## Cover Slide

- Title: *YouTube Performance & Engagement Intelligence Dashboard*
- Subtitle: *Data-Driven Insights for Content Growth & Audience Engagement*
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- 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;
```

```sql
-- 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;
```


```sql
-- 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?

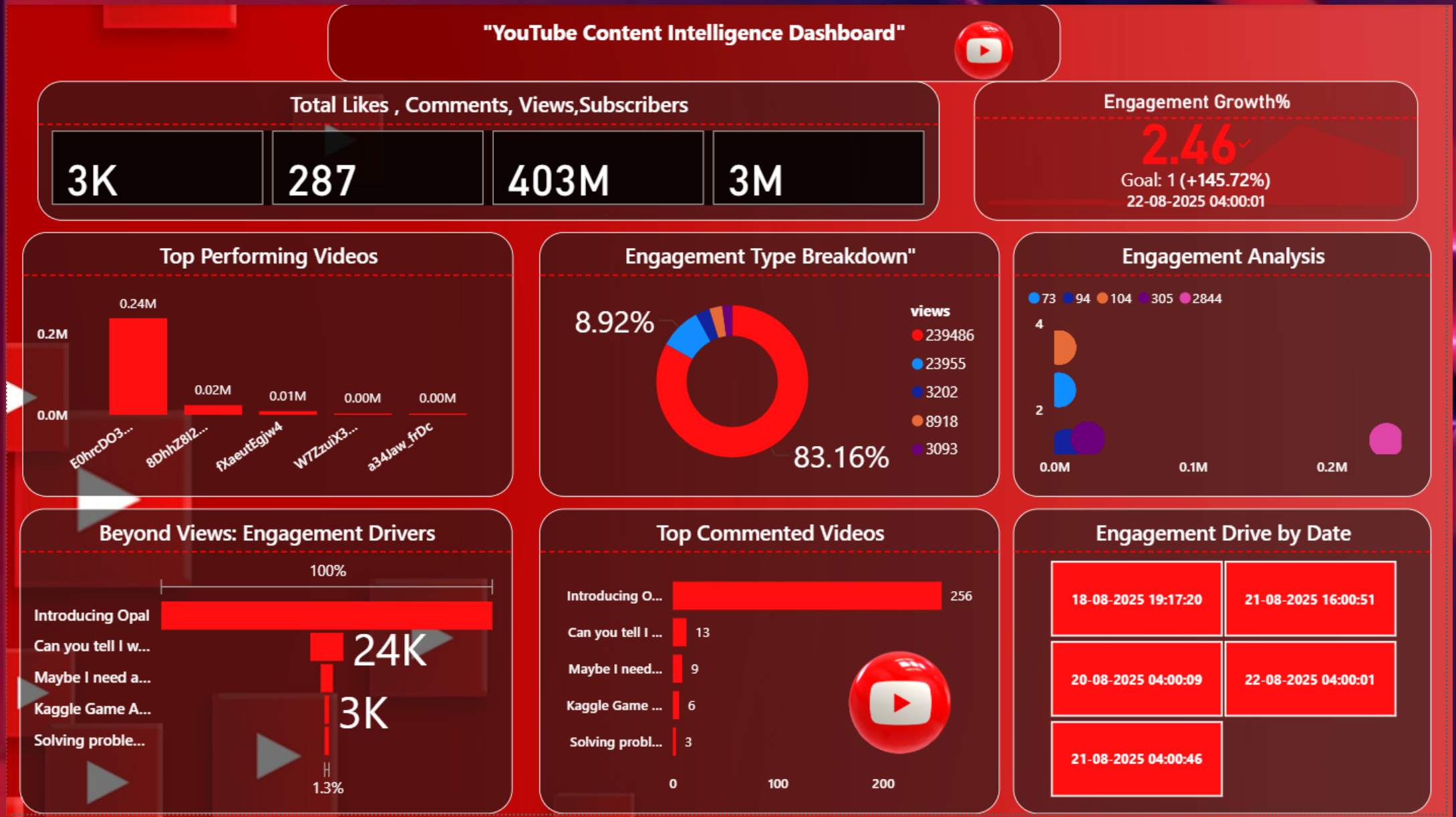
•Raw YouTube dataset had multiple tables (videos, comments, channels).

•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:



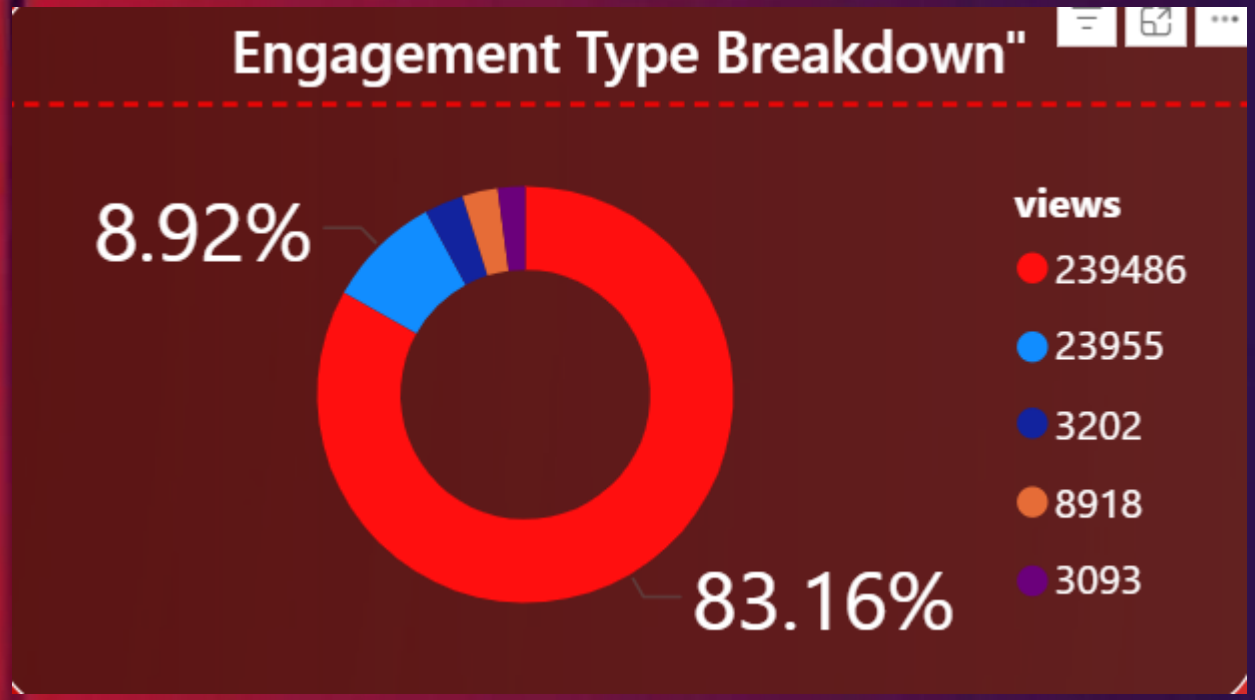
## KPI Highlights

- 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)



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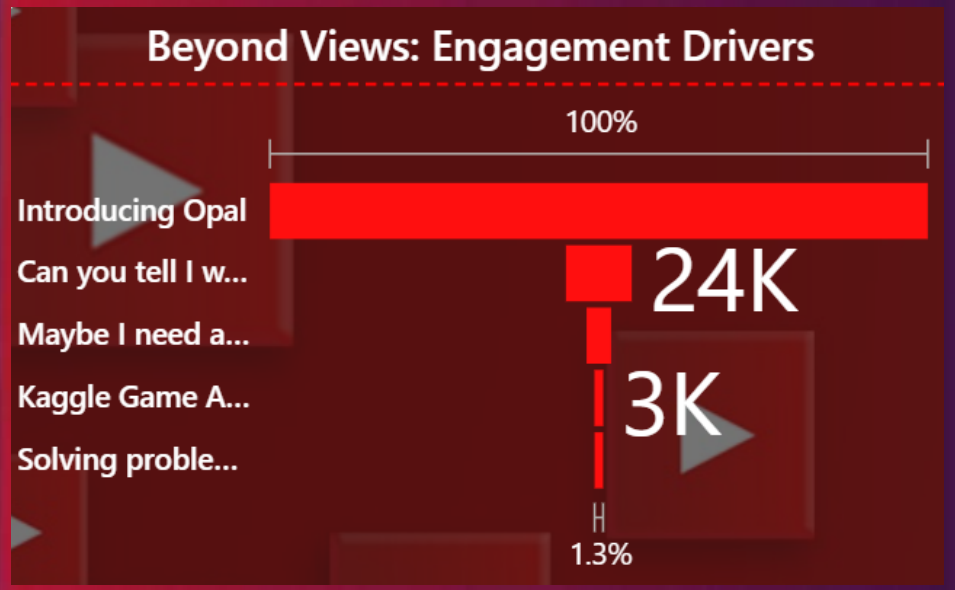
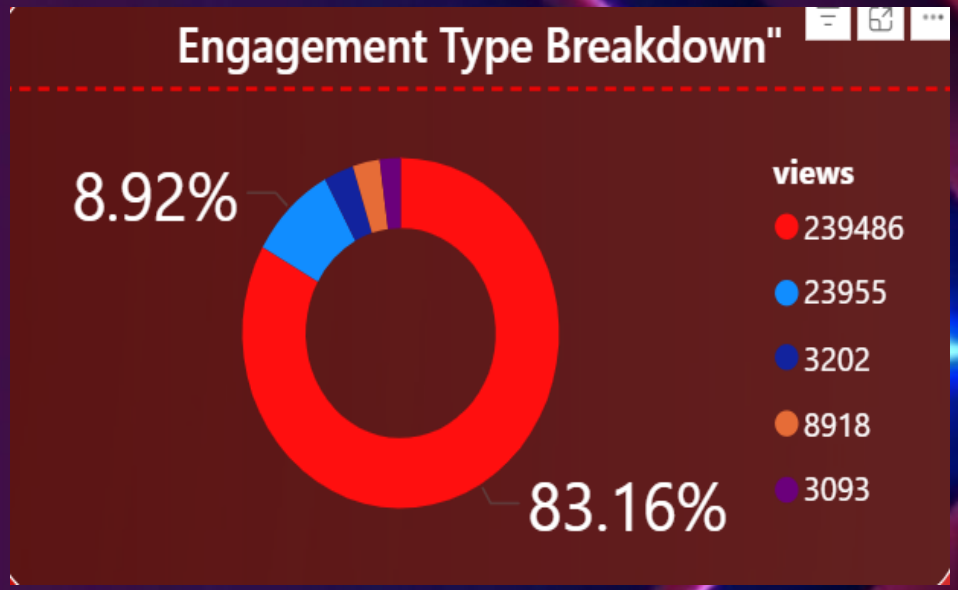
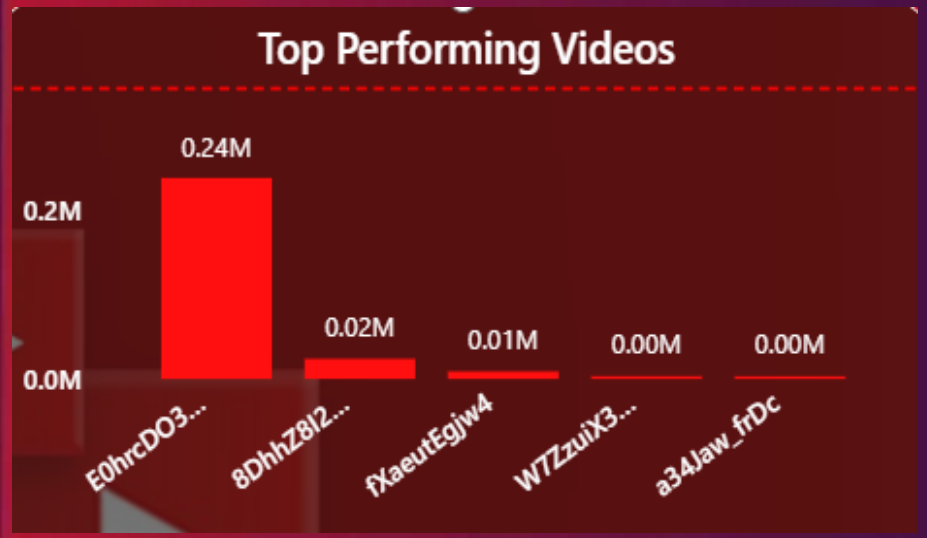


# Audience Insights

•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

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Git hub: https://github.com/Tanu272004/YouTube-Performance-Engagement-Intelligence-.git

Website: https://tanu272004.github.io/Data_Projects.github.io/