Cover Slide

- Title: *YouTube Performance & Engagement Intelligence Dashboard*
- Subtitle: *Data-Driven Insights for Content Growth & Audience Engagement*
- Name: **Tanmay Sharma**
- Date: 24/08/2025
- Role: Data/Business Analyst

Project Overview

•**Objective:** Analyse YouTube channel data to track performance & engagement.

•**Key Questions:**

- Which videos perform the best?
- What drives engagement (likes, comments, shares)?
- How is subscriber growth trending?

•**Tech Stack:** MySQL + Python + Power BI

Data Architecture:

- API → CSV → MySQL → Power BI → Dashboard
- dataset used (videos, channels, comments)

SQL Work

- Queries

```sql
-- Average comments per video per channel
select count(*) as avg_comments,video_id
from comments s
Join comments s on v.comment_id = s.comment_id
join channels c on v.channel_id = c.channel_id
group by avg_comments
order by avg_comments;


-- Best Posting Times
-- Extract best posting day
SELECT DAYNAME(published_at) AS day_of_week,
       COUNT(*) AS total_videos,
       SUM(views) AS total_views
FROM videos
GROUP BY day_of_week
ORDER BY total_views DESC;
```

```sql
-- Subscriber growth per channel
SELECT title, subscribers, views, video_count
FROM channels
ORDER BY subscribers DESC;




-- Recent trending videos (last 30 days, by views)
-- Top 10 recent trending videos (last 30 days, by views)
SELECT
    video_id,
    title,
    published_at,
    views
FROM videos
WHERE published_at >= DATE_SUB(CURRENT_DATE, INTERVAL 30 DAY)
ORDER BY views DESC
LIMIT 10;
```

Why SQL?

- Raw YouTube dataset had multiple tables (videos, comments, channels).
- Needed to **join, clean, and aggregate data** before sending it to Power BI.
- SQL helped in:
  - Filtering recent videos
  - Calculating engagement metrics
  - Ranking top-performing content

Power BI Dashboard:

"YouTube Content Intelligence Dashboard"
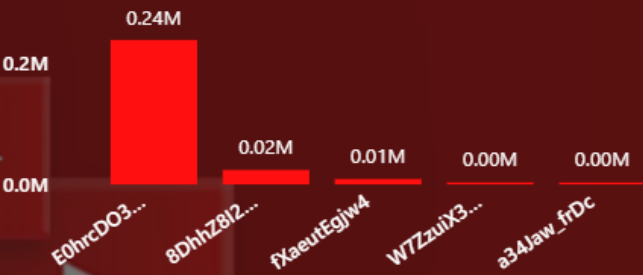
Total Likes , Comments, Views, Subscribers

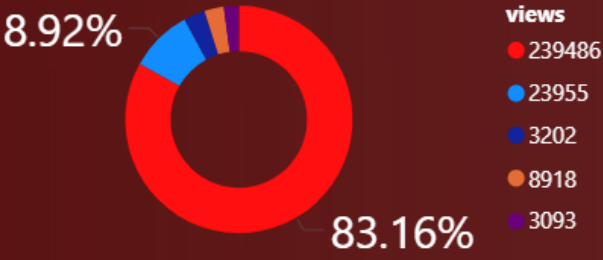| 3K	287	403M	3M

Engagement Growth%

2.46
Goal: 1 (+145.72%)
22-08-2025 04:00:01

Top Performing Videos

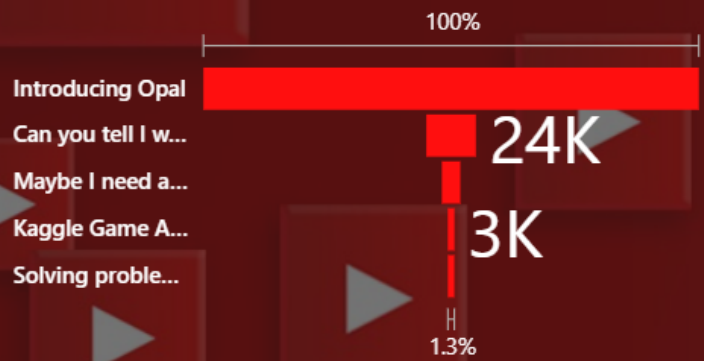- 0.24M
- 0.2M
- 0.02M
- 0.01M
- 0.00M
- 0.00M
- 0.0M

E0hrcDO3... 8DhhZ8l2... fXaeutEgjw4 W7ZzuiX3... a34Jaw_frDc

Engagement Type Breakdown"

8.92%

83.16%

views
- 239486
- 23955
- 3202
- 8918
- 3093

Engagement Analysis

●73 ●94 ●104 ●305 ●2844

4

2

0.0M   0.1M   0.2M
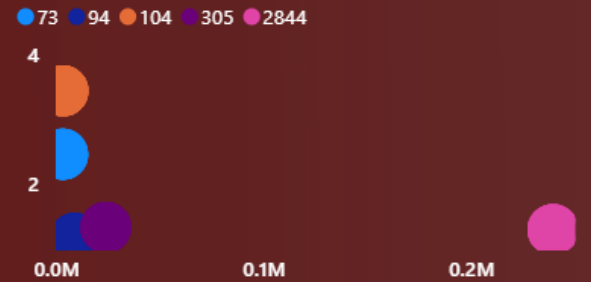
Beyond Views: Engagement Drivers

100%

Introducing Opal
Can you tell I w...
Maybe I need a...
Kaggle Game A...
Solving proble...

24K

3K

1.3%

Top Commented Videos

Introducing O...	256
Can you tell I ...	13
Maybe I need...	9
Kaggle Game ...	6
Solving probl...	3

0   100   200
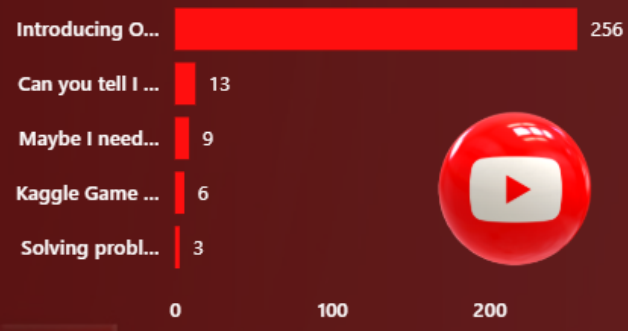
Engagement Drive by Date

18-08-2025 19:17:20	21-08-2025 16:00:51
20-08-2025 04:00:09	22-08-2025 04:00:01
21-08-2025 04:00:46	

KPI Highlights
- Total Views
- Total Likes
- Total Subscribers
- Total Comments

| Total Likes , Comments, Views,Subscribers			
3K	287	403M	3M

Engagement Analysis
- **Donut Chart**: % Likes vs % Views vs % Comment
- **Funnel Chart**: Engagement Funnel by video (likes, comments, shares)

Engagement Type Breakdown"

8.92%

83.16%

views
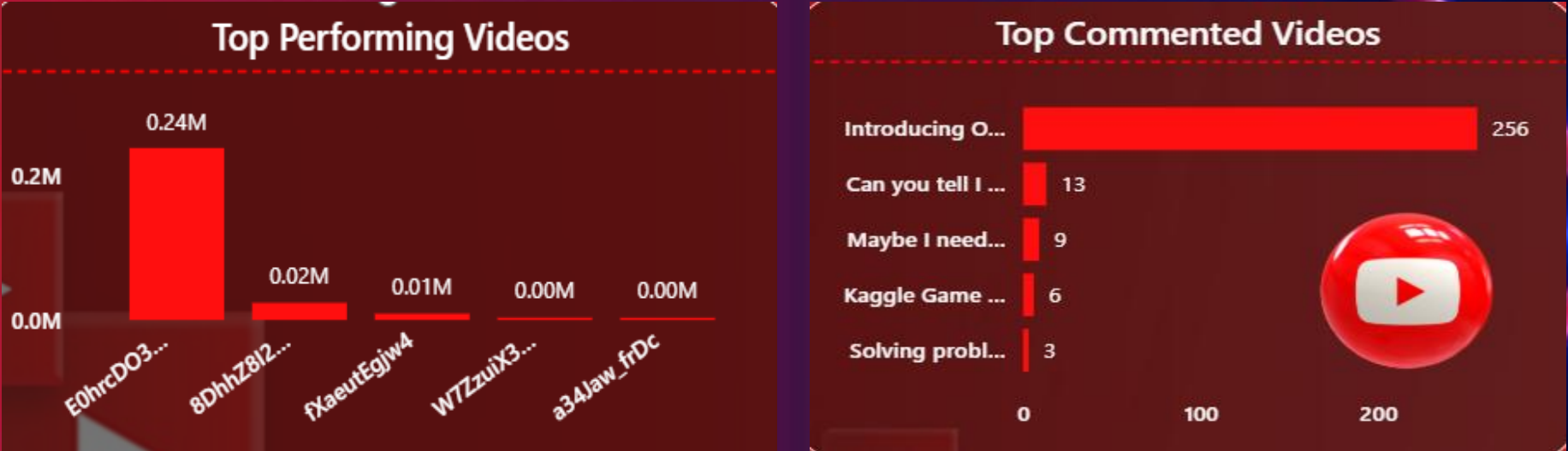- 239486
- 23955
- 3202
- 8918
- 3093
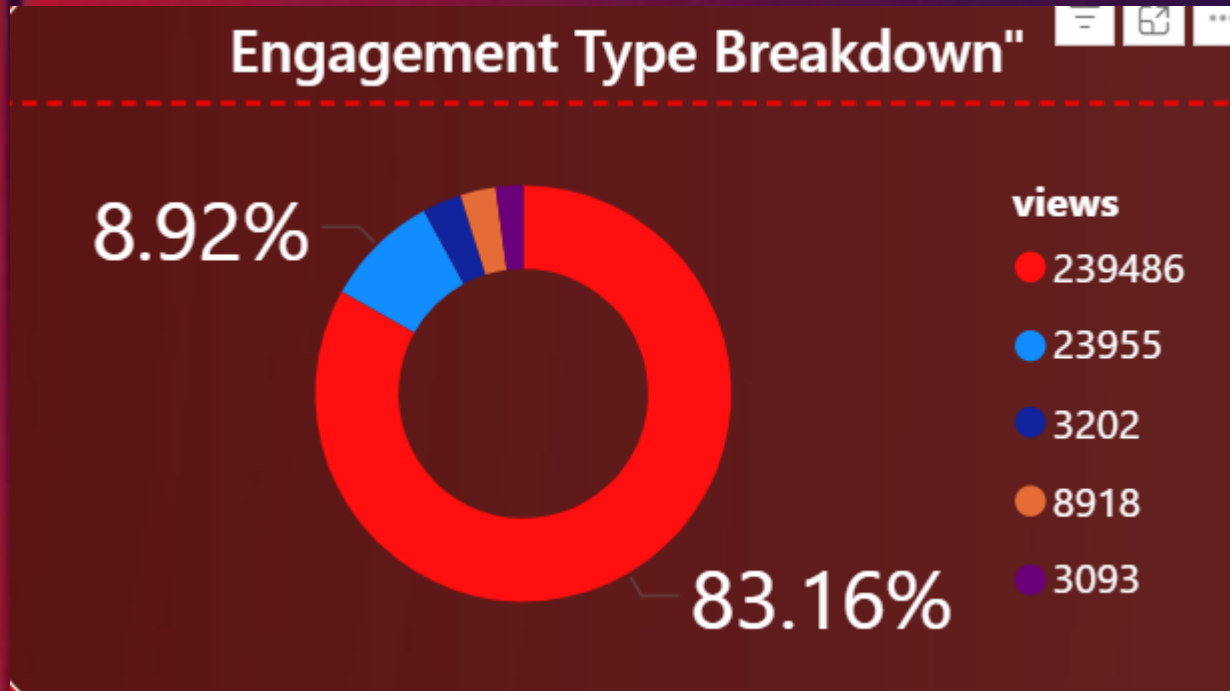
Engagement Analysis

- **Donut Chart**: % Likes vs % Views vs % Comment
- **Funnel Chart**: Engagement Funnel by video (likes, comments, shares)
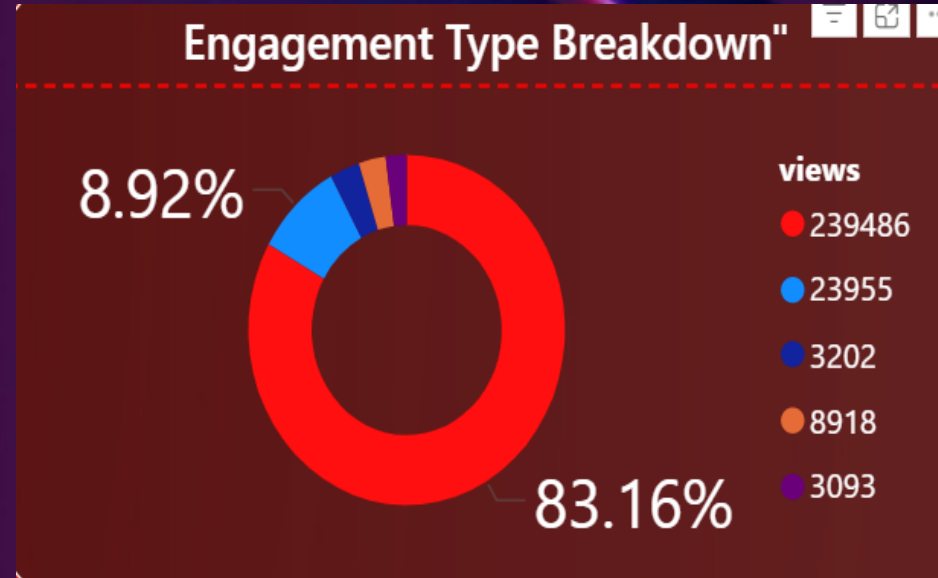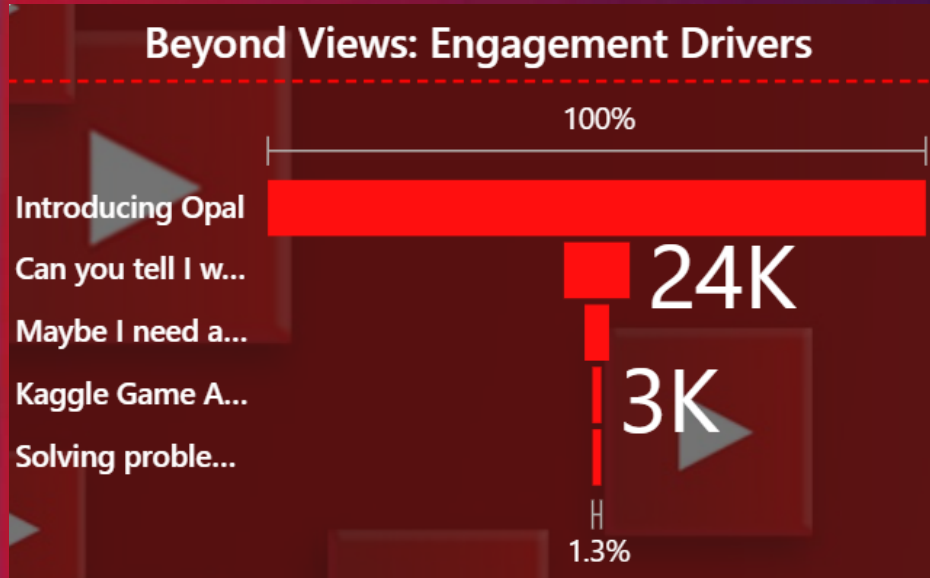
Audience Insights

- Top Engaged Videos vs Low Engagement Videos (Bar Chart)

Actionable Insights

- "Videos with higher comments drive more subscribers"
- "Engagement ratio shows opportunities for shares"

Learnings & Challenges

- What you learned (SQL + Power BI synergy, data modeling)
- Challenges (no sentiment column, had to create engagement alternative visuals)

Conclusion

- Dashboard helps creators **track performance, grow subscribers, & optimize content strategy**
- Future Scope: Sentiment Analysis (NLP), Predictive Analytics (views prediction)

"Why These Tools Were Preferred"

- **MySQL Workbench**
  - Easy GUI for SQL queries & schema design
  - Widely used in industry for analytics
  - Lightweight & faster setup compared to PostgreSQL for this use-case
  - Good integration with Power BI
- **Power BI**
  - Industry-standard BI tool
  - Rich visualization library (cards, KPIs, donut, heatmaps, funnels)
  - Easy DAX calculations for KPIs (Engagement %, Growth %)
  - Direct SQL + CSV integration
- **Python**
  - Ideal for preprocessing (comments cleaning, word cloud, sentiment)
  - Can extend analysis beyond SQL/Power BI (ML models for prediction)
  - Open-source ecosystem (pandas, matplotlib, (Natural Language Toolkit), etc.)

Thank you

LinkedIn: https://www.linkedin.com/in/tanmay-sharma-800599373/
Git hub: https://github.com/Tanu272004/YouTube-Performance-Engagement-Intelligence-.git
Website: https://tanu272004.github.io/DataInsights24.gihub.io/