

Instagram User Analytics

Project Description:

In order to assist development, marketing, and product teams in making well-informed decisions regarding platform expansion, this project will use SQL and MySQL Workbench to analyze user engagement and interactions on Instagram. In order to find trends that influence platform engagement, as a data analyst, I will investigate user behavior, paying particular attention to how they interact with features like posts, likes, and photos. I'll extract important metrics like the total number of users, the average number of posts per user, and the days with the highest engagement by examining data from tables that include users, comments, likes, and photos. In order to improve user experience, product development, and marketing strategies, I will also spot extreme behaviors, like possible bots liking every photo.

Approach:

In order to properly analyze user engagement and interactions on Instagram, I took a number of crucial steps in my approach. In order to comprehend the connections between tables like users, posts, likes, and photos, I first looked into the database structure. This assisted me in determining which information would be most pertinent to responding to the team's queries. To extract crucial data, such as the overall number of users, the average number of posts per user, and the days of the week with the highest user engagement, I then created SQL queries. Furthermore, I found users who displayed extreme behaviors that might point to possible bot activity, like liking every photo. Following data collection, I employed aggregation techniques to find trends and patterns, offering useful information that could direct feature development, product enhancements, and marketing plans. I was able to produce significant insights that aid the Instagram team in making decisions by closely examining the data and answering every query.

Tech-Stack Used:

I used MySQL Workbench for this project, as it provides a user-friendly interface for SQL query execution, data modeling, and database management, making it ideal for analyzing Instagram user engagement efficiently.

Insights and Result:

A) Marketing Analysis:

1. Loyal User Reward: Identify the five oldest users on Instagram

Solution:

```
SELECT USERNAME FROM USERS
```

```
ORDER BY CREATED_AT
```

```
LIMIT 5;
```

These users are the most devoted and established platform users. Acknowledging and rewarding them can promote loyalty and keep them involved.

username
Darby_Herzog
Emilio_Bernier52
Elenor88
Nicole71
Jordyn.Jacobson2

2. Inactive User Engagement: Identify users who have never posted a single photo on Instagram.

Solution:

```
SELECT U.USERNAME FROM USERS U
```

```
LEFT JOIN PHOTOS P
```

```
ON P.USER_ID = U.ID
```

```
WHERE P.ID IS NULL;
```

These users most likely consume content passively. User-generated content and platform activity can both be increased by providing them with features or incentives to post content.

username
Tierra.Trantow

Mike.Auer39
Jessyca_West
Julien_Schmidt
Pearl7
Nia_Haag
Bartholome.Bernhard
Bethany20
Rocio33
Aniya_Hackett
Maxwell.Halvorson
Franco_Keebler64
Darby_Herzog
Janelle.Nikolaus81
Esther.Zulauf61
Esmeralda.Mraz57
Hulda.Macejkovic
Mckenna17
Duane60
Ollie_Ledner37
Linnea59
Morgan.Kassulke
David.Osinski47
Leslie67
Jaclyn81
Kasandra_Homenick

3. Contest Winner Declaration: Determine the winner of the contest and provide their details to the team.

Solution:

```
SELECT U.ID USER_ID, U.USERNAME, P.ID PHOTO_ID FROM LIKES L
INNER JOIN PHOTOS P
ON P.ID = L.PHOTO_ID
```

INNER JOIN USERS U

ON U.ID = P.USER_ID

GROUP BY P.ID, U.ID, U.USERNAME

ORDER BY COUNT(*) DESC

LIMIT 1;

Ensuring the fairness and accuracy of contest results increases user satisfaction and trust, which promotes participation in subsequent events.

user_id	username	photo_id
52	Zack_Kemmer93	145

4. Hashtag Research: Identify and suggest the top five most commonly used hashtags on the platform.

Solution:

SELECT TAG_NAME FROM TAGS T

INNER JOIN PHOTO_TAGS PT

ON T.ID = PT.TAG_ID

GROUP BY T.ID

ORDER BY COUNT(*) DESC

LIMIT 5;

Trending subjects and user interests are reflected in these hashtags. Using these hashtags in advertising campaigns can boost exposure and interaction.

tag_name
smile
beach
party
fun
food

5. Ad Campaign Launch: Determine the day of the week when most users register on Instagram. Provide insights on when to schedule an ad campaign.

Solution:

```
SELECT DAYNAME( CREATED_AT) AS WEEK_DAY, COUNT(*) USER_REGISTERED FROM USERS
GROUP BY DAYNAME(CREATED_AT)
ORDER BY USER_REGISTERED DESC;
```

In order to maximize exposure to new users who are more likely to be active and engaged, it is best to schedule an ad campaign on the day with the highest registration rate.

week_day	user_registered
Thursday	16
Sunday	16
Friday	15
Monday	14
Tuesday	14
Wednesday	13
Saturday	12

This indicates that the majority of Instagram users register on “**Thursdays**” and “**Sundays**” with a registration of “**16**” people, so it would be best to plan an advertising campaign for those days or the day before.

B) Investor Metrics:

1. User Engagement: Calculate the average number of posts per user on Instagram. Also, provide the total number of photos on Instagram divided by the total number of users.

Solution:

```
SELECT ROUND(AVG(POST_COUNT), 2) AVG_POSTS_PER_USER,
(SELECT (SELECT COUNT() FROM PHOTOS)/ (SELECT COUNT() FROM USERS) )
PHOTOS_PER_USER
FROM
( SELECT U.ID, COUNT(*) AS POST_COUNT FROM USERS U INNER JOIN PHOTOS P ON
P.USER_ID = U.ID GROUP BY U.ID ) SUB_QUERY;
```

This measure establishes a starting point for user engagement and activity. Setting reasonable goals for user-generated content and assessing the general health of the platform can both benefit from it.

Avg_posts_per_user	photos_per_user
3.47	2.5700

2. Bots & Fake Accounts: Identify users (potential bots) who have liked every single photo on the site, as this is not typically possible for a normal user.

Solution:

```
SELECT USER_ID, U.USERNAME FROM LIKES L
```

```
INNER JOIN USERS U
```

```
ON U.ID = L.USER_ID
```

```
GROUP BY USER_ID, U.USERNAME
```

```
HAVING COUNT(*) = (SELECT COUNT(DISTINCT ID) FROM PHOTOS);
```

Most likely, these accounts are either phony or bots. Removing or flagging these accounts can resolve this problem and enhance the platform's overall integrity as well as the genuineness of user interactions.

user_id	username
24	Maxwell.Halvorson
54	Duane60
36	Ollie_Ledner37
21	Rocio33
66	Mike.Auer39
76	Janelle.Nikolaus81
41	Mckenna17
5	Aniya_Hackett
14	Jaclyn81
57	Julien_Schmidt
91	Bethany20
71	Nia_Haag

75	Leslie67
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