

Social Media Sentiment Analysis Report

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Task 2 – Data Science/Data Analytics Internship

Title: Social Media Sentiment Analysis Using NLP ,Excel and Power BI

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1. Introduction

This report presents insights derived from social media data related to trending tech hashtags such as #AI, #CloudComputing, #DataScience, #MachineLearning, and #Python. Using NLP sentiment classification and the VADER model, we analyzed the tone of discussions across platforms like Twitter, Instagram, and Reddit.

Data Sources

Platforms Analyzed: Instagram , Twitter, Reddit

Analyze 600 social media posts.

Classify content as **Positive**, **Neutral**, or **Negative** using:

Predefined sentiment labels

VADER sentiment scores.

Visualize key patterns and trends across:

Hashtags

Platforms

Time	Engagement metrics (likes and shares)
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Hashtags Monitored:

- #AI
- #CloudComputing
- #DataScience
- #MachineLearning
- #Python

Total likes and shares

Total Likes: 141K

Total Shares: 58K

2. Sentiment Overview

Manual Sentiment Analysis (from Dashboard 1):

Positive Sentiment: 209 posts

Neutral Sentiment: 203 posts

Negative Sentiment: 188 posts

- Top Hashtags with Positive Sentiment:**

#Python and #MachineLearning showed higher positive sentiment.

● **Platform Sentiment Distribution:**

Instagram, Reddit, and Twitter each contributed roughly equally across sentiment types.

Positive sentiment is slightly more represented on Instagram and Twitter.

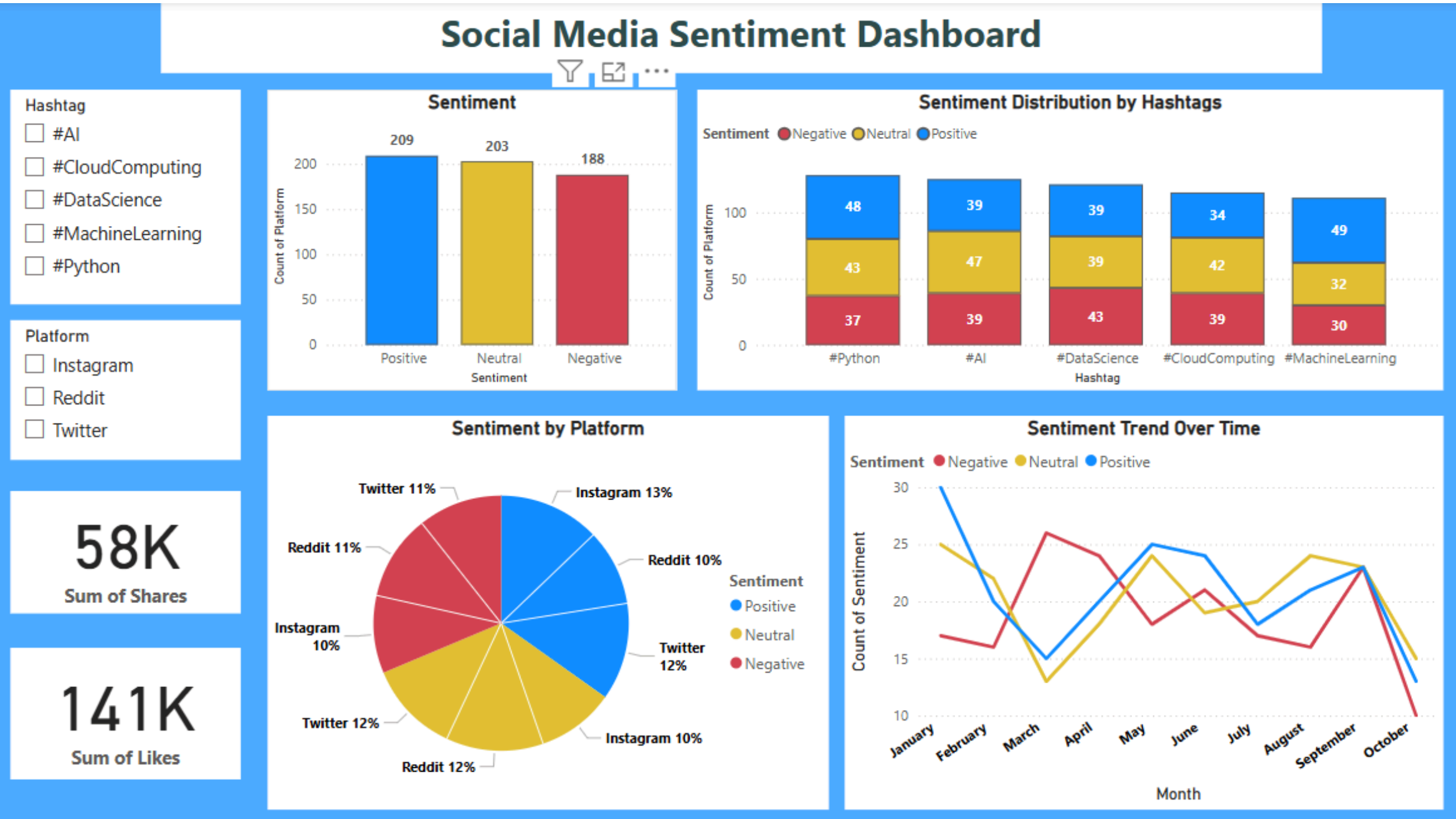
● **Likes and Shares:**

Likes: 141K

Shares: 58k

Trend Over Time:

Positive and Neutral sentiments occur more frequently and consistently throughout the year, while Negative spikes are less frequent.



VADER Sentiment Analysis (from Dashboard 2):

- **Positive Sentiment:** 482 posts

- **Neutral Sentiment:** 118 posts
- **Negative Sentiment:** Not classified in this version.
- **Hashtag Performance:**

All five hashtags (e.g., #AI, #Python) show significantly more positive sentiment compared to neutral.

- **Platform Sentiment Distribution:**

Instagram: 27 %

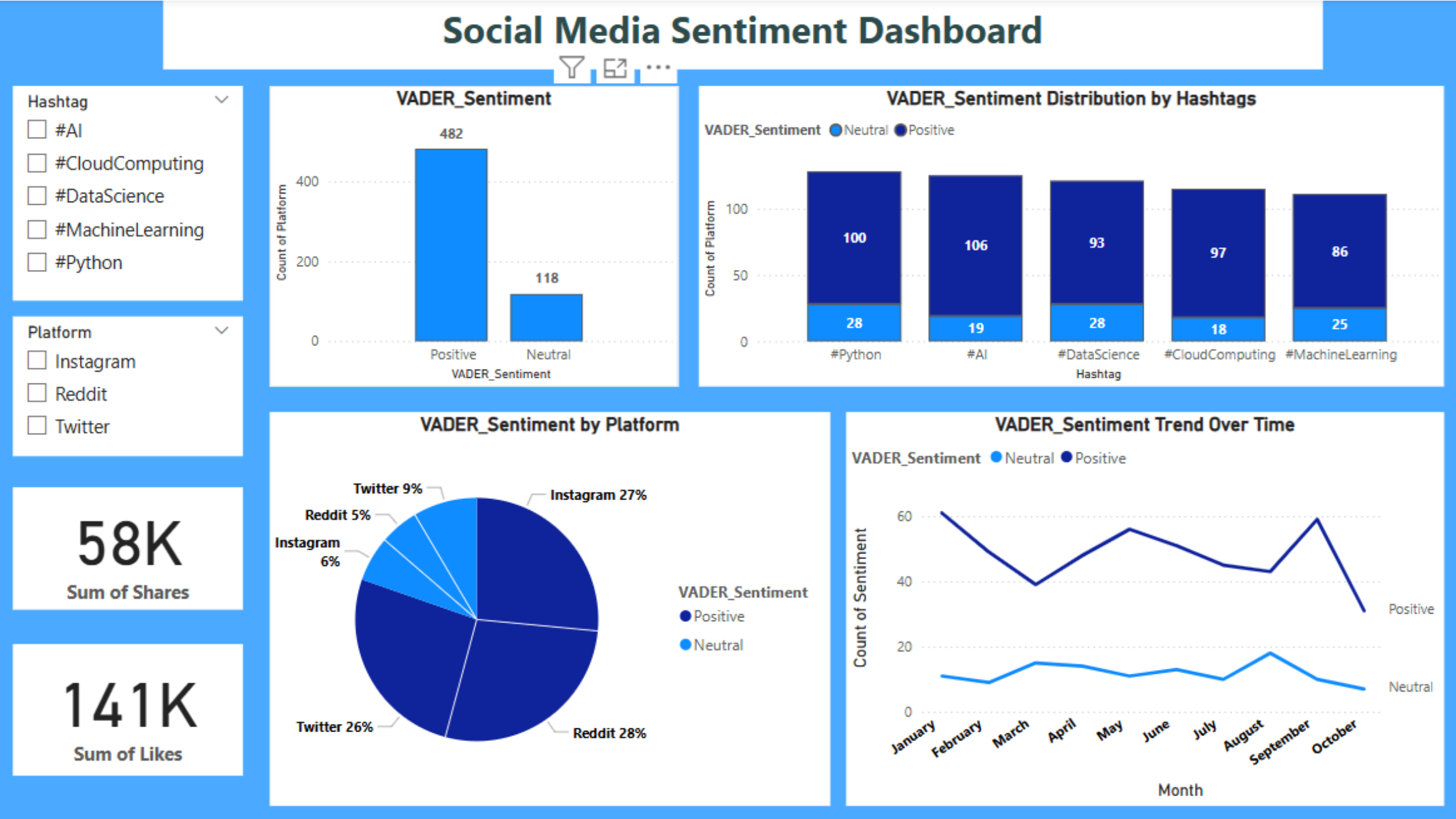
Reddit: 28 %

Twitter: 26 %

Positive sentiment dominates across all platforms, especially on Instagram and Reddit.

Trend Over Time:

A steady stream of positive sentiment, with frequent neutral events but no negative classification.

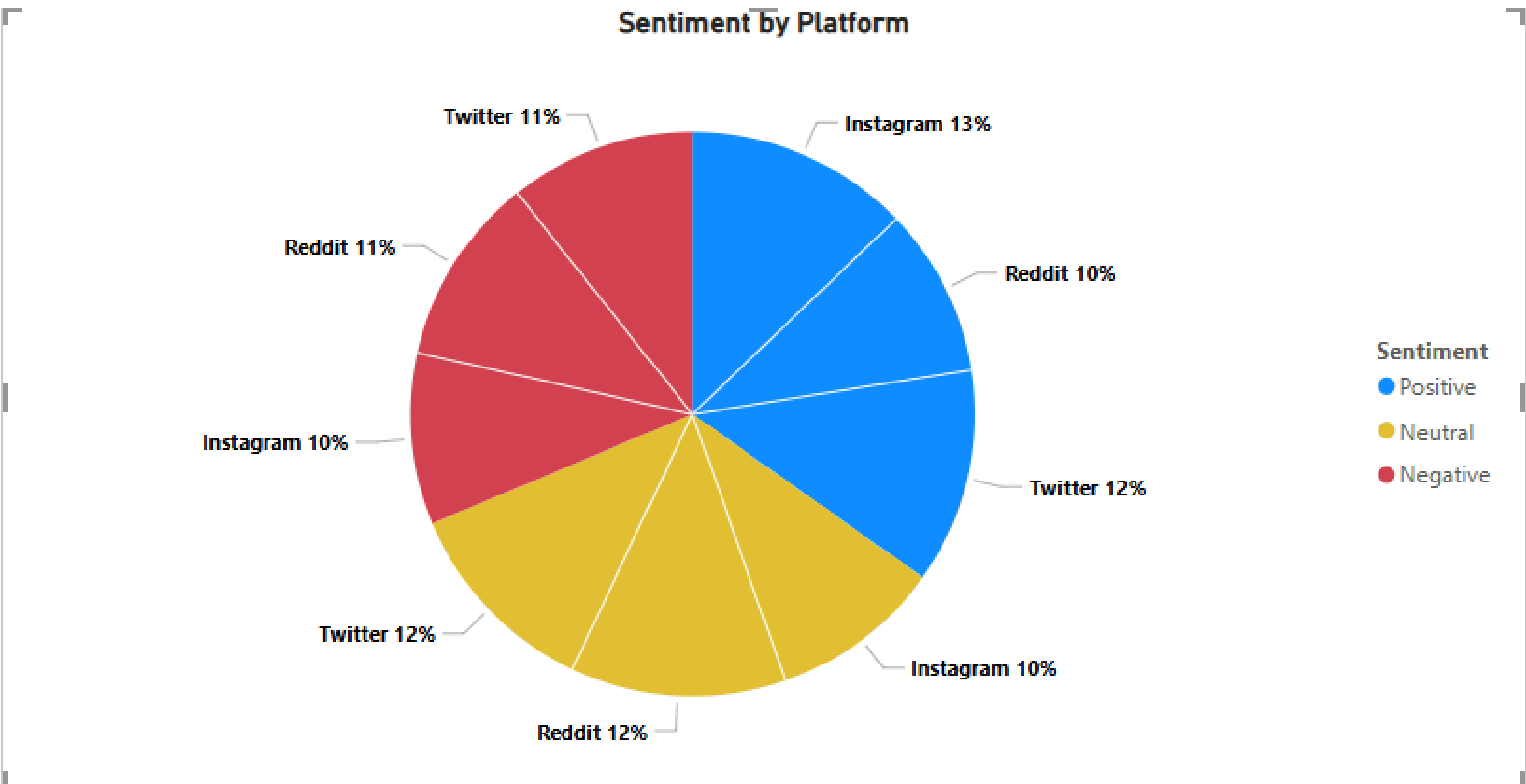


3. Platform Sentiment Analysis

#Manual Sentiment:

Each platform (Instagram, Twitter, Reddit) has a nearly even distribution across all three sentiment categories.

Twitter and Reddit slightly edge out Instagram in share.

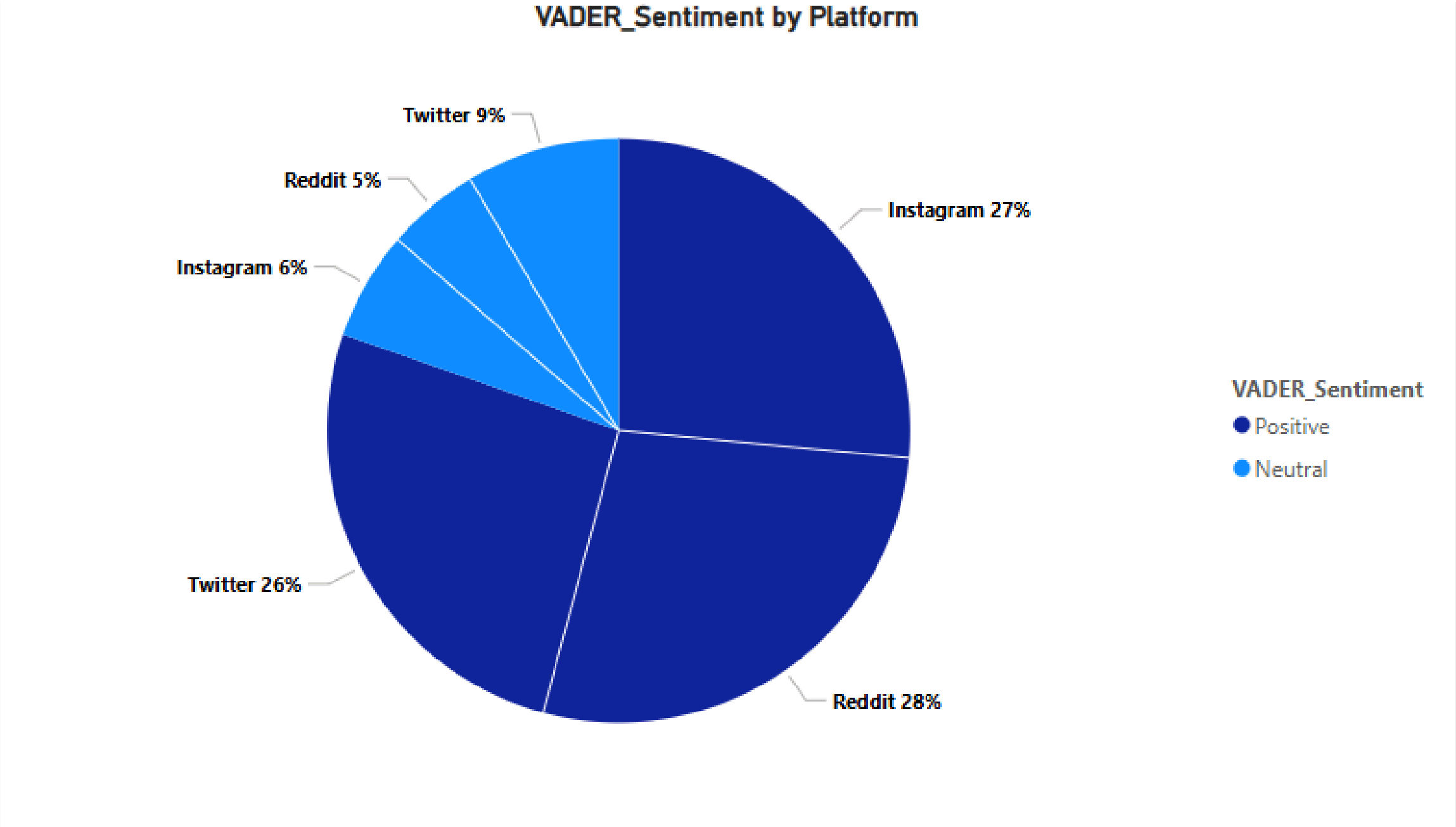


Visualization: Pie chart showing sentiment share by platform

#VADER Sentiment:

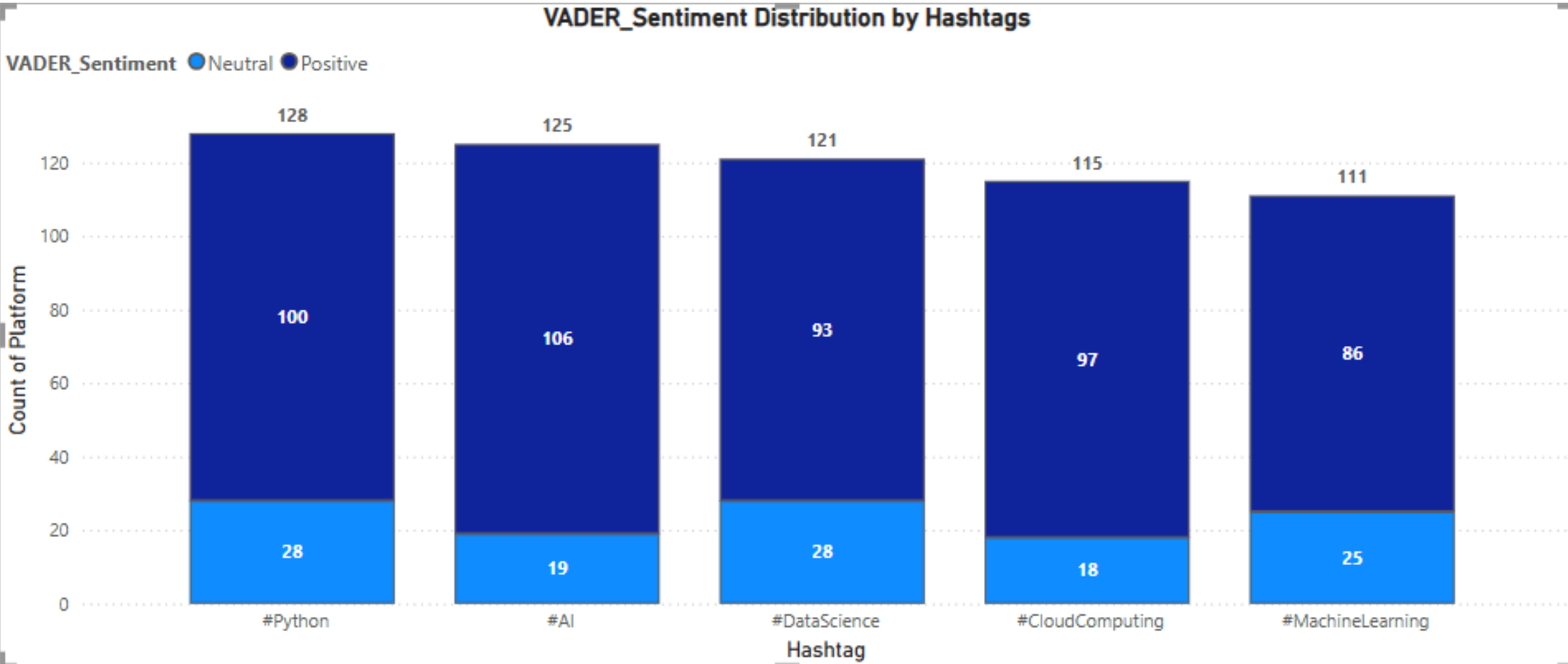
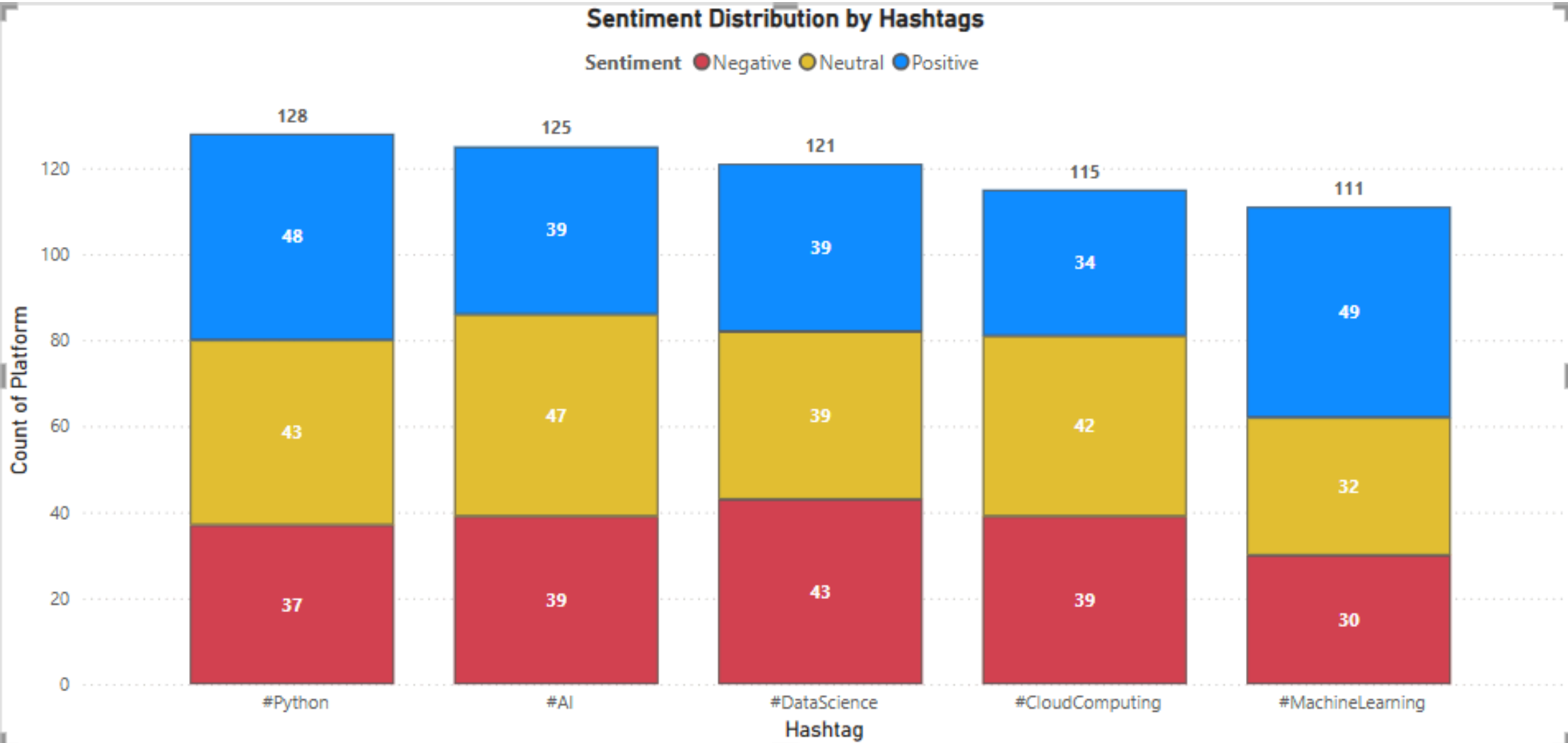
Reddit (28%) and **Instagram (27%)** dominate positive sentiment volume.

Twitter shows less activity in comparison (26% positive).



Visualization: Pie chart showing sentiment share by platform

4. Sentiment by Hashtag



Insights:

#MachineLearning and **#Python** show the **highest positive sentiment** in both analyses.

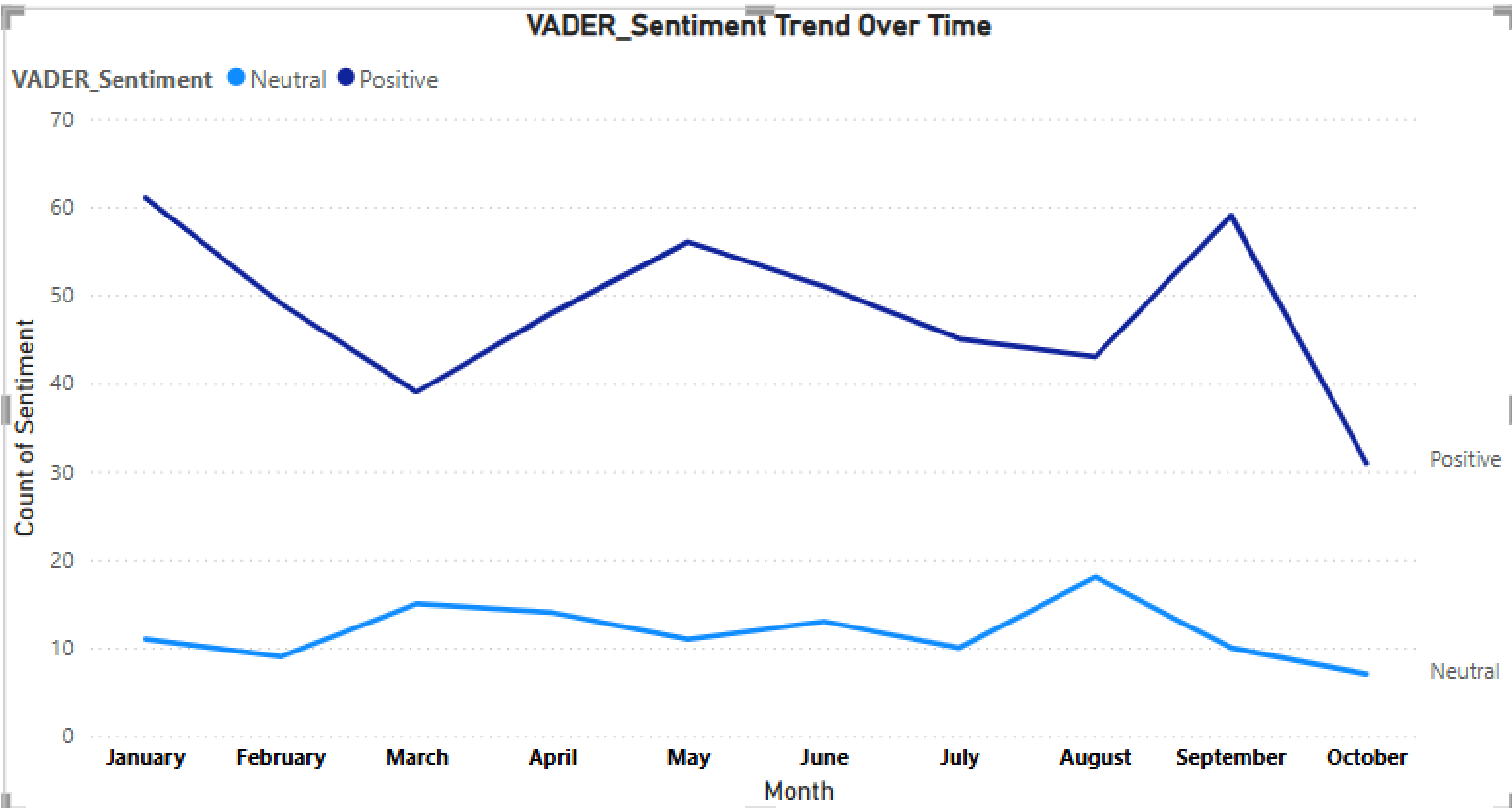
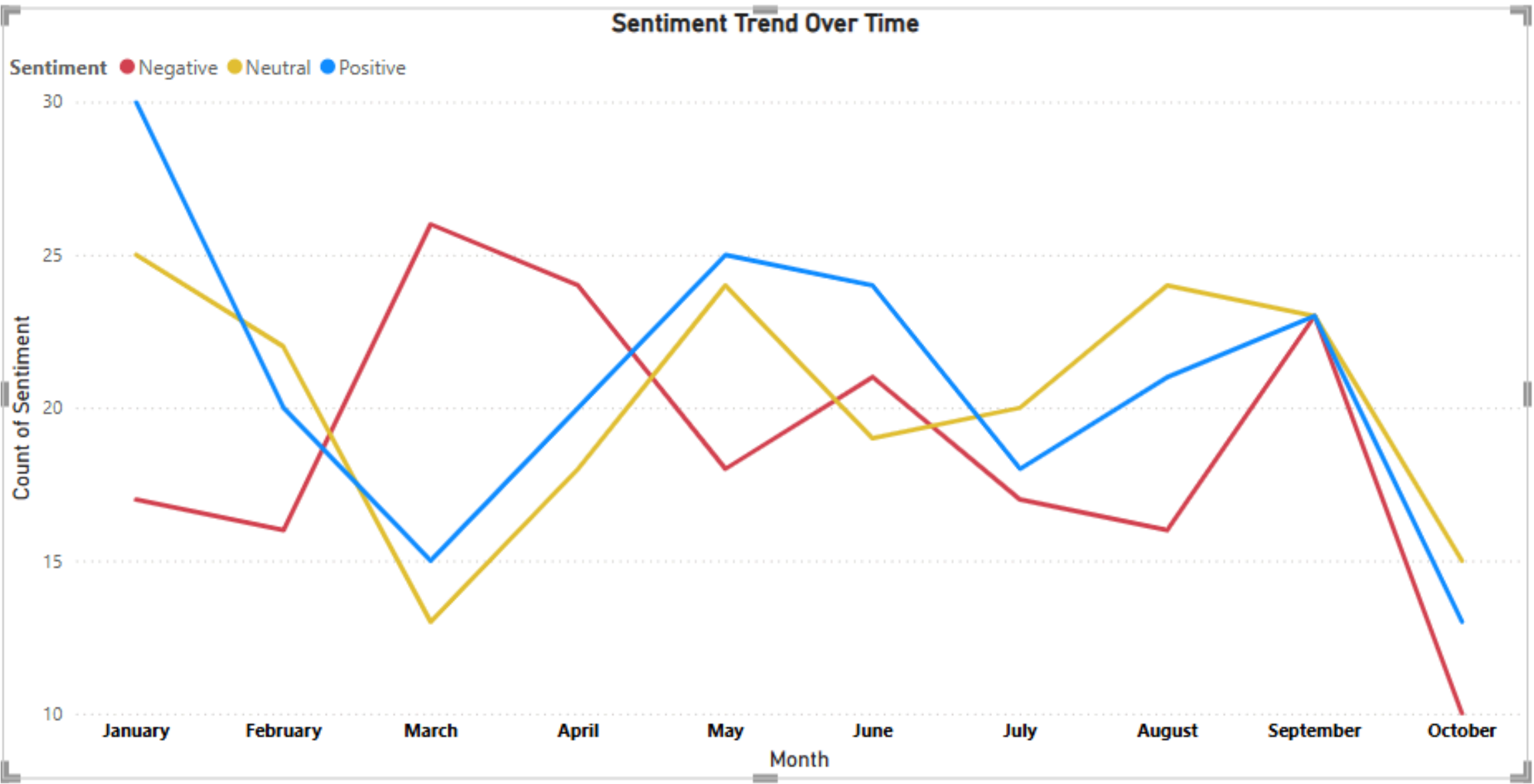
#DataScience consistently shows **lower sentiment polarity**, with a higher share of negative/neutral responses in the manual method.

5. Sentiment Trend Over Time

Sentiment activity over months (March– October 2024) reveals:

Visualization: Line and bar charts tracking sentiment counts over time

Fluctuations in public opinion, with peaks in May and July



2. VADER results show a higher frequency of positive sentiment peaks.

6. Engagement Metrics

Total Likes: 141K

Total Shares: 58k

Positive sentiment correlates with higher likes and shares, showing a strong link between tone and engagement.

7. Methodology

a. Data Preprocessing

Lowercased text

Removed punctuation, URLs, and emojis

Removed stopwords using NLTK

b. Sentiment Classification

Manual Labels: Based on a predefined column in the dataset

VADER Analysis: Used compound score to classify:

Positive: ≥ 0.05

Neutral: Between -0.05 and 0.05

Negative: ≤ -0.05

c. Visualization in Power BI

1. KPIs: Total Likes, Shares
2. Bar Charts: Sentiment distribution, hashtag performance
3. Pie Charts: Platform-wise sentiment breakdown
4. Line Charts: Sentiment trend over time

4. Tools Used

1. **Python (Pandas, VADER, NLTK)** – Data Cleaning and Sentiment Analysis
2. **Power BI** – Dashboard Development
3. **Google Colab** – Notebook Execution
4. **Microsoft Word** – Report Preparation

Conclusion

1. Overall Sentiment is positive, but differs by analysis method:
2. VADER detects higher positivity than manual classification.
3. #MachineLearning and #Python are highly favored.
4. Platform-wise, Reddit and Instagram contribute the most to positive sentiment, while Twitter appears more neutral.
5. Spikes in engagement correlate with major dates or trends

