Instagram Engagement Report

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1. Introduction

This report provides an in-depth analysis of user engagement and activity on Instagram. The objective is to identify key trends, detect potential bots, and provide actionable insights for marketing, user engagement, and platform optimization.

Goals of the Analysis:

- Identify the most loyal (oldest) users.
- Detect inactive users for re-engagement campaigns.
- Find contest winners based on likes.
- Analyze the most popular hashtags.
- Determine optimal days for ad campaigns.
- Evaluate overall user engagement metrics.
- Detect potential bot activity.

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2. Marketing Analysis

2.1 Loyal Users

To identify long-term users, we retrieved the **five oldest accounts** based on their creation date.

SQL Query:

```
SELECT * FROM users ORDER BY created_at ASC LIMIT 5;
```

Results:

id	username	created_at
80	Darby_Herzog	2016-05-06 00:14:21+00
67	Emilio_Bernier52	2016-05-06 13:04:30+00
63	Elenor88	2016-05-08 01:30:41+00
95	Nicole71	2016-05-09 17:30:22+00
38	Jordyn.Jacobson2	2016-05-14 07:56:26+00

Insight:
These users have been on the platform the longest and may be targeted for loyalty rewards or premium features.

2.2 Inactive Users

To improve user engagement, we identified users who have never posted a single photo.

SQL Query:

```
SELECT users.id, users.username
FROM users
LEFT JOIN photos ON users.id = photos.user_id
GROUP BY users.id, users.username
HAVING COUNT(photos.user_id) = 0;
```

Results:

id	username
91	Bethany20
74	Hulda.Macejkovic
54	Duane60
71	Nia_Haag
68	Franco_Keebler64
34	Pearl7
80	Darby_Herzog
83	Bartholome.Bernhard
90	Esmeralda.Mraz57
45	David.Osinski47
89	Jessyca_West
36	Ollie_Ledner37
14	Jaclyn81
66	Mike.Auer39
75	Leslie67
41	Mckenna17
53	Linnea59
7	Kasandra_Homenick
24	Maxwell.Halvorson
57	Julien_Schmidt
81	Esther.Zulauf61
25	Tierra.Trantow
21	Rocio33
49	Morgan.Kassulke
76	Janelle.Nikolaus81
5	Aniya_Hackett

Insight:
Targeted promotions or personalized email campaigns can be used to encourage these users to start posting.

2.3 Contest Winner

To determine the contest winner, we identified the **user with the most likes on a single photo**.

SQL Query:

```
SELECT users.id, users.username, photos.image_url, photos.id AS photo_id,
COUNT(likes.photo_id) AS total_likes
FROM photos
LEFT JOIN likes ON photos.id = likes.photo_id
LEFT JOIN users ON photos.user_id = users.id
GROUP BY users.id, users.username, photos.id, photos.image_url
ORDER BY total_likes DESC
LIMIT 1;
```

Results:

id	username	image_url	photo_id	total_likes
33	Yvette.Gottlieb91	https://brook.com	100	8

Insight:
This query helps identify the **most engaging content**, which can be used to design future campaigns.

2.4 Popular Hashtags

Brands looking to increase visibility need to know the most frequently used hashtags.

SQL Query:

```
SELECT tags.id AS tag_id, tags.tag_name, COUNT(photo_tags.tag_id) AS
countOfTagUsed
FROM tags
LEFT JOIN photo_tags ON tags.id = photo_tags.tag_id
GROUP BY tags.id, tags.tag_name
ORDER BY countOfTagUsed DESC
LIMIT 5;
```

Results:

```
| tag_id | tag_name | countoftagused |
| ------ | -------- | -------------- |
| 21     | smile    | 59             |
| 20     | beach    | 42             |
| 17     | party    | 39             |
| 13     | fun      | 38             |
| 5      | food     | 24             |
```

Insight:
The most popular hashtags can be recommended for brand campaigns and influencers to increase engagement.

2.5 Best Days for Ad Campaigns

To determine the best days for launching advertisements, we analyzed the **days with the highest user registrations**.

SQL Query:

```
SELECT TO_CHAR(created_at, 'Day') AS "DayOfTheWeek", COUNT(*) AS
"TotalNoOfRegisteredUser"
FROM users
GROUP BY "DayOfTheWeek"
ORDER BY "TotalNoOfRegisteredUser" DESC
LIMIT 2;
```

Results:

```
| DayOfTheWeek | TotalNoOfRegisteredUser |
| ------------ | ----------------------- |
| Thursday     | 16                      |
| Sunday       | 16                      |
```

Insight:
Advertising on peak registration days ensures **maximum reach and impact**.

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3. Investor Metrics

3.1 User Engagement

We calculated the **average number of posts per user** to measure engagement levels.

SQL Query:

```
SELECT COUNT(photos.id) * 1.0 / NULLIF(COUNT(DISTINCT photos.user_id), 0) AS
"AverageOfPostPerUser"
FROM users
LEFT JOIN photos ON users.id = photos.user_id;
```

Results:

```
| AverageOfPostPerUser |
| -------------------- |
| 3.4729729729729730   |
```

Insight:
This metric helps investors understand if users are actively engaging with the platform.

3.2 Platform Activity Ratio

To assess overall platform usage, we calculated the **ratio of total photos to total users**.

SQL Query:

```
SELECT COALESCE(
    (SELECT COUNT(*) * 1.0 FROM photos) / NULLIF((SELECT COUNT(*) FROM
users), 0),
    0
) AS "PostPerUser";
```

Results:

```
| PostPerUser       |
| ----------------- |
| 2.5700000000000000 |
```

Insight:
A higher post-per-user ratio indicates an **active user base**, while a lower ratio may suggest passive users.

3.3 Bot Detection

To detect potential bot activity, we identified users who **liked every single photo**, which is an unusual behavior.

SQL Query:

```
SELECT likes.user_id, users.username, COUNT(*) AS "TotalUserLikesPerPost"
FROM likes
INNER JOIN users ON likes.user_id = users.id
GROUP BY likes.user_id, users.username
HAVING COUNT(*) = (SELECT COUNT(*) FROM photos)
ORDER BY "TotalUserLikesPerPost" DESC;
```

Results:

```
| user_id | username      | TotalUserLikesPerPost |
| ------- | ------------- | --------------------- |
| 5       | Aniya_Hackett | 257                   |
```

Insight:
Such users could be **fake accounts or bots** artificially inflating engagement metrics.

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4. Key Findings & Recommendations

4.1 Key Insights

- The **oldest users** can be leveraged for premium offerings and loyalty programs.
- **Inactive users** present an opportunity for engagement campaigns.
- The **most-liked photo** can provide guidance for future content strategies.
- **Popular hashtags** are essential for increasing visibility.
- **Peak registration days** should be prioritized for advertising.
- **Post-per-user ratio** indicates user engagement levels.
- **Bot detection** is necessary to maintain the platform's integrity.

4.2 Recommendations

- Launch an **email re-engagement campaign** for inactive users.
- Promote **top hashtags** to maximize reach.
- Schedule ad campaigns on **high-registration days** for better conversion.
- Investigate potential **bot accounts** and take necessary actions. Conduct further **trend analysis** to refine content strategies.

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5. Conclusion

This Instagram engagement analysis provides **critical insights** into user behavior, platform engagement, and marketing opportunities. By leveraging these insights, **brands, marketers, and platform managers** can enhance user experience, boost engagement, and drive revenue.

☐ **Next Steps:**

- Implement user engagement campaigns.
- Monitor hashtag trends for better content strategies.
- Conduct bot audits to maintain data integrity.
- Refine advertising strategies based on user activity trends.

☐ **Final Thought:**
Understanding user behavior through **data-driven decisions** is key to **Instagram's long-term growth and success**.