time.
16–18 Smartphone cohort is the highest at around 4.5+ hours/day.

5. Location-Based Segment Analysis (Urban vs Rural)

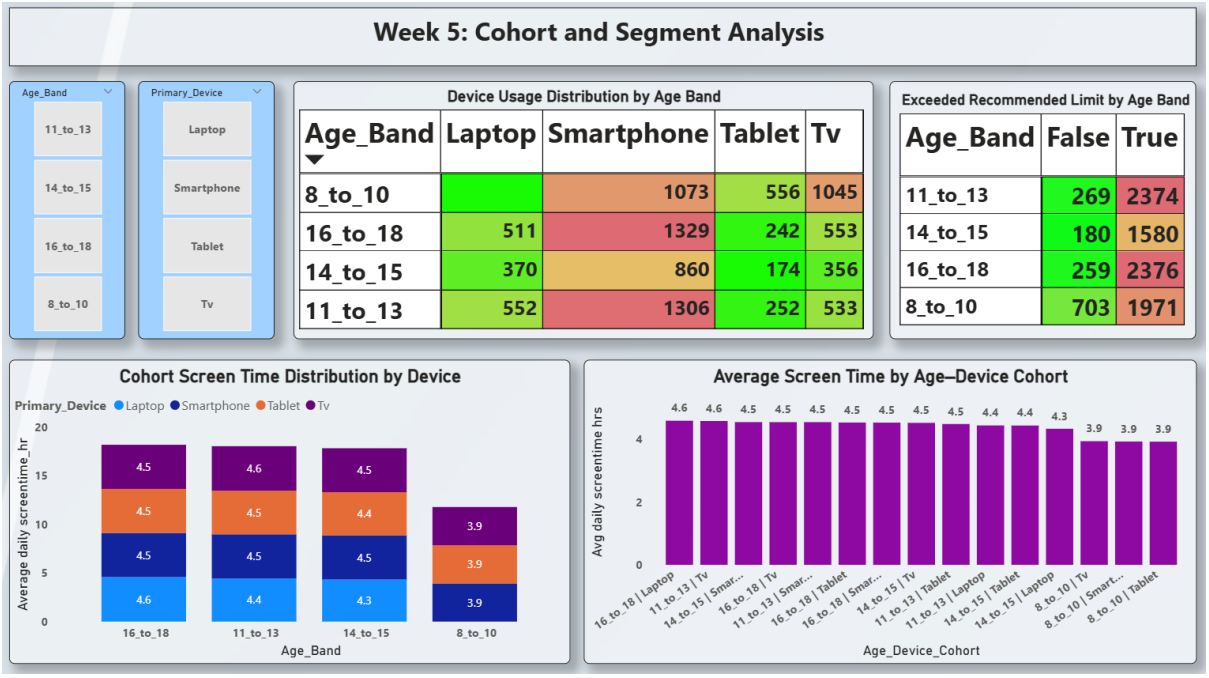
Compares average daily screen time across urban and rural students.
Urban students use screens slightly more than rural students.

6. Activity Share by Age Band (Education vs Recreation)

Shows the percentage of educational vs recreational usage.
Recreational usage dominates (~70%) across all age groups.

7. Risk Cohorts (Pie Chart)

Breaks users into Low, Moderate, and High Risk groups.
Moderate Risk is the majority (~68%).



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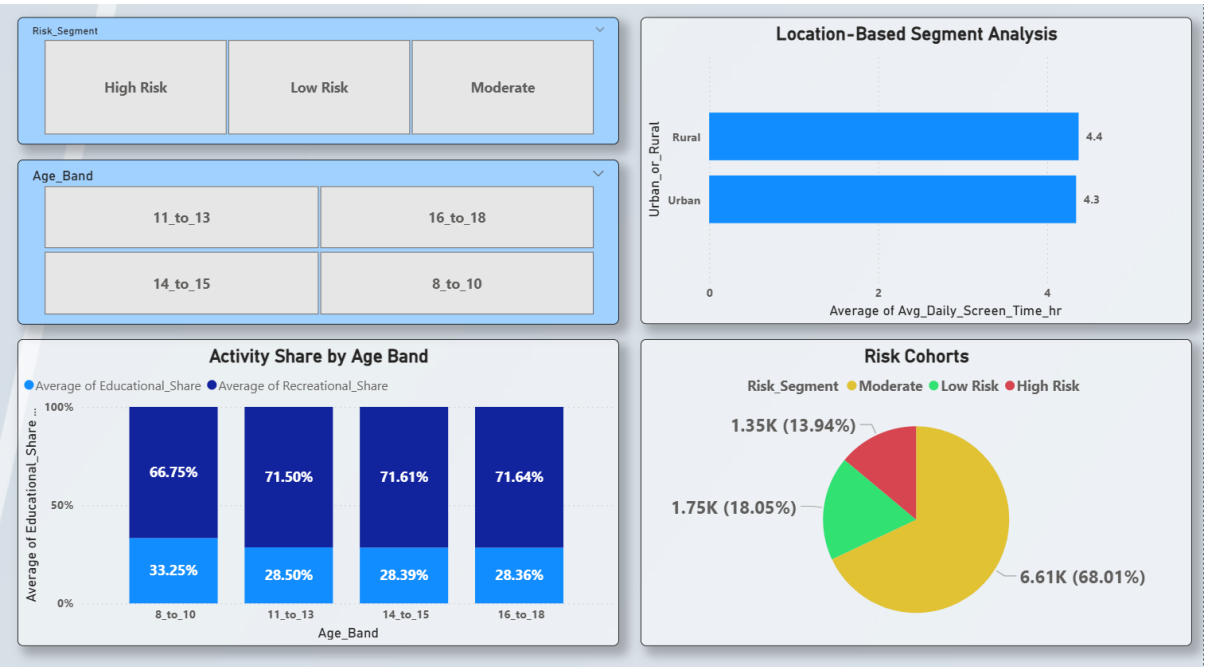

5. Key Insights from Week 5

- Smartphone usage dominates across all age groups
- 16–18 age group has the highest screen exposure
- Exceeded-limit violations are highest in 11–13 and 16–18
- Recreational screen time dominates over educational usage
- Urban students show slightly higher screen usage
- Majority of students fall in the **moderate-risk** segment

WEEK 6: HABIT PATTERN ANALYSIS

1. Overview

Since the dataset does not contain calendar dates, Week 6 focused on analyzing **habit-based patterns**, such as weekday vs weekend usage, device dependency habits, and risk segmentation. The aim was to understand repeating behavioral patterns and weekly screen time cycles.

2. Objectives

- Compare weekday and weekend screen usage
- Understand device-based habits across age groups
- Analyze how habits differ across gender and location
- Identify high-risk habitual users

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- Summarize segment-wise habit drivers

3. Tasks Performed

- Analyzed weekday and weekend screen time using derived columns
- Built habit pattern visuals for age, gender, and location
- Created heatmap for usage intensity across age groups
- Generated risk segmentation based on daily habits
- Compared device habits across age groups
- Summarized habit drivers like age, device access, and recreational patterns

4. Visuals & Explanation

1. Weekday vs Weekend Screen Time by Age Band (Bar Chart)

Shows screen time on weekdays vs weekends for each age group.
All age bands show clear weekend spikes.

2. Device Usage Pattern Across Age Bands (Stacked Chart)

Shows count of devices used by age groups.
Younger children prefer tablets, older ones prefer smartphones and laptops.

3. Screen Time Usage Level Distribution by Age Band (Heatmap)

Shows Low, Moderate, High, Very High, and Extreme usage levels.
11–13 and 16–18 have the highest number of high-usage students.

4. Habit Risk Segmentation (Pie Chart)

Displays how many students fall into Low, Moderate, and High risk categories.
Moderate risk is the largest category (68%).

5. Screen Time Pattern by Gender (Bar Chart)

Shows weekday and weekend screen habits for male and female students.
Both increase screen time on weekends; males have a slightly higher spike.

6. Screen Time Pattern: Urban vs Rural (Bar Chart)

Compares urban and rural students' weekday/weekend usage.
Urban students show higher weekend screen time.

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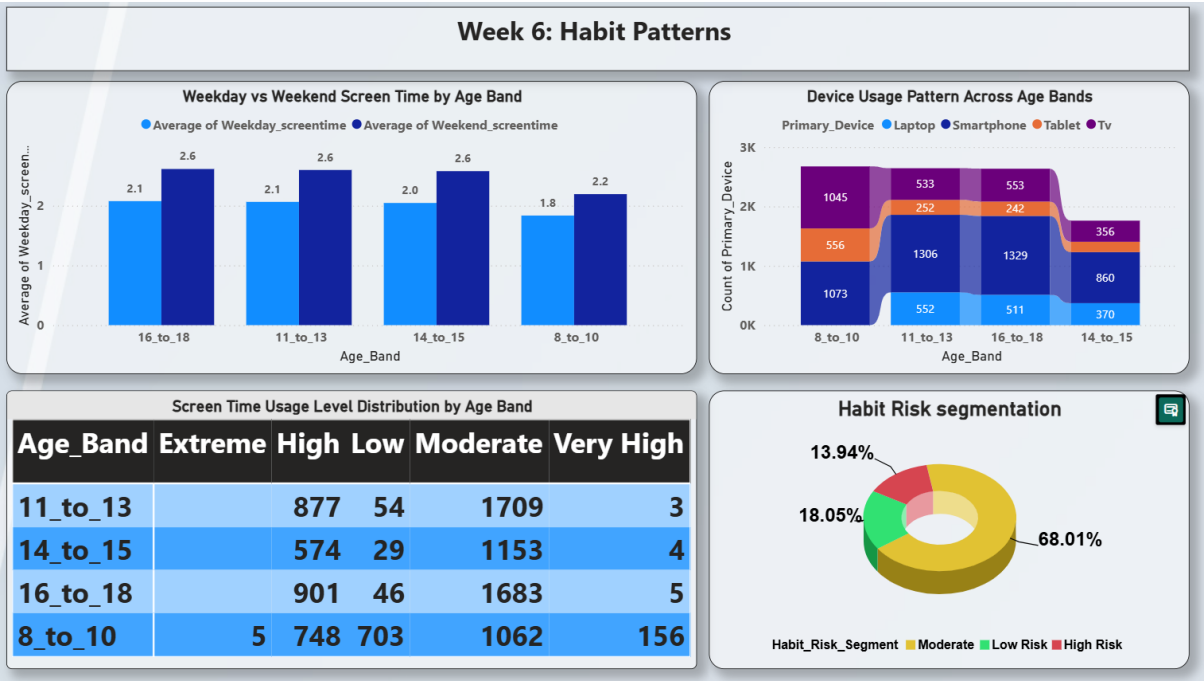
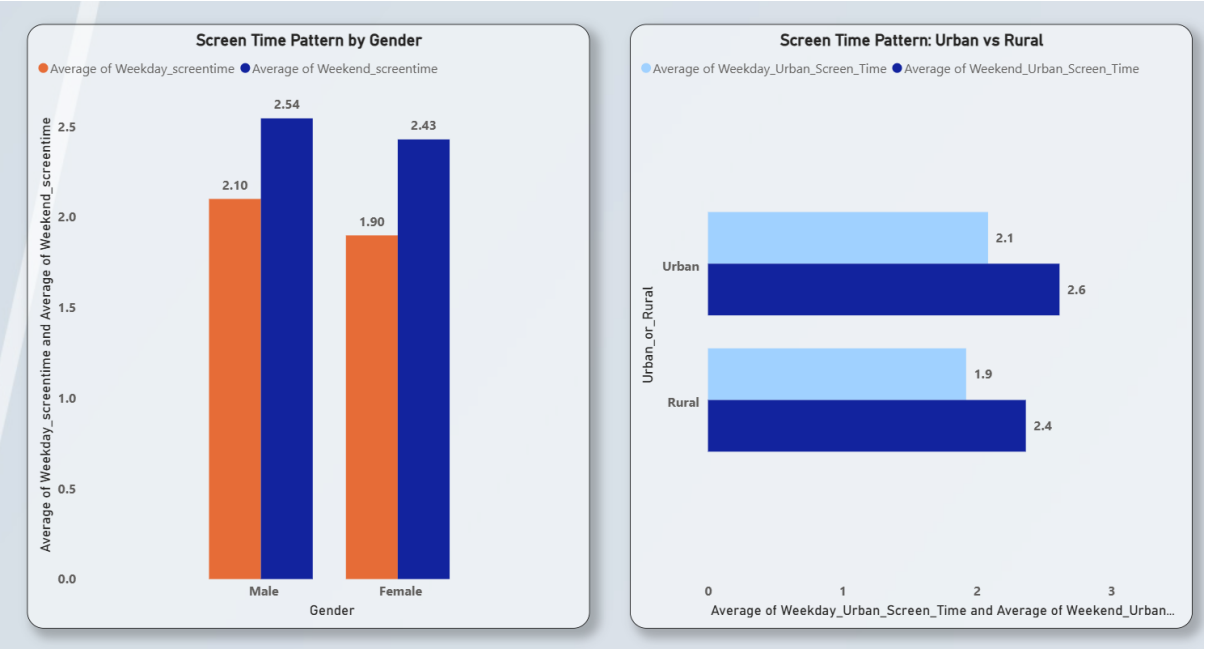


Age_Band	Extreme	High	Low	Moderate	Very High
11_to_13		877	54	1709	3
14_to_15		574	29	1153	4
16_to_18		901	46	1683	5
8_to_10	5	748	703	1062	156



5. Key Insights from Week 6

- Weekend screen time spikes are consistent for all demographics
- Older age groups (14–18) maintain high screen hours throughout the week
- Tablet usage is higher among younger children (8–10)
- Smartphone dependency increases sharply in older age groups
- Urban students have higher weekend screen time compared to rural
- High-risk users mostly fall in the older age bands
- Recreational habits strongly influence week/weekend usage patterns

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Conclusion (Week 5 & Week 6)

Weeks 5 and 6 together provide a strong understanding of both **cohort-based** and **habit-based** screen behaviors.
The analysis shows that:

- **Smartphone + Teenager cohorts** are consistently the highest consumers of digital screen time.
- **Weekend spikes and recreational usage** form the core reasons behind excessive screen exposure.
- **11–13 and 16–18** age groups require the most attention as they exceed recommended limits frequently.
- Device dependency and weekly usage patterns indicate long-term behavioral habits.

These insights can help educators, parents, and policymakers design more effective digital wellness strategies for children.