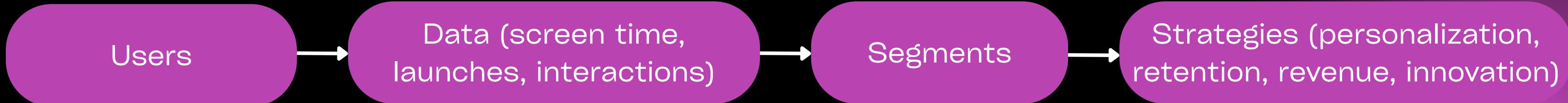


User Segmentation Insights: Driving Personalization in the Digital Era

Presented By:
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Introduction & Importance of User Segmentation

- Traditional segmentation (age, gender, income) is limited in digital spaces.
- Behavioral segmentation focuses on what users actually do → screen time, app launches, interactions, categories.
- Delivers personalized experiences (e.g., Netflix recommendations, Spotify playlists).
- Improves user retention & loyalty by identifying at-risk segments and re-engaging them.
- Helps in revenue optimization by targeting high-value groups (e.g., heavy spenders in gaming).
- Guides product innovation as usage trends reveal what features to prioritize.



Behavioral Segmentation in Action



SPOTIFY

Segments users into casual listeners, playlist curators, premium subscribers, and podcast-driven users. This allows Spotify to create tailored playlists and personalized marketing campaigns. It helps boost engagement and encourage free users to upgrade to premium.



NETFLIX

Groups viewers into binge-watchers, genre enthusiasts, and occasional users. By analyzing hours watched, device preferences, and genre diversity, Netflix powers its recommendation engine (responsible for 80%+ of streamed content).



AMAZON

Differentiates between deal-seekers, frequent buyers, and Prime members. Deal-seekers are targeted with discounts and lightning sales, while Prime members get early access and loyalty benefits.



GAMING APPS

Identify casual gamers, competitive players, and “whales” (users who spend heavily on in-app purchases). Casual gamers are engaged with free rewards, competitive players with tournaments, and whales with exclusive premium offers.

Critique & Business Impact of Segmentation

STRENGTHS	Provides clear, actionable clusters for businesses.	Enables personalized marketing campaigns and boosts retention.	Informs product innovation by highlighting usage trends.
LIMITATIONS	Dashboards may oversimplify complex user behaviors.	User habits are dynamic and evolve over time, making clusters unstable.	Segmentation often ignores context (high screen time ≠ satisfaction).
ETHICAL CONSIDERATIONS	Must protect user privacy and comply with data regulations.	Avoid exploitative practices like addictive design or manipulative nudges.	Ensure transparency in how user data is analyzed and applied.
IMPACT	When applied responsibly, segmentation improves ROI, strengthens customer loyalty, and drives sustainable growth.		

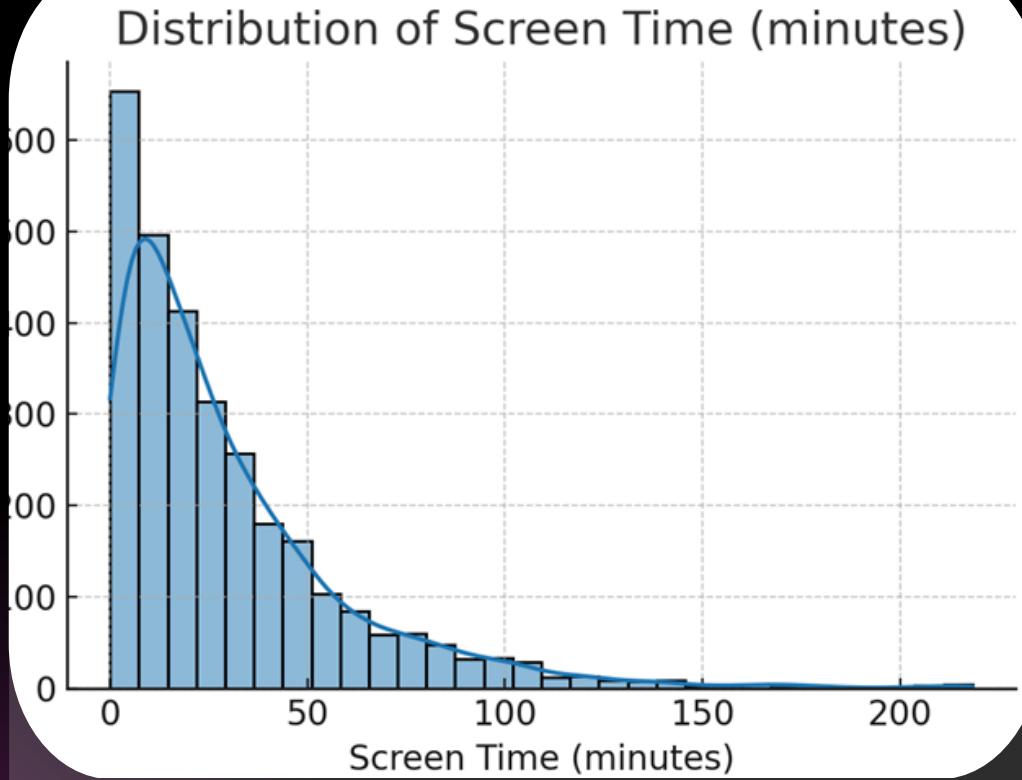
Dataset Identification & Description

The dataset used for segmentation is `segmented_users_clean.csv`, sourced from trusted open repositories (Kaggle/Google Dataset Search). It was cleaned, normalized, and structured at the user level, making it suitable for clustering and dashboard visualization. Each row represents a unique user, while the columns capture key engagement metrics such as screen time, launches, interactions, and dominant app category.

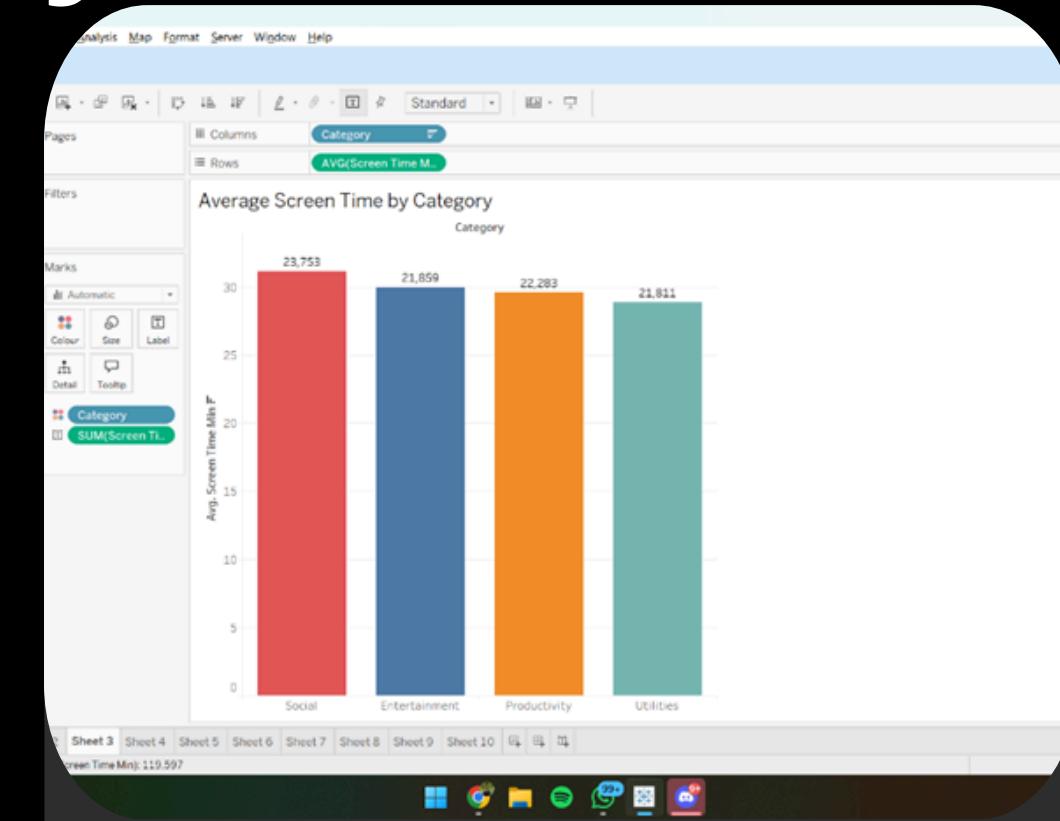
Key Details:

- Source & Origin: Public, anonymized dataset → refined through EDA
- Structure: User ID + behavioral metrics (screen time, launches, interactions, category)
- Preprocessing: Missing values removed, normalization applied, categorical encoding done
- Purpose: To segment users into clusters and generate actionable insights for personalization, retention, and product strategy
- Limitations: Focuses only on behavioral data (no demographics/psychographics); averages reduce visibility into temporal behavior

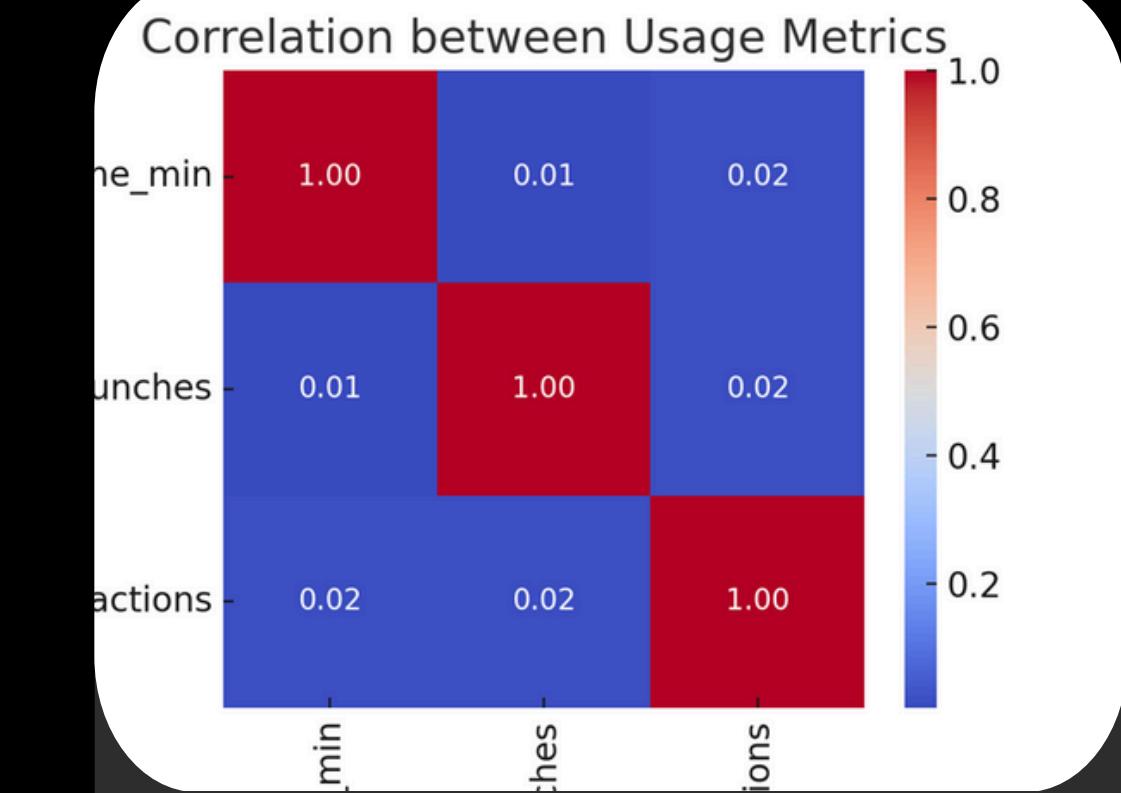
Exploratory Data Analysis (EDA)



Screen Time Insights:
Most users spend 20–40 minutes daily, while heavy users exceed 200 minutes
→ shows a right-skewed distribution.



Category Usage:
Social & Entertainment dominate time, Productivity frequent launches but less retention.



Correlation Findings:
Strong positive between Screen Time & Interactions ($r \approx 0.70$); moderate with Launches ($r \approx 0.55$).

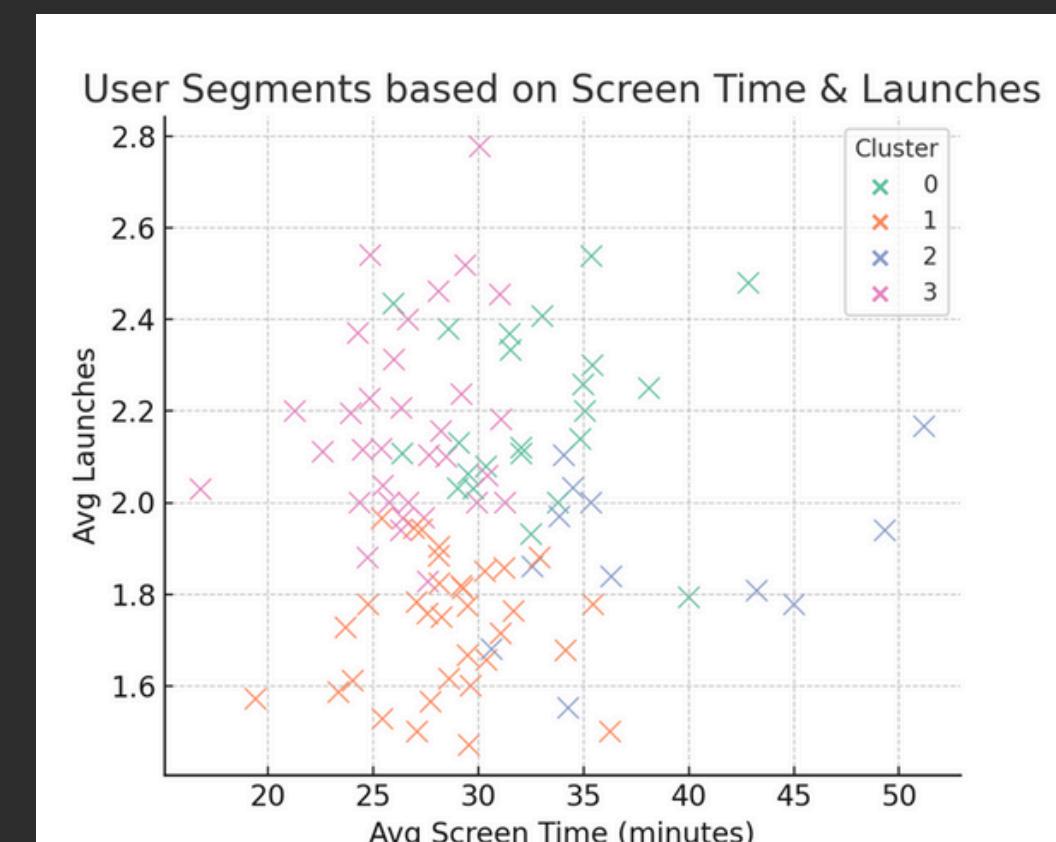
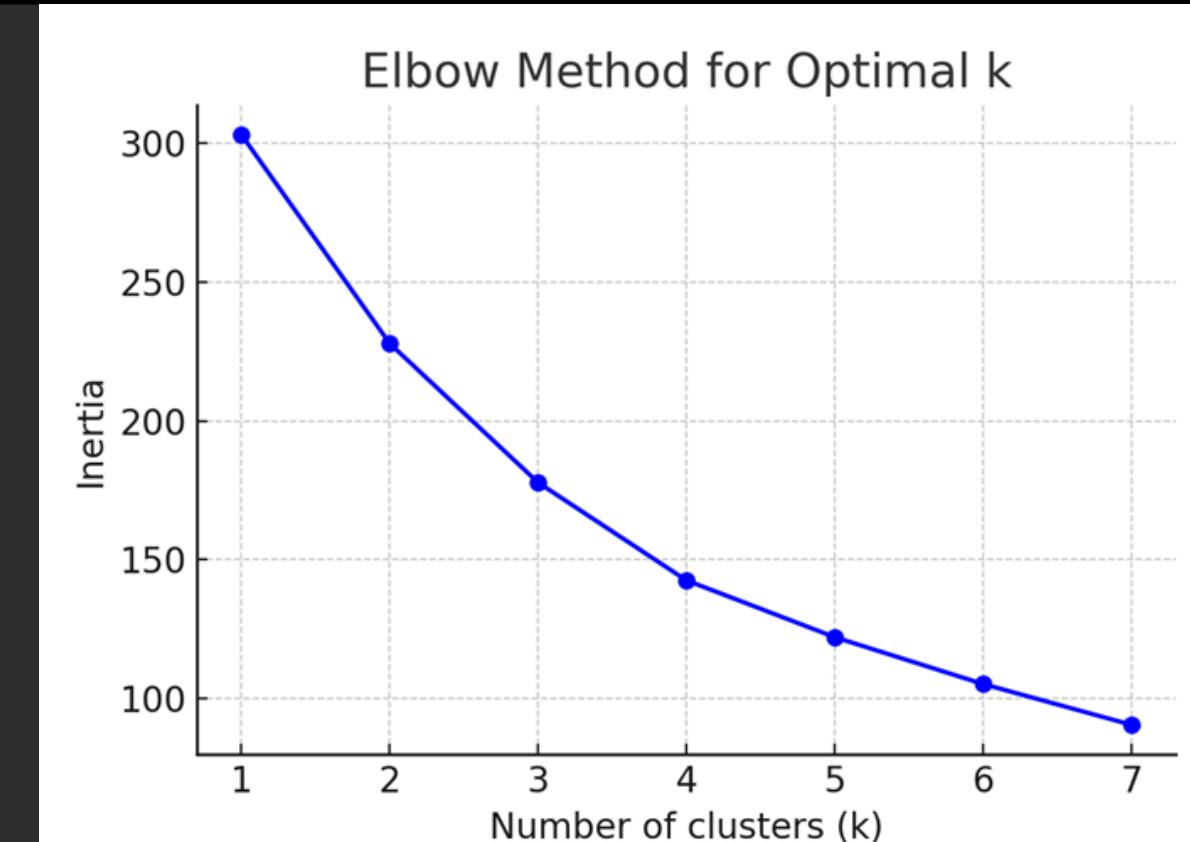
Segmentation Results (K-Means Clustering)

Approach:

Used K-Means ($k=4$) clusters confirmed via Elbow Method.

Cluster Profiles:

- Socially Engaged Users (~33 mins, highest interactions) → Social/comm. heavy.
- Productivity + Social Hybrids (~28 mins, balanced use) → Mixed focus.
- Entertainment-Heavy (~38 mins, longest time, fewer interactions) → Passive consumers.
- Utility-First Light Users (~27 mins, practical focus) → Task-driven.
- Chart: Scatter Plot – Segmentation (Screen Time vs Launches, color-coded by Cluster)



Dashboard Layout & Design

Top Section (Overview):

- Histogram – Screen Time Distribution
- Bar Chart – Avg. Screen Time by Category

Middle Section (Segmentation):

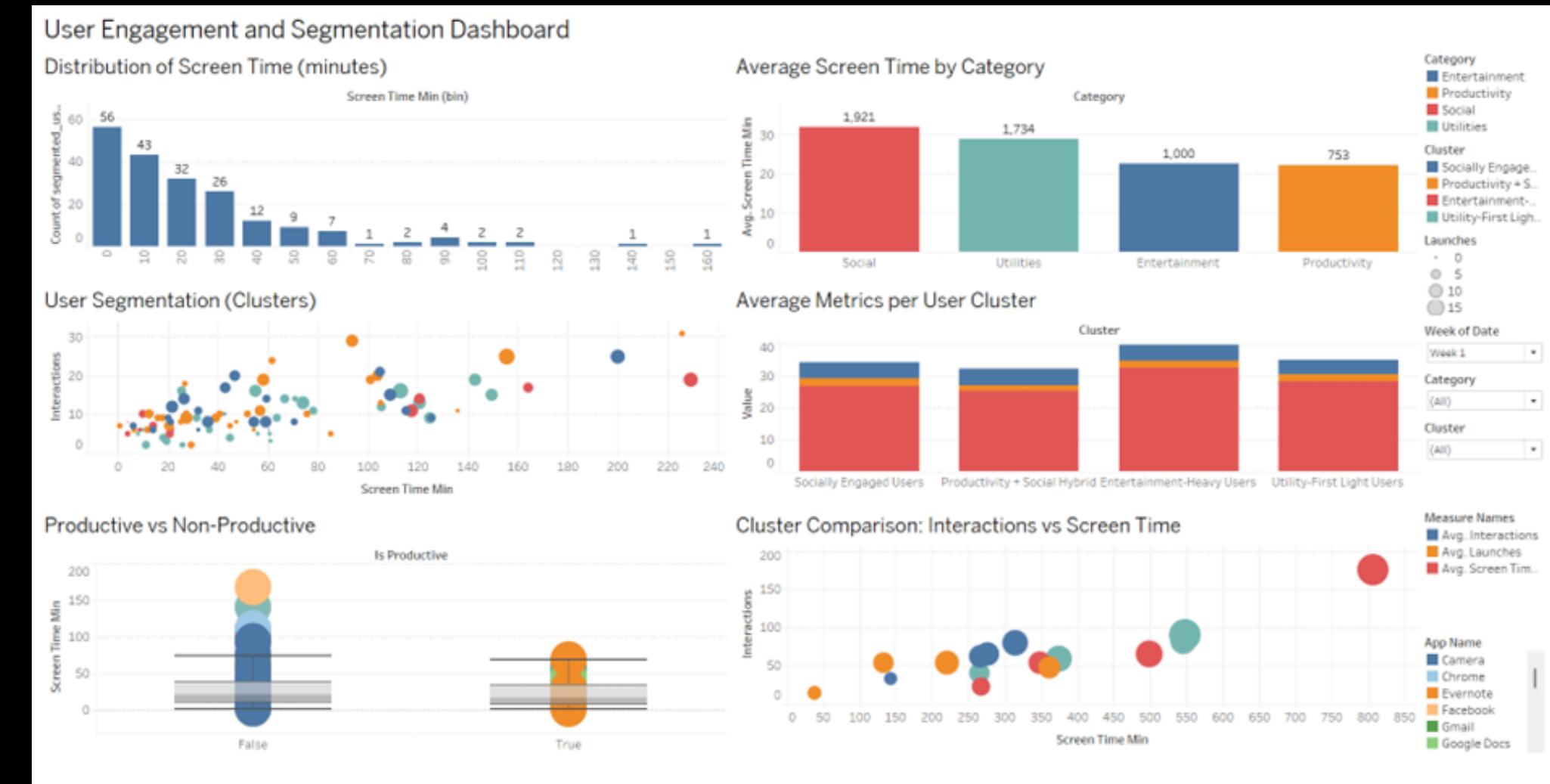
- Scatter Plot – User Clusters
- Bar Chart – Average Metrics per Cluster (screen time, launches, interactions)

Bottom Section (Detailed Insights):

- Box Plot – Productive vs Non-Productive App Usage
- Bubble Chart – Cluster Comparison (Screen Time vs Interactions vs Launches)

Design Principles:

- Clarity, consistency, interactivity, storytelling flow from general → detailed insights.



Business Impact & Ethical Considerations



Business Applicability:

- Social Users → Targeted ad campaigns
- Entertainment-Heavy → Premium subscriptions
- Productivity Hybrids → Gamification & collaboration tools
- Utility-First → Onboarding nudges & cross-promotions



Ethical Considerations:

- Dataset anonymized, visuals kept accurate
- No manipulative charts (e.g., distorted axes)
- Focus on positive engagement not addictive design



Business Problem

Business Problem

- Low User Retention: Nearly 80% of users abandon an app within the first month → high acquisition costs but low lifetime value.
- Inefficient Monetization: Users contribute unequally to revenue, yet platforms often apply one-size-fits-all strategies (same ads, same notifications, same pricing).

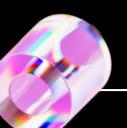
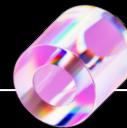
Impact

- Marketing campaigns underperform due to poor targeting.
- Product innovations don't resonate equally across users.
- Engagement stagnates → increasing churn and revenue loss.

Core Challenge

How can mobile app companies boost retention and revenue by tailoring strategies to distinct user segments, identified through actual app usage behavior?

Segment-Based Insights



Socially Engaged Users

- Most interactive → high responsiveness to features.
- Best suited for targeted ads & viral strategies.

Productivity + Social Hybrids

- Dual intent users, steady engagement but no standout driver.
- Opportunity for gamification & workflow-based features

Entertainment-Heavy Users

- Highest screen time, but passive → ads ineffective.
- Better monetization through subscriptions & bundled content.

Utility-First Light Users

- Practical, functional users with high churn risk.
- Require onboarding support, nudges & contextual reminders.

Behavioral diversity across segments → a one-size-fits-all strategy fails.

Strategic Recommendations

Retention Challenge (Light Users & Hybrids)	Monetization (Entertainment-Heavy Users)	Advertising (Socially Engaged Users)	Feature Innovation (Productivity + Social Hybrids)
<ul style="list-style-type: none">• Interactive onboarding campaigns.• Smart reminders & contextual notifications.• Cross-promotion of utility bundles + loyalty rewards.	<ul style="list-style-type: none">• Personalized subscription offers (music + video + gaming).• Free trials with tiered premium upgrades.• Loyalty perks (ad-free experiences)	<ul style="list-style-type: none">• Referral programs & social-sharing challenges.• Interactive ad campaigns within social features.• Test optimized ad frequency/formats.	<ul style="list-style-type: none">• Gamified productivity tools (badges, streaks, leaderboards).• Collaborative task-sharing features.• Dashboards to track productivity progress.

THANK
YOU

