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OPERATION ANALYTICS AND INVESTIGATING METRIC SPIKES

INTRODUCTION

Operation Analytics involves analyzing the entire end-to-end operations of a company with the aim of achieving a common objective. It entails using tools in a more effective and efficient manner, thereby altering the organization's approach to data. This type of analysis is highly significant within a company as it serves the purpose of predicting overall growth or decline in its fortune. It leads to improved automation, enhanced understanding among cross-functional teams, and the establishment of more effective workflows.

Additionally, investigating metric spikes is a crucial component of operation analytics. As a Data Analyst, it is essential to comprehend and communicate reasons behind fluctuations such as a decrease in daily engagement or a decline in sales. Daily inquiries like these necessitate thorough investigation of metric spikes.

In my role as a Data Analyst Lead, I am responsible for working with the provided dataset. My objective is to derive insightful information from the data and respond to various questions posed by different departments.

APPROACH

I used **MySQL Workbench 8.0**, a graphical IDE for managing MySQL databases, to handle a dataset with large amounts of data. With its features and capabilities, I designed and built databases, created tables based on the files, and examined the data within them. I extracted valuable information using SQL queries. To present insights and answer questions, I used **MS Excel for Microsoft 365** to generate graphs and charts.

Case Study 1 focuses on Operational Analysis, specifically working with a single table. This table contains Actor details such as their Job ID, organization affiliation, language of the content, and other relevant information.

Case study 2 focuses on Investigating Metric Spikes, where we work with 3 tables:

Table "User" includes one row per user, with descriptive information about that user's account.

Table "Events" includes one row per event, where an event is an action that a user has taken. These events include login events, messaging events, search events, events logged as users progress through a signup funnel, events around received emails.

Table "Email Events" contains events specific to the sending of emails. It is similar in structure to the "Events" table.

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Case Study 01

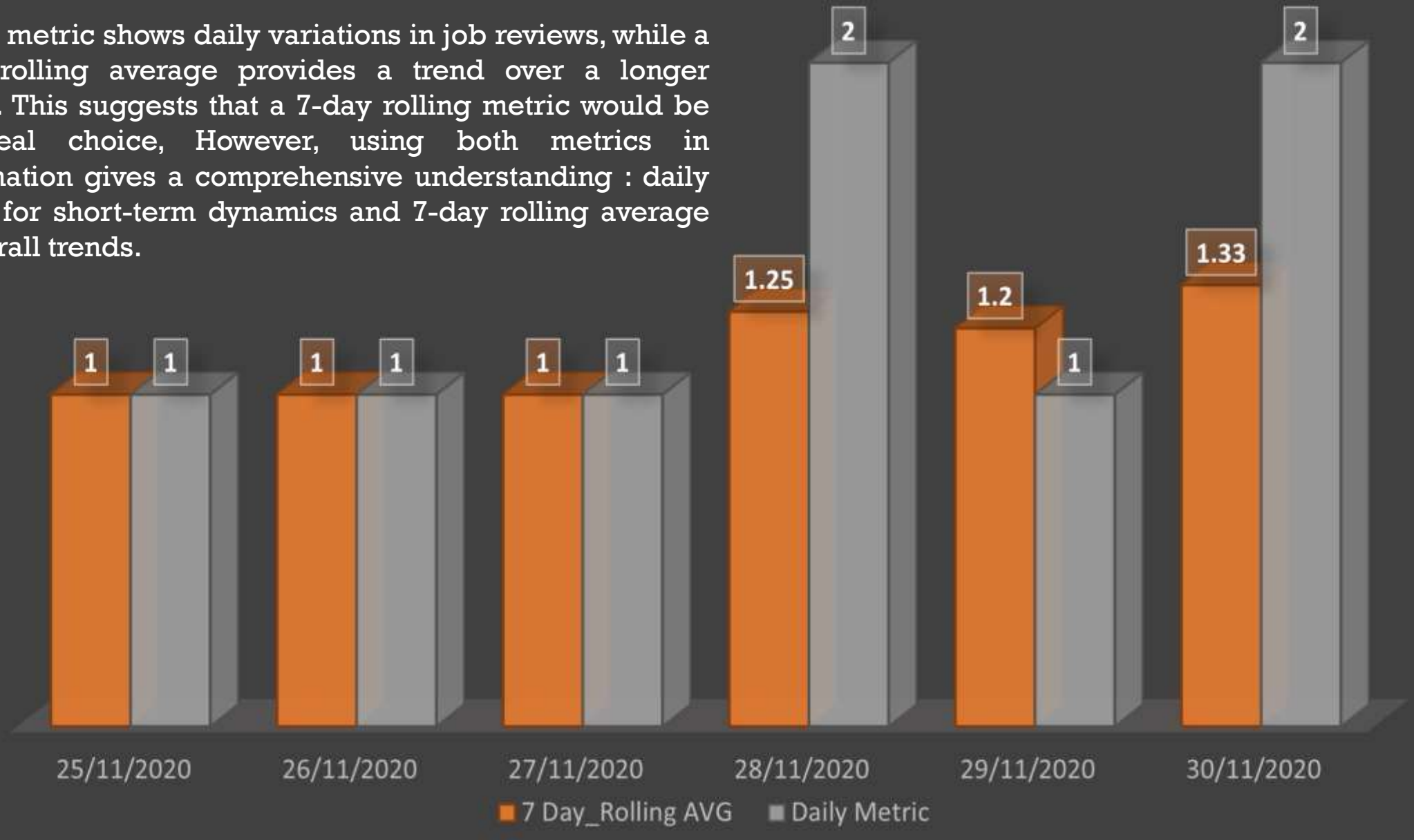
Our task: Calculate the number of jobs reviewed per hour per day for November 2020?

The number of jobs reviewed per hour was the lowest on 27th-Nov and highest on 28th-Nov.

Case Study 01

Calculate 7 day rolling average of throughput? Do you prefer daily metric or 7-day rolling and why?

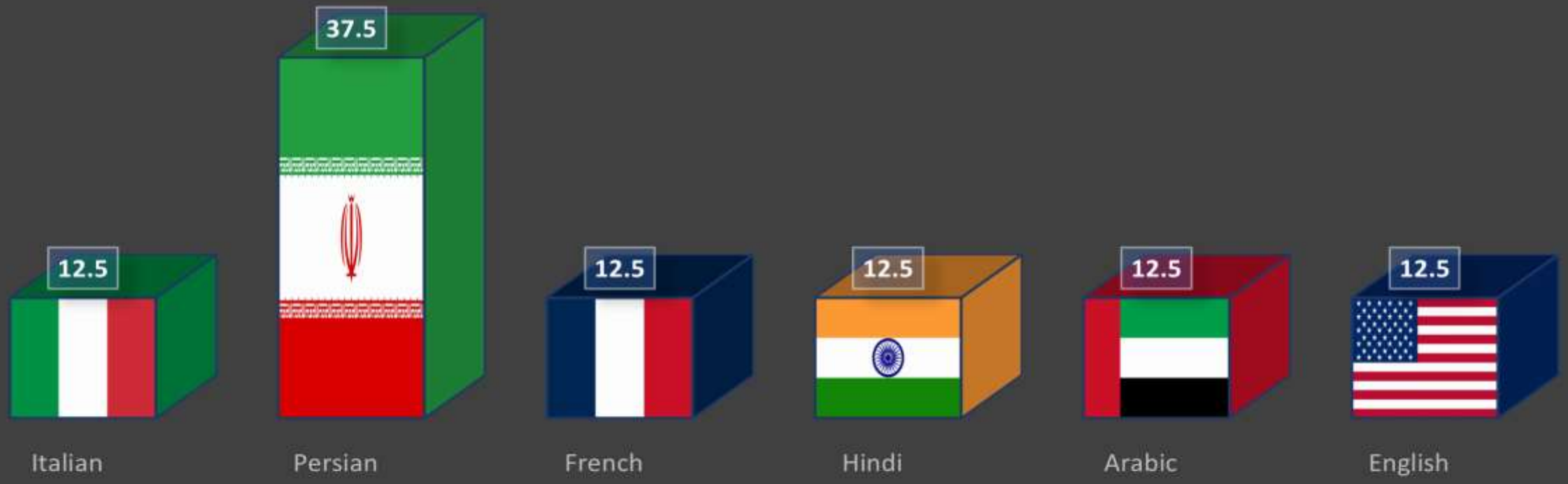
A daily metric shows daily variations in job reviews, while a 7-day rolling average provides a trend over a longer period. This suggests that a 7-day rolling metric would be an ideal choice, However, using both metrics in combination gives a comprehensive understanding : daily metric for short-term dynamics and 7-day rolling average for overall trends.



Case Study 01

Calculate the percentage share of each language in the last 30 days

Persian language is the most preferred language with highest value of 37.5%. So increasing the content in this language would be ideal to increase its user counts. However, it's also crucial to provide adequate support for other languages with lower values. Investing in translating and localizing content into languages with lower values to ensure a well-rounded user experience for speakers of those languages.



Case Study 01

Identify and display duplicates rows from the table.

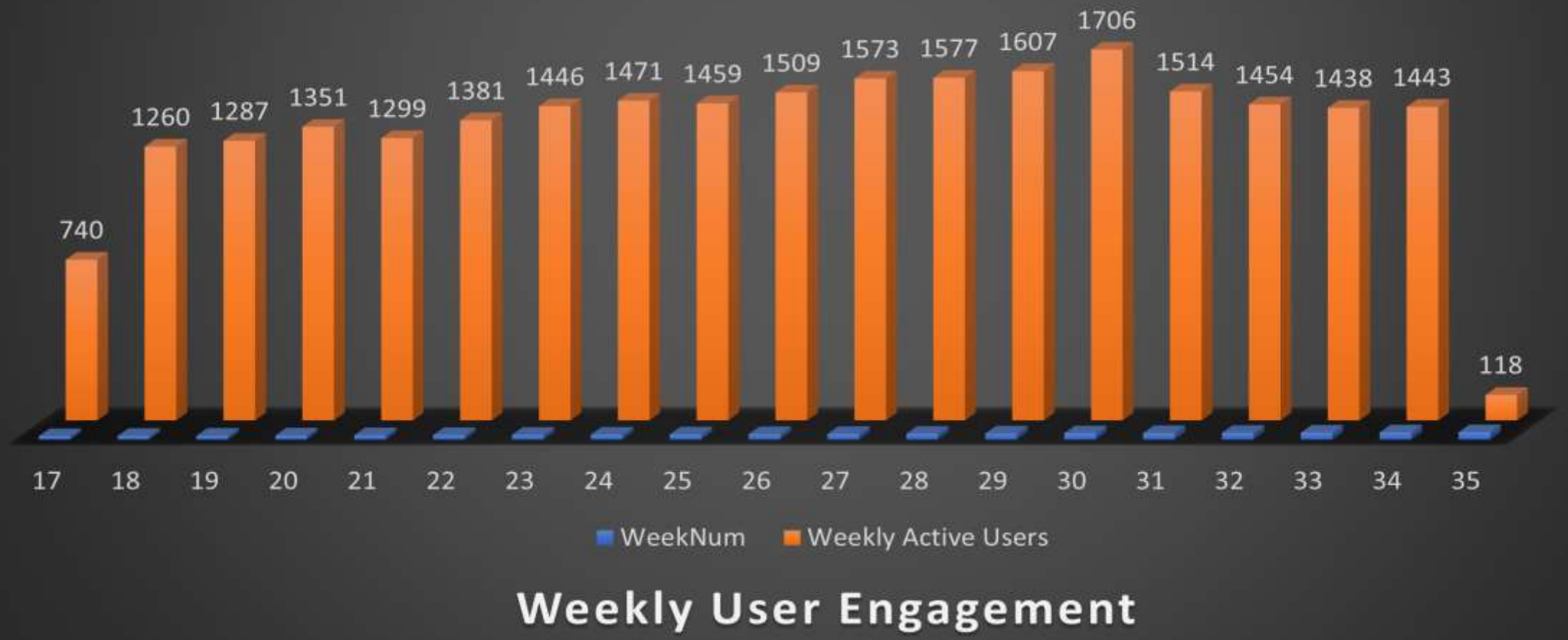
Upon partitioning the data by specific columns, for example, "job_id", "org" or "language", we discovered the presence of duplicate rows. However, considering all the columns in general, every row appears to be unique. I did not find any instances where all the data in two rows were identical.

Now we move on to Investigating the Metric Spikes with the help of Case Study 2 ……

Case Study 02

User Engagement: To measure the activeness of a user. Measuring if the user finds quality in a product/service.
Task: Calculate the weekly user engagement?

There was a noticeable increase in weekly user engagement from the 18th week to the 30th week. However, starting from that point, the engagement gradually declined. This suggests that during the later weeks, some users may have perceived a decrease in the quality of the product or service, leading to reduced engagement.



Case Study 02

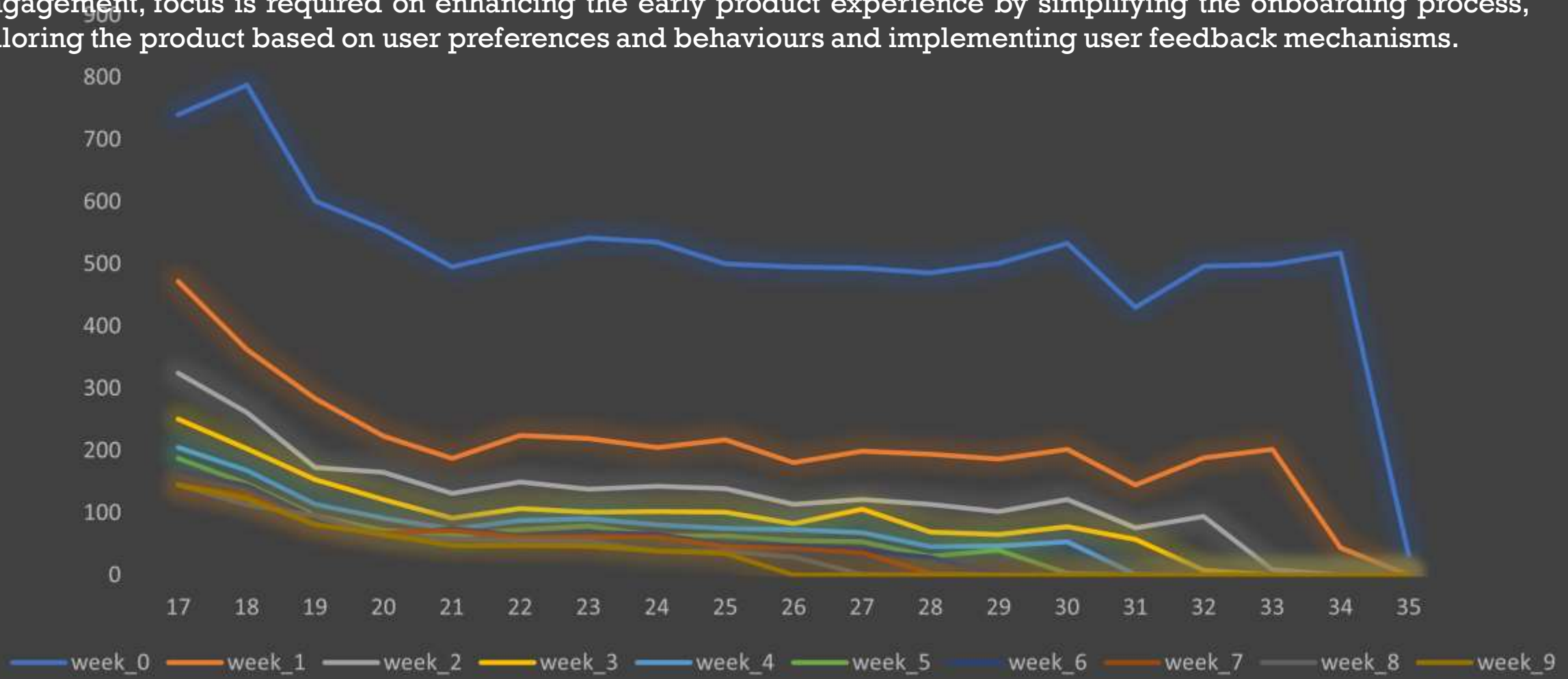
User Growth: Amount of users growing over time for a product.
Task: Calculate the user growth for product?

The period between January 2013 and August 2014 experienced a noticeable growth in user sign-ups, indicating a high level of user engagement with the product.

Case Study 02

Weekly Retention: Users getting retained weekly after signing-up for a product.
Task: Calculate the weekly retention of users-sign up cohort

The retention curve clearly shows a decline in user engagement after the initial sign-up. This indicates that users are not finding enough value in the product early on, resulting in low retention. To improve user experience and drive engagement, focus is required on enhancing the early product experience by simplifying the onboarding process, tailoring the product based on user preferences and behaviours and implementing user feedback mechanisms.



Case Study 02

Weekly Retention: Users getting retained weekly after signing-up for a product.
Task: Calculate the weekly retention of users-sign up cohort

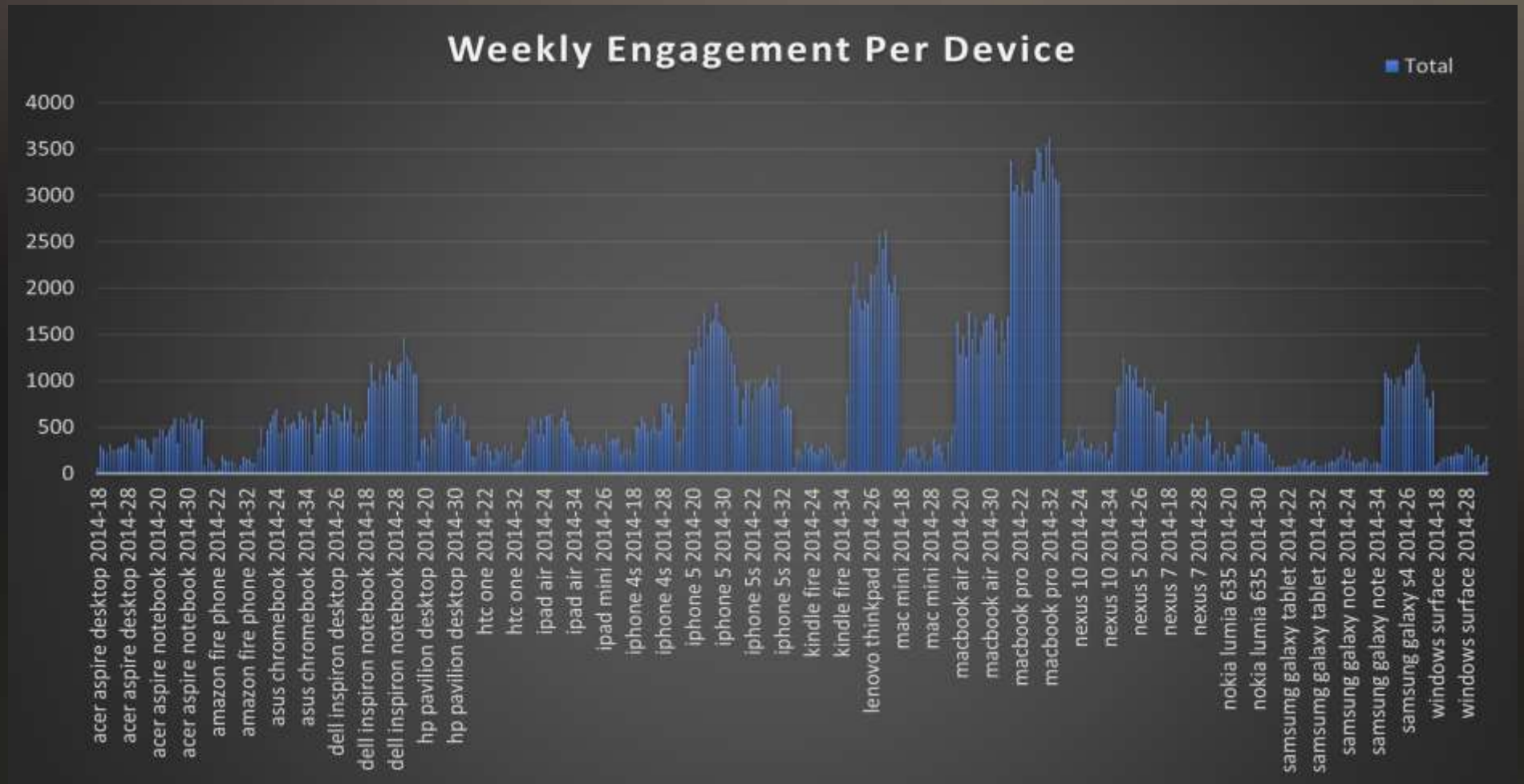
This is another representation of the User Sign-up Cohort

Week	week_0	week_1	week_2	week_3	week_4	week_5	week_6	week_7	week_8	week_9
17	740	472	324	251	205	187	167	146	145	145
18	788	362	261	203	168	147	144	127	113	122
19	601	284	173	153	114	95	91	81	95	82
20	555	223	165	121	91	72	63	67	63	65
21	495	187	131	91	74	63	75	72	58	48
22	521	224	150	107	87	73	63	60	55	48
23	542	219	138	101	90	79	69	61	54	47
24	535	205	143	102	81	63	65	61	38	39
25	500	218	139	101	75	63	50	46	38	35
26	495	181	114	83	73	55	47	43	29	0
27	493	199	121	106	68	53	40	36	1	0
28	486	194	114	69	46	30	28	3	0	0
29	501	186	102	65	47	40	1	0	0	0
30	533	202	121	78	53	3	0	0	0	0
31	430	145	76	57	1	0	0	0	0	0
32	496	188	94	8	0	0	0	0	0	0
33	499	202	9	0	0	0	0	0	0	0
34	518	44	0	0	0	0	0	0	0	0
35	32	0	0	0	0	0	0	0	0	0

Case Study 02

Weekly Engagement: To measure the activeness of a user. Measuring if the user finds quality in a product/service weekly.
Task: Calculate the weekly engagement per device?

MacBook Pro and Lenovo Thinkpad users exhibit the highest engagement count among the devices used for weekly engagement. Conversely, Amazon Fire Phone and Samsung Galaxy Tablet users have the lowest engagement count.



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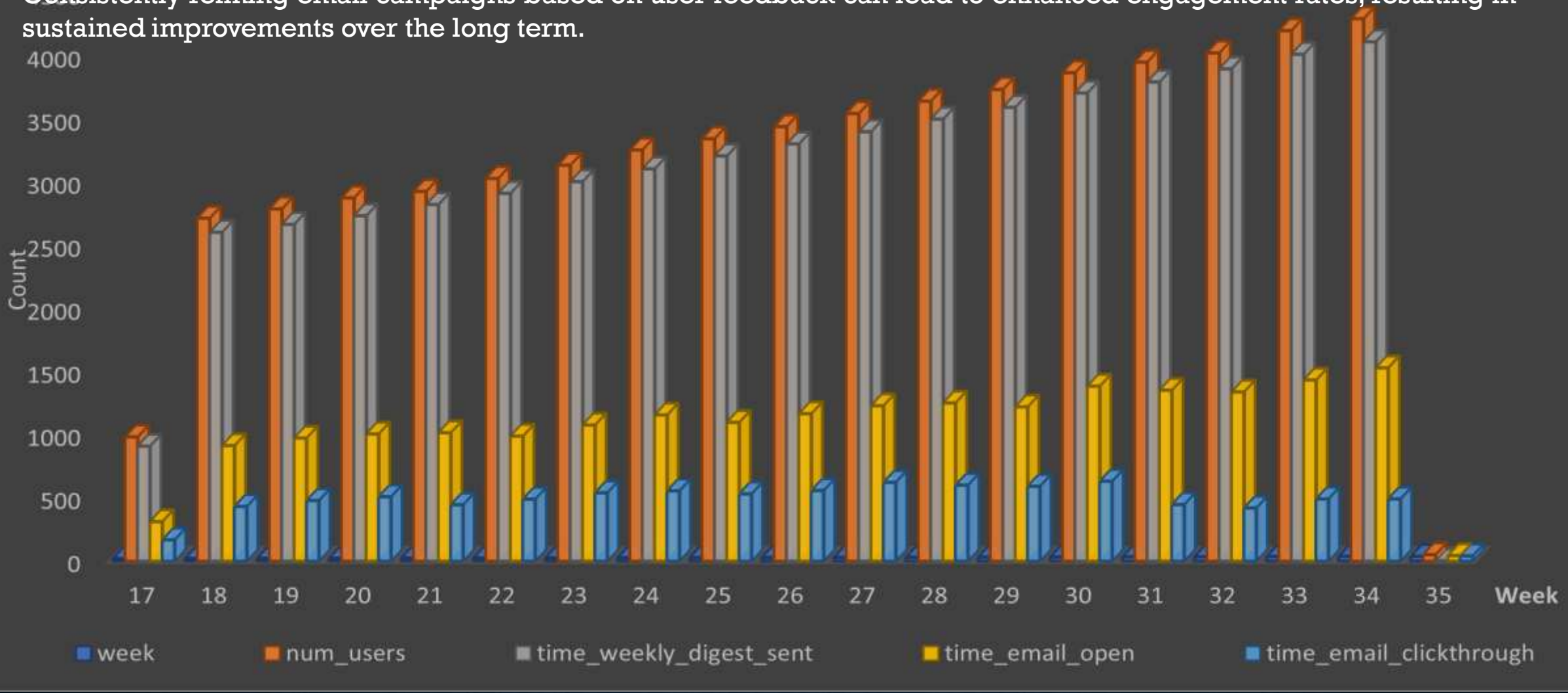
Case Study 02

Email Engagement: Users engaging with the email service.
Task: Calculate the email engagement metrics

Email engagements have witnessed a remarkable surge starting from week 17 and continuing through week 34. Consistently refining email campaigns based on user feedback can lead to enhanced engagement rates, resulting in sustained improvements over the long term.



CONCLUSION

In conclusion, operational analysis plays a vital role in optimizing the end-to-end operations of a company. By effectively utilizing tools and changing the approach to data within the organization, operational analysis helps achieve shared objectives, improve automation, foster better understanding between cross-functional teams, and enhance workflows.

Furthermore, investigating metric spikes is a crucial component of operational analysis. As data analysts, we must be able to understand and address questions related to changes in metrics such as daily engagement or sales decline. Daily inquiries like these require diligent investigation of metric spikes to uncover underlying causes and provide valuable insights.

By leveraging tools like MySQL Workbench for database management and data analysis, we can delve into the provided datasets, create tables, and extract meaningful information using SQL queries. Additionally, visualizing the obtained insights using tools like MS Excel allows for effective communication and presentation of findings.

In summary, through operational analysis and diligent investigation of metric spikes, we can make informed decisions, predict the overall growth or decline of a company, and drive improvements in user engagement, ultimately contributing to the success of the organization.

Queries for Operational Analysis Queries for Investigating Metric Spikes SQL Query Results

THANK YOU