



DATA ANALYSIS & INSIGHTS REPORT

Exploring user, campaign, and engagement trends
through Python & Power BI

Date: October 08, 2025

Presenter: Lakshman Atmakuri



DATA CLEANING & MERGING

(from Jupyter Notebook)

01

Convert date columns

```
1 users['signup_date'] = pd.to_datetime(users['signup_date'])
2 campaigns['created_date'] = pd.to_datetime(campaigns['created_date'])
3 campaigns['published_date'] = pd.to_datetime(campaigns['published_date'])
4 usage['week_start_date'] = pd.to_datetime(usage['week_start_date'])
5 usage['last_active_date'] = pd.to_datetime(usage['last_active_date'])
```

Fill missing categorical values

```
1 users['country'] = users['country'].fillna('Unknown')
2 users['device'] = users['device'].fillna('Unknown')
3 users['referral_code'] = users['referral_code'].fillna('No')
4 campaigns['experience_type'] = campaigns['experience_type'].fillna('Unknown')
```

Fill missing numeric values

```
1 campaigns['credits_used'] = campaigns['credits_used'].fillna(0)
2 usage['sessions'] = usage['sessions'].fillna(usage['sessions'].mean())
3 usage['avg_session_time'] = usage['avg_session_time'].fillna(usage['avg_session_time'].mean())
4 usage['engagement_score'] = usage['engagement_score'].fillna(usage['engagement_score'].mean())
```

02

- Checked for missing values across all datasets (users, campaigns, usage_metrics).
- Handled missing values using logical replacements:
 - Filled published_date with “Not Published”.
 - Replaced missing last_active_date with signup_date.

03

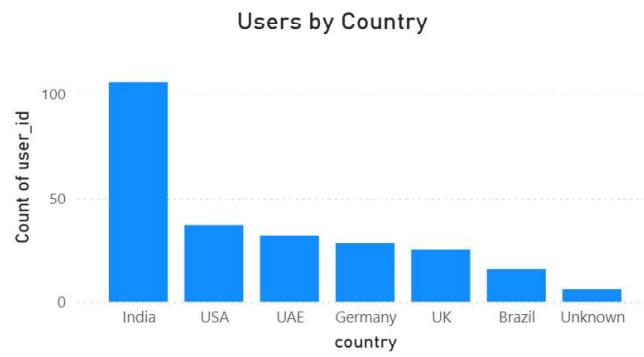
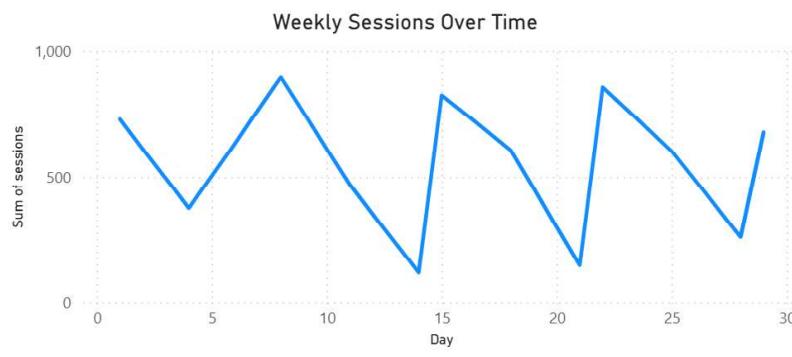
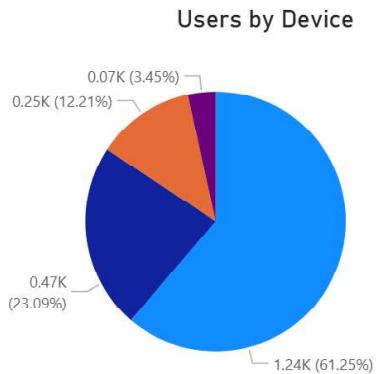
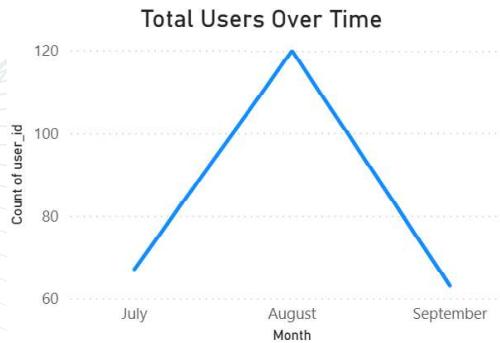
```
1 # Merge usage with users for device/country/referral info
2 usage_users = usage.merge(users, on='user_id', how='left')
3 print("Merged Usage + Users Sample:")
4 display(usage_users.head(2))
5
6 # Merge campaigns with users
7 campaigns_users = campaigns.merge(users, on='user_id', how='left')
8 print("Merged Campaigns + Users Sample:")
9 display(campaigns_users.head(2))
10
11 # Merge campaigns + usage for engagement analysis
12 campaign_usage = campaigns.merge(usage, on='user_id', how='left')
13
14 print("Merged Campaigns + Usage Sample:")
15 display(campaign_usage.head(2))
16
```

04

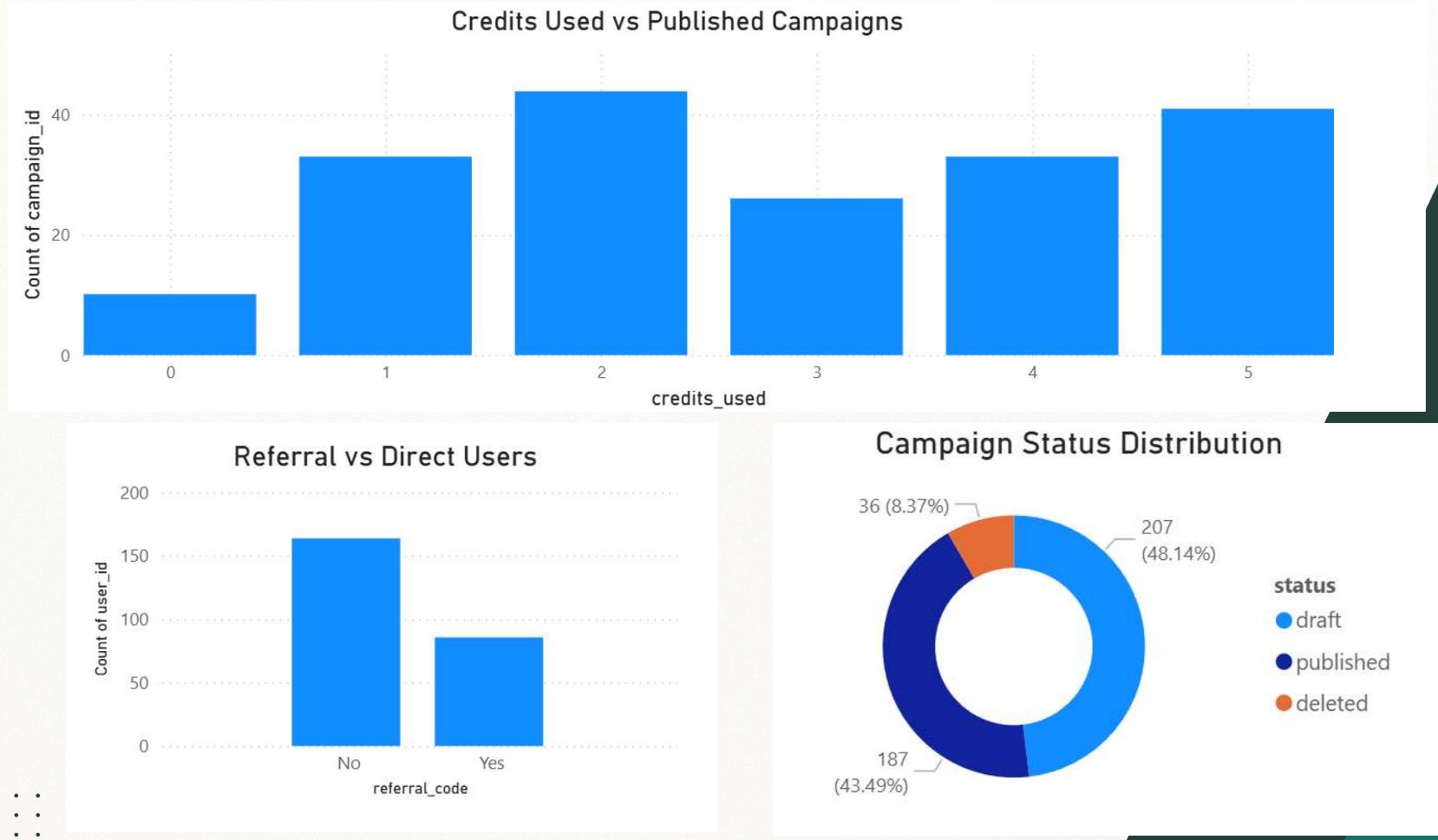
- Merged datasets using user_id to create:
 - usage_users → usage + user data
 - campaigns_users → campaigns + user data
 - campaign_usage → campaigns + usage data
- Exported cleaned datasets to CSV for Power BI visualization.

EXPLORATORY ANALYSIS

(from power bi)

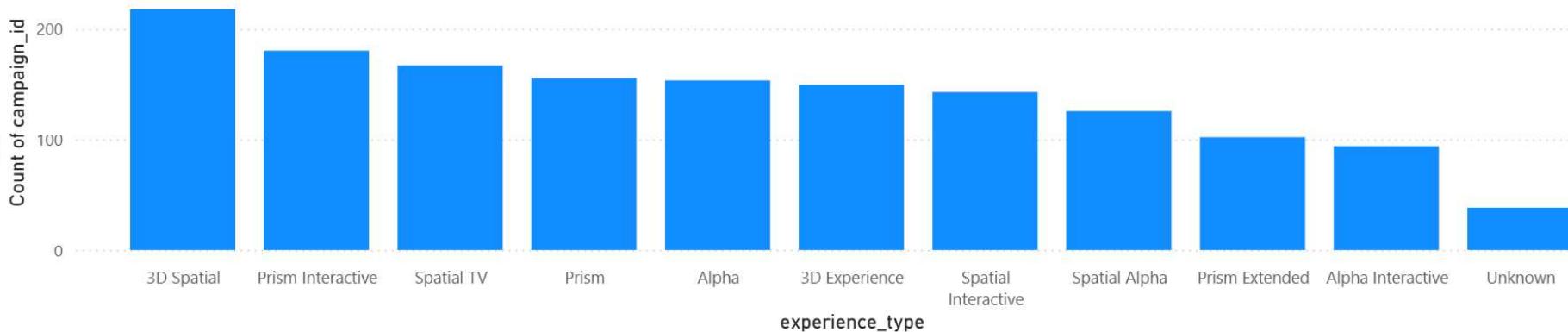


BEHAVIORAL INSIGHTS

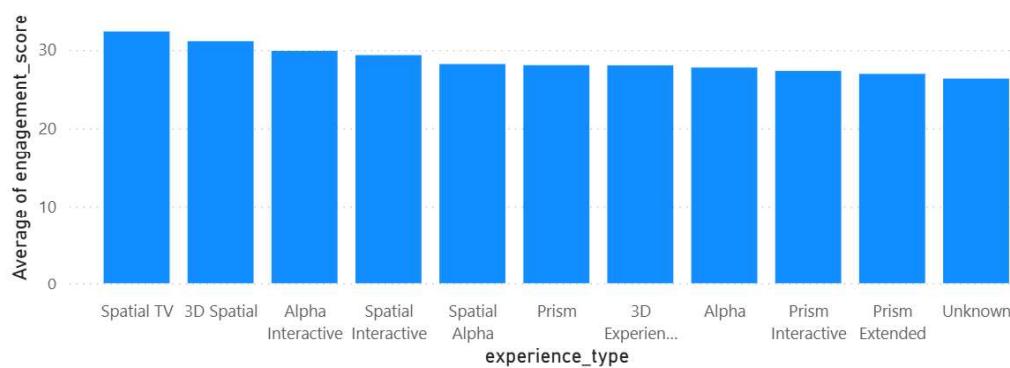


EXPERIENCE & PERFORMANCE PATTERNS

Published Campaigns by Experience Type



Engagement by Experience Type



Engagement by Country & Device

country	Android	iOS	Unknown	Web	Total
Brazil	28.27	30.60	19.22	20.46	26.83
Germany	30.31	26.36	29.89	10.67	27.98
India	29.25	30.62	26.98	31.14	29.68
UAE	24.48	26.70		19.69	24.83
UK	25.29	31.05		24.39	26.61
Unknown	21.84	14.65		25.01	20.71
USA	28.86	28.29	37.92	30.92	29.46
Total	27.93	28.44	28.61	28.66	28.16

VISUALIZATION & STORYTELLING

Total Users

250

Published Campaigns

187

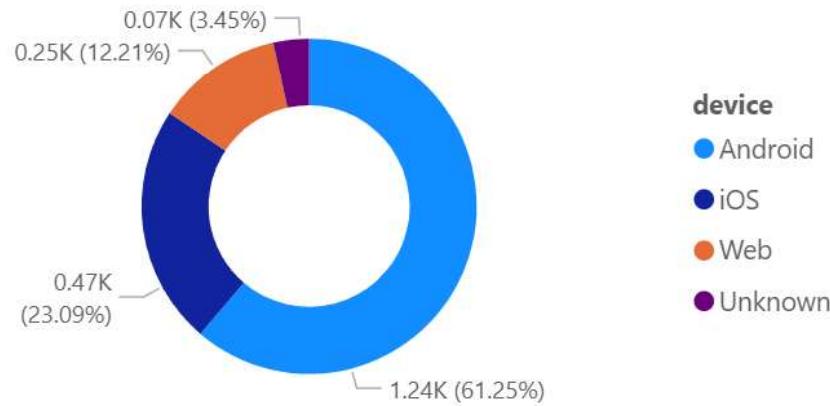
Average Engagement Score

28.16

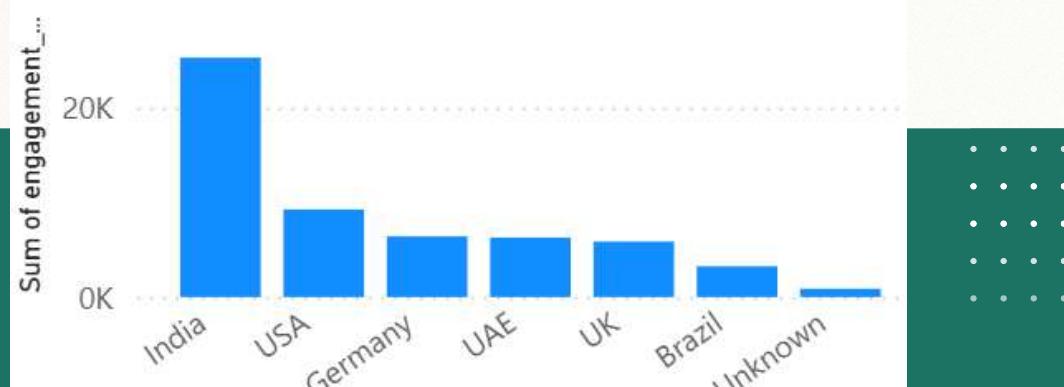
Average Session Time

7.98

Count of user_id by device



Country vs Engagement





INSIGHTS & RECOMMENDATIONS

► Insights:

- 📈 Steady user growth observed, with engagement peaking in weeks following signup.
- 🌐 India and the USA show the highest engagement rates across devices.
- 📱 Android users contribute to higher session counts, while iOS users show stronger average engagement scores.
- 🎬 Published campaigns correlate strongly with higher engagement and session frequency.
- 💳 Credits used and experience type influence publishing frequency and user retention.

► Recommendations

- 🎯 Enhance onboarding flow to sustain engagement beyond early active weeks.
- 📢 Focus marketing efforts on high-potential regions (India, USA) and optimize device-specific experiences.
- 🧠 Encourage campaign publishing via incentives or simplified creation tools.
- ⚙️ Personalize engagement strategy based on experience type and credits usage behavior.
- 📊 Continuously monitor KPIs (sessions, engagement score, published rate) through Power BI dashboards for data-driven decisions.

THANK YOU!

