Uncovering Instagram Trends via

MySQL

Tech Instagram Influencer Analysis

📊 Project Overview: Instagram Activity Data Analysis

This project focuses on analyzing three database tables containing Instagram activity data. The primary objective is to explore the dataset, uncover trends, and answer key business questions. The ultimate goal is to generate actionable insights that can help improve engagement, content strategy, and overall platform performance.

⚙️ Project Setup & Approach

To begin the analysis and generate meaningful insights:

1.Database Setup

- Loaded the gdb0120.sql file into **MySQL Workbench** to access the data.

2.Tables Used

- dim_dates: Contains date-related dimensions.
- fact_account: Stores account-level activity data.
- fact_content: Includes content-specific metrics (e.g., posts, engagement).

3.Analysis Process

- Reviewed key questions from sql_questions.pdf.
- Wrote optimized **SQL queries** to answer each question and uncover insights.

1. How many unique post types are found in the 'fact_content' table?

```sql
SELECT COUNT(DISTINCT post_type) AS unique_post_types
FROM fact_content;
```

unique_post_types
4

📌 **Insight :**

"The influencer uses 4 unique content formats on Instagram, indicating a diverse content strategy aimed at reaching a wider audience. This variety allows flexibility in engagement and performance experimentation across formats."

2. What are the highest and lowest recorded impressions for each post type?

```sql
SELECT
    post_type,
    MAX(impressions) AS highest_impressions,
    MIN(impressions) AS lowest_impressions
FROM fact_content
GROUP BY post_type;
```

post_type	highest_impressions	lowest_impressions
IG Image	129694	23367
IG Reel	339708	87570
IG Carousel	9677	3264
IG Video	73321	8741

📌 **Insight :**

"Among all content formats, IG Reels achieved the highest impression count (339K), significantly outperforming other post types. Even the lowest-performing Reel (87K) had more impressions than the highest-performing Carousel. This highlights Reels as the top-performing format in terms of visibility."

3. Filter all the posts that were published on a weekend in the month of March and April and export them to a separate csv file.

```sql
SELECT *
FROM fact_content AS c
JOIN dim_dates AS d ON c.date = d.date
WHERE d.weekday_or_weekend = 'weekend'
  AND d.month_name IN ('March', 'April');
```

📌 **Insight :**

“A total of **18 posts** were published on **weekends** during **March and April**, indicating a **strategic focus on weekend engagement** — likely to align with audience availability and maximize post visibility.”

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	date	post_category	post_type	video_duration	carousel_item_count	impressions	reach	shares	follows	likes	comments	saves	date	month_name	weekday_name	weekday_or_weekend	week_no
2	04-03-2023	Earphone	IG Video	291	0	12265	3668	69	92	327	7	18	04-03-2023	March	Saturday	Weekend	W9
3	05-03-2023	Smartwatch	IG Image	0	0	62770	18001	273	360	1194	28	76	05-03-2023	March	Sunday	Weekend	W10
4	11-03-2023	Mobile	IG Carousel	0	3	5899	1093	45	12	53	0	6	11-03-2023	March	Saturday	Weekend	W10
5	12-03-2023	Laptop	IG Image	0	0	79416	23474	327	259	1235	69	204	12-03-2023	March	Sunday	Weekend	W11
6	18-03-2023	Mobile	IG Carousel	0	3	9157	2254	67	58	55	6	15	18-03-2023	March	Saturday	Weekend	W11
7	19-03-2023	Smartwatch	IG Carousel	0	3	4146	1079	42	17	43	1	6	19-03-2023	March	Sunday	Weekend	W12
8	25-03-2023	Earphone	IG Reel	22	0	132284	66721	1093	1482	3622	83	695	25-03-2023	March	Saturday	Weekend	W12
9	26-03-2023	Mobile	IG Image	0	0	63425	26113	435	336	1994	68	179	26-03-2023	March	Sunday	Weekend	W13
10	01-04-2023	Mobile	IG Carousel	0	3	4549	1052	27	18	35	1	6	01-04-2023	April	Saturday	Weekend	W13
11	02-04-2023	Earphone	IG Video	163	0	54672	16126	172	182	938	22	81	02-04-2023	April	Sunday	Weekend	W14
12	08-04-2023	Other Gadgets	IG Video	258	0	37955	12663	204	164	753	31	63	08-04-2023	April	Saturday	Weekend	W14
13	09-04-2023	Mobile	IG Image	0	0	52278	14438	271	167	1393	36	44	09-04-2023	April	Sunday	Weekend	W15
14	15-04-2023	Laptop	IG Reel	30	0	123270	39850	296	1486	3926	101	1139	15-04-2023	April	Saturday	Weekend	W15
15	16-04-2023	Other Gadgets	IG Reel	29	0	115701	66829	937	929	5749	94	658	16-04-2023	April	Sunday	Weekend	W16
16	22-04-2023	Laptop	IG Video	172	0	33604	14682	255	349	1038	22	73	22-04-2023	April	Saturday	Weekend	W16
17	23-04-2023	Earphone	IG Video	229	0	36973	13629	224	244	929	30	68	23-04-2023	April	Sunday	Weekend	W17
18	29-04-2023	Earphone	IG Video	206	0	43526	11799	134	138	646	12	59	29-04-2023	April	Saturday	Weekend	W17
19	30-04-2023	Mobile	IG Reel	59	0	185017	63990	1010	2238	6039	94	330	30-04-2023	April	Sunday	Weekend	W18

4. Create a report to get the statistics for the account. The final output includes the following fields: • month_name • total_profile_visits • total_new_followers

```sql
SELECT
    MONTHNAME(date) AS month_name,
    SUM(profile_visits) AS total_profile_visits,
    SUM(new_followers) AS total_new_followers
FROM fact_account
GROUP BY MONTHNAME(date);
```

month_name	total_profile_visits	total_new_followers
January	26512	17053
February	20628	15254
March	23132	18285
April	29852	21799
May	106571	66984
June	103350	76942
July	54352	33302
August	42094	24371
September	41522	28523

📌 Insight :

“The highest spike in both **profile visits (106,571)** and **new followers (66,984)** was observed in **May**, followed closely by June.
This suggests a strong content or campaign performance during these months, offering a benchmark for future growth strategies.”

5. Write a CTE that calculates the total number of 'likes' for each 'post_category' during the month of 'July' and subsequently, arrange the 'post_category' values in descending order according to their total likes.

```sql
WITH category_likes AS (
    SELECT
        post_category,
        SUM(likes) AS total_likes
    FROM fact_content
    WHERE MONTH(date) = 7  -- July
    GROUP BY post_category
)
SELECT *
FROM category_likes
ORDER BY total_likes DESC;
```

post_category	total_likes
Other Gadgets	26519
Tech Tips	20296
Mobile	16338
Earphone	14435
Smartwatch	3918

📌 Insight :

- Among all post categories, **"Other Gadgets"** emerged as the most engaging content type, accumulating **26,519 likes**, outperforming all other categories. **"Tech Tips"** followed closely with **20,296 likes**, while **"Mobile"** and **"Earphone"** secured significant engagement at **16,338** and **14,435 likes**, respectively. **"Smartwatch"**, with only **3,918 likes**, ranked the lowest in engagement.
- This highlights **"Other Gadgets"** as the most engaging category for the audience, signaling an opportunity to prioritize similar content for maximizing interaction and visibility.

6. Create a report that displays the unique post_category names alongside their respective counts for each month. The output should have three columns: • month_name • post_category_names • post_category_count

```sql
SELECT
    DATE_FORMAT(date, '%M') AS month_name,
    GROUP_CONCAT(DISTINCT post_category ORDER BY post_category ASC) AS post_category_names,
    COUNT(DISTINCT post_category) AS post_category_count
FROM
    fact_content
GROUP BY
    month_name
ORDER BY
    FIELD(month_name, 'January', 'February', 'March', 'April', 'May', 'June',
    'July', 'August', 'September', 'October', 'November', 'December');
```

month_name	post_category_names	post_category_count
January	Earphone,Mobile,Smartwatch	3
February	Earphone,Laptop,Mobile,Smartwatch	4
March	Earphone,Laptop,Mobile,Smartwatch	4
April	Earphone,Laptop,Mobile,Other Gadgets,Smart...	5
May	Earphone,Laptop,Mobile,Other Gadgets,Smart...	6
June	Mobile,Other Gadgets,Smartwatch,Tech Tips	4
July	Earphone,Mobile,Other Gadgets,Smartwatch,T...	5
August	Earphone,Mobile,Other Gadgets,Smartwatch,T...	5
September	Mobile,Other Gadgets,Smartwatch,Tech Tips	4

📌 Insight :

- The content strategy reveals a **progressive diversification trend** across months, with the number of post categories increasing steadily from **January (3 categories)** to **May (6 categories)**—suggesting an expanding focus on varied topics. **June saw a slight reduction** in category diversity, indicating a potential shift in content priorities.
- Interestingly, **Mobile and Other Gadgets** remain consistent across all months, reinforcing their **strong audience appeal**, while categories like **Tech Tips** gained traction only after May—suggesting a growing interest in informational content.

7. What is the percentage breakdown of total reach by post type? The final output includes the following fields: • post_type • total_reach • reach_percentage

```sql
SELECT
    post_type,
    SUM(reach) AS total_reach,
    round((SUM(reach) / (SELECT SUM(reach) FROM fact_content) * 100),2) AS reach_percentage
FROM
    fact_content
GROUP BY
    post_type
ORDER BY
    total_reach DESC;
```

post_type	total_reach	reach_percentage
IG Reel	5379091	61.63
IG Image	1866381	21.38
IG Video	1422300	16.30
IG Carousel	60465	0.69

📌 Insight :

- **IG Reels dominate reach performance**, securing an overwhelming **61.63%** of total impressions, far surpassing other post formats. **IG Images and IG Videos** contribute notably at **21.38%** and **16.30%**, respectively, reinforcing their role in engagement. However, **IG Carousels lag behind with only 0.69% reach**, signaling a diminished impact compared to more dynamic content types.
- This highlights **Reels as the most effective format for maximizing visibility**, suggesting that brands and creators should **prioritize short-form video content** to enhance audience reach and engagement. 🚀

8. Create a report that includes the quarter, total comments, and total saves recorded for each post category. Assign the following quarter groupings: The final output columns should consist of: • post_category • quarter • total_comments • total_saves

```sql
SELECT
    post_category,
    CASE
        WHEN MONTH(date) IN (1, 2, 3) THEN 'Q1'
        WHEN MONTH(date) IN (4, 5, 6) THEN 'Q2'
        WHEN MONTH(date) IN (7, 8, 9) THEN 'Q3'
        WHEN MONTH(date) IN (10, 11, 12) THEN 'Q4'
    END AS quarter,
    SUM(comments) AS total_comments,
    SUM(saves) AS total_saves
FROM
    fact_content
GROUP BY
    post_category,
    quarter
ORDER BY
    post_category,
    quarter;
```

post_category	quarter	total_comments	total_saves
Earphone	Q1	351	2230
Earphone	Q2	589	3602
Earphone	Q3	427	3247
Laptop	Q1	418	2837
Laptop	Q2	452	2248
Mobile	Q1	1836	9843
Mobile	Q2	2313	17207
Mobile	Q3	1134	5285
Other Gadgets	Q2	1622	12041
Other Gadgets	Q3	964	4457
Smartwatch	Q1	600	2860
Smartwatch	Q2	1358	12581
Smartwatch	Q3	971	3326
Tech Tips	Q2	2201	17649
Tech Tips	Q3	1596	12976

📌 Insight :

- The **quarterly engagement patterns** highlight key shifts in audience interactions. **Q2 (April–June) stands out as the most interactive quarter**, with **Tech Tips (22,201 comments & 17,649 saves) leading the engagement surge**, closely followed by **Mobile and Smartwatch categories**. This suggests a **peak in audience curiosity for informative and trending content** during these months.
- Meanwhile, **Q3 (July–September) shows a decline in overall interaction**, especially for categories like **Other Gadgets and Mobile**, signaling a shift in content reception. However, **Tech Tips and Smartwatch continue to maintain strong engagement**, reinforcing their lasting appeal.

9. List the top three dates in each month with the highest number of new followers. The final output should include the following columns: • month • date • new_followers

```sql
WITH ranked_dates AS (
    SELECT
        d.month_name AS month,
        d.date,
        SUM(f.new_followers) AS new_followers,
        RANK() OVER (PARTITION BY d.month_name ORDER BY SUM(f.new_followers) DESC) AS rn
    FROM fact_account f
    JOIN dim_dates d ON f.date = d.date
    GROUP BY d.month_name, d.date
)
    -- Select top 3 dates per month based on new followers
    SELECT
        month,
        date,
        new_followers
    FROM
        ranked_dates
    WHERE
        rn <= 3
    ORDER BY
        month,
        rn;
```

month	date	new_followers
April	2023-04-25	3736
April	2023-04-30	2753
April	2023-04-06	2500
August	2023-08-23	2074
August	2023-08-21	1783
August	2023-08-06	1687
February	2023-02-01	4106
February	2023-02-24	2383
February	2023-02-02	1989
January	2023-01-30	3186
January	2023-01-03	2959
January	2023-01-23	1003
July	2023-07-08	3716
July	2023-07-15	3364
July	2023-07-28	2344
June	2023-06-30	8804
June	2023-06-03	8802
June	2023-06-21	7033
March	2023-03-21	5421
March	2023-03-28	2513
March	2023-03-25	2356
May	2023-05-08	8872
May	2023-05-20	6169
May	2023-05-12	6051
September	2023-09-16	3849
September	2023-09-22	3570
September	2023-09-21	2285

📌 Insight :

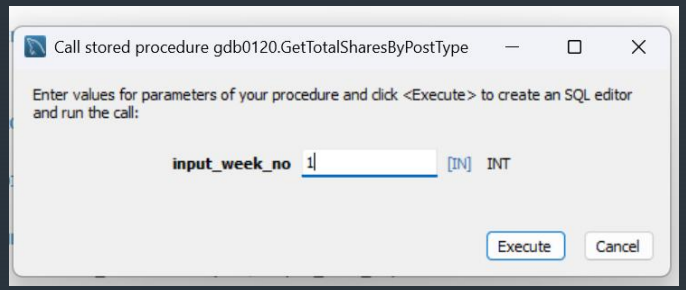
- The **top follower growth days** reveal crucial patterns in engagement. **June 30th (8,804 new followers)** stands out as the single **highest growth day**, closely followed by **May 8th (8,872 new followers), and June 3rd (8,802 new followers)**.
- Interestingly, **June records two of the strongest follower surges**, suggesting a **seasonal engagement spike**. Meanwhile, **March shows a moderate rise**, with **March 21st (5,421 new followers)** outperforming other dates in the same month.
- This data indicates **optimal posting windows for maximum follower acquisition**, reinforcing the strategy of **aligning high-impact content with peak audience growth days** for better visibility and retention. 🚀

10. Create a stored procedure that takes the 'Week no' as input and generates a report displaying the total shares for each 'Post_type'. The output of the procedure should consist of two columns: • post_type • total_shares

```sql
DELIMITER //

CREATE PROCEDURE GetTotalSharesByPostType(IN input_week_no INT)
BEGIN
    SELECT
        post_type,
        SUM(shares) AS total_shares
    FROM
        fact_content fc
    JOIN
        dim_dates dd ON fc.date = dd.date
    WHERE
        dd.week_no = CONCAT('W', input_week_no)
    GROUP BY
        post_type
    ORDER BY
        SUM(shares) DESC;
END //

DELIMITER ;
```



post_type	total_shares
IG Image	1134
IG Reel	659
IG Carousel	40

Final Recommendation

Prioritize IG Reels as they deliver the highest impressions and 61.63% of total reach.

Focus on top-performing categories: Other Gadgets, Tech Tips, and Mobile show strong engagement.

Leverage Q2 (April–June) for campaigns, as it has the highest comments and saves.

Diversify content formats and categories to maintain audience interest and reach.

Minimize or improve IG Carousels, which showed the lowest performance.

Schedule key posts on weekends and high-growth dates to maximize follower acquisition.