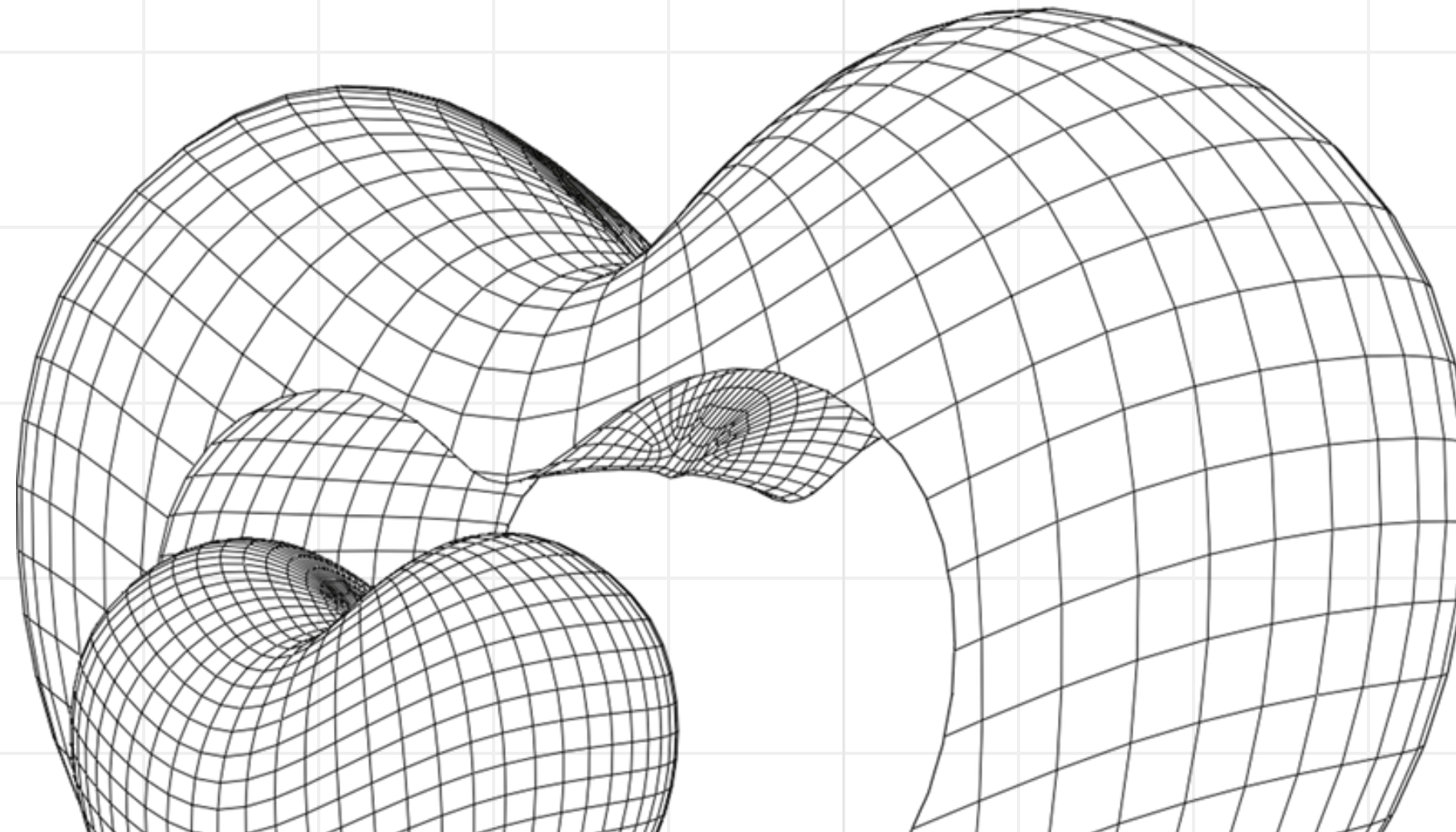


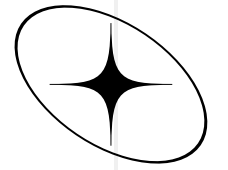
SAUMYA, SHREEVARDHAN, & HRIDAY

ENGAGE-X



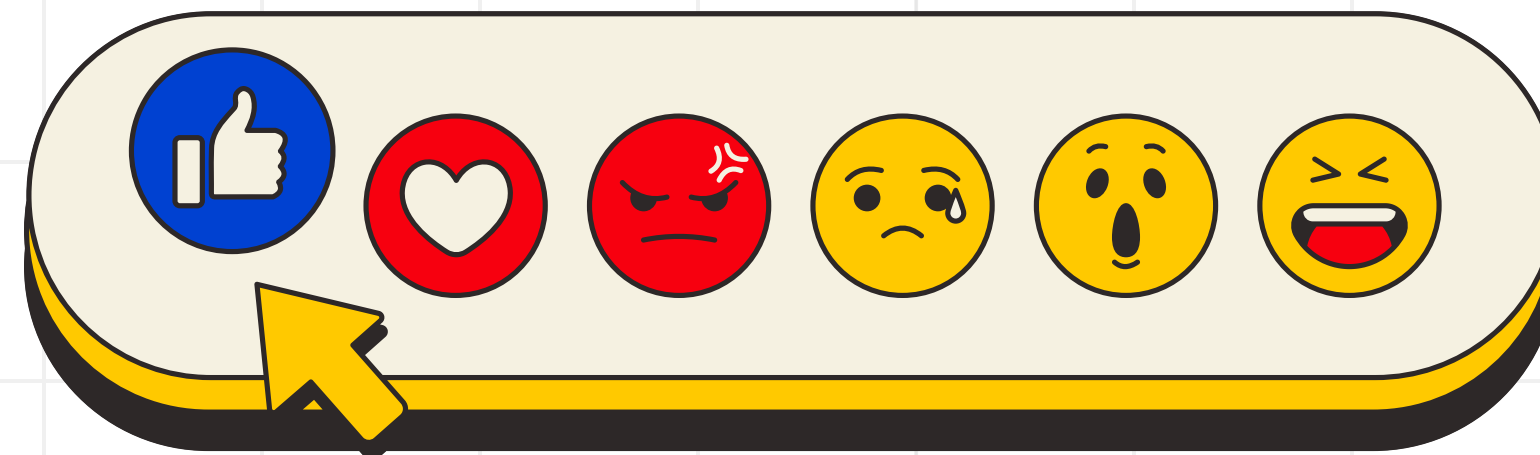
ENGAGE





WHAT IS THE PROBLEM?

Plaksha's online presence is not able to capture the attention of its proper target audience. The engagement rates are low, the posting process lacks coherence, and content optimization is not up to the mark.



WHY THIS PROBLEM?

PLAKSHA UNIVERSITY, BEING A NEW ENTRANT IN THE ACADEMIC ARENA, IS AT A CRUCIAL JUNCTURE WHERE ESTABLISHING A ROBUST DIGITAL FOOTPRINT IS INDISPENSABLE. WHILE THE UNIVERSITY HOLDS IMMENSE POTENTIAL, ITS **SOCIAL MEDIA PRESENCE** HASN'T FULLY HARNESSSED THIS YET. IN TODAY'S DIGITAL AGE, A STRONG SOCIAL MEDIA ENGAGEMENT ISN'T JUST A BONUS; **IT'S A NECESSITY**. **IT'S THE BRIDGE CONNECTING THE UNIVERSITY TO PROSPECTIVE STUDENTS, EDUCATORS, AND THE GLOBAL ACADEMIC COMMUNITY. HOWEVER, THE CURRENT CHALLENGE LIES IN UNDERSTANDING HOW TO MAKE OUR POSTS RESONATE AND TRULY ENGAGE THIS AUDIENCE.**

there are many rich kids on the campus, the university itself is very new, it's very far away

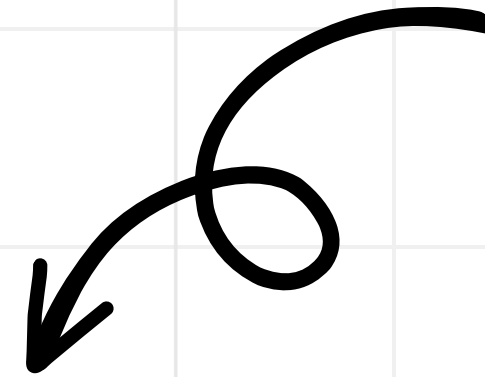
Yeh dusra LPU hai.

roz ke 5 call, 20 messages aur 12 emails hai.

It's another private univ with polished campus. | Block them.

CURRENT PROCESS BREAKDOWN

PLAKSHA SOCIAL MEDIA
TEAM



**CONTENT
IDEAS**



**CALENDAR
TIMELINE***



**GRAPHICS OR
VIDEOS**

**COPYS &
HASHTAGS***



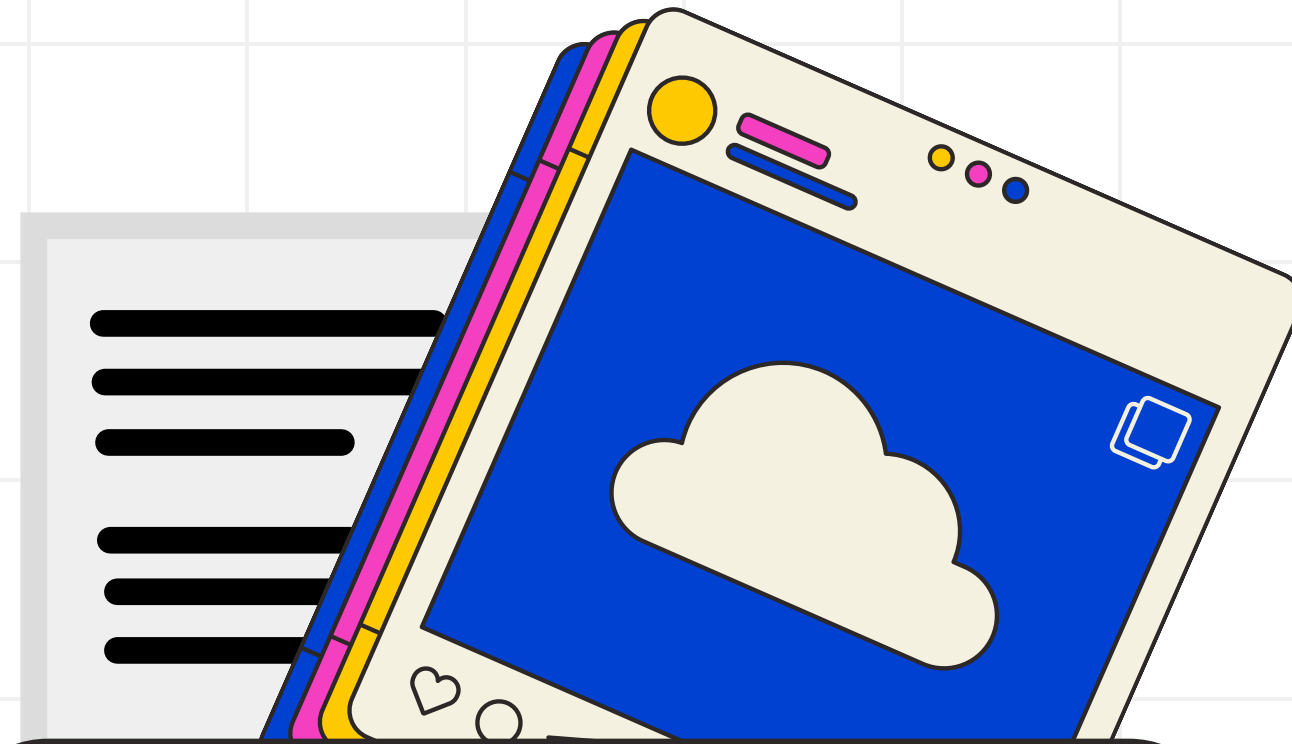
**SCHEDULED
UPLOAD***

*WORK WAS OUTSOURCED DUE TO
LACK OF EXPERTISE & THE AGENCY WAS
ALSO THEN FIRED FOR POOR QUALITY

SOLUTION?

CREATE A MODEL USING PLAKSHA'S PAST SOCIAL MEDIA POSTS AND ENGAGEMENT DATA TO ANALYSE WHAT WORKS AND WHAT DOES NOT, AND AT THE SAME TIME PREDICT THE KIND OF ENGAGEMENT EXPECTED IN A FUTURE POST.

OUR OBJECTIVE IS TO LEVERAGE MACHINE LEARNING TO CREATE A SOCIAL MEDIA PREDICTION MODEL FOR PLAKSHA. THIS WILL ASSIST IN MAKING INFORMED DECISIONS AROUND POST TIMING, CONTENT, AND FORMAT, AS WELL AS PROVIDE INSIGHTS INTO ENGAGEMENT FORECASTING.





ENGAGE-X


 **12K**  **10K**


LITERATURE REVIEW

Machine Learning-Based Mathematical Modelling for Prediction of Social Media Consumer Behavior Using Big Data Analytics

 The study's objective was to develop a mathematical and ML-based model to **predict consumer behaviour on social media** platforms, **in terms of likes, followers**, visits, and downloads for various products and services.


 The dataset was collected from various social media platforms, including **Facebook, Twitter, LinkedIn, YouTube, Instagram, and Pinterest**. The data was preprocessed to remove outliers, noises, and errors.


 The study found that the **XGBoost Regressor model** showed the best performance based on the **lowest root mean square error** and the **highest accuracy** on validation data.


 Variety of ML models including Linear Regression, Decision Tree Regressor, Random Forest Regressor, XGBRegressor, Bagging Regressor etc


(Chaudhary et al., 2021)

Machine Learning for Predictive Analytics in Social Media Data

 The study's objective was to utilize machine learning algorithms to **identify significant trends and forecast user behavior** from social media data.

 Dataset included user profiles, blog posts, **comments, and engagement metrics**.

 The study found that **ensemble approaches, particularly random forests, performed better** than other algorithms in predicting user behavior. The models demonstrated high F1-scores and accuracy

 Variety of ML models including ensemble methods (e.g., gradient boosting, random forests), neural networks, decision trees, and support vector machines. The paper **highlights the need for preprocessing this data, which includes eliminating duplicates, addressing missing values, normalizing text, and filtering out extraneous elements**.

(Alassafi et al., 2023)

TOOLS



Sprout Social

Instagram scheduling, real time post monitoring, hashtag trends, content suggestion, optimal send times



Hootsuite

Engagement rate, Impressions, Video views & reach, Follower growth, Negative feedback rate, customised publish time, competitive analysis



Iconosquare

Analytics, scheduler, competition analysis, Keyword Filtering, all in one management.



Brandwatch

Overview of social conversations about brand, competitors, keyword trends, sentiment analysis, influencer marketing



Instagram Analytics

Impressions, Reach, Engagement, top posts, followers, likes, comments, shares



Brand24 (Free)

Insights on what IG users say about brand, hashtags, Sentiment Analysis, Competitive Analysis, customer engagement.

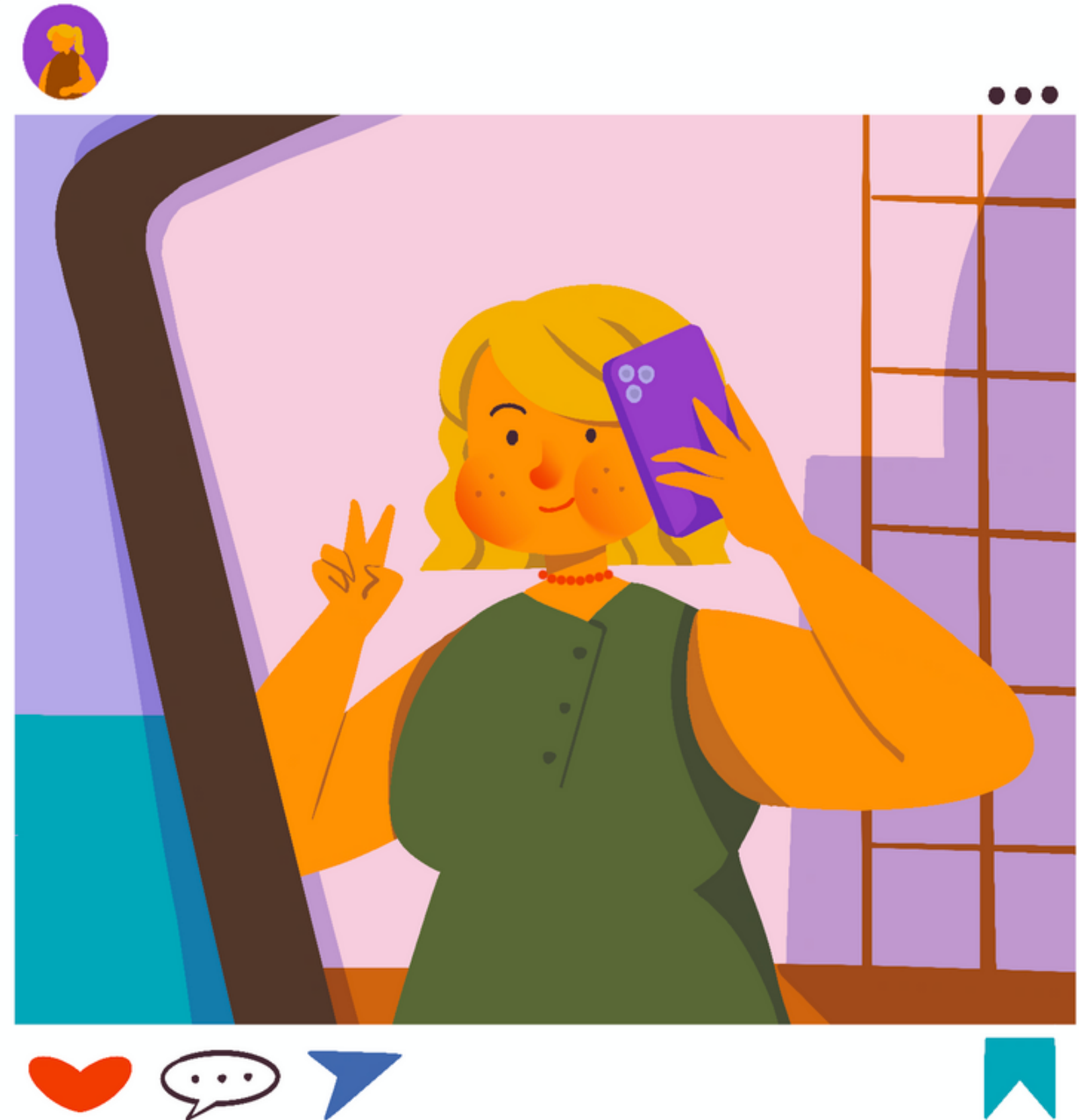
X



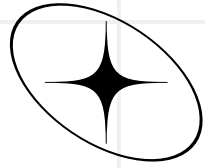
1. Copy / Caption
2. Hashtags
3. Type (Video/Image)
4. Followers
5. Day, hour
6. Mentions

USER BEHAVIOUR

THE MODEL WILL TAKE IN DATA LIKE THE HASHTAGS, COPY/CAPTIONS, TYPE(VIDEO/IMAGE) FOR A SAMPLE POST AND THEN IT WILL FORECAST WHAT POSSIBLE ENGAGEMENT THE TEAM CAN EXPECT AND SUGGESTIONS TO IMPROVE THE CONTENT.



Forecasted engagement metrics (Range of likes, engagement ratio etc)

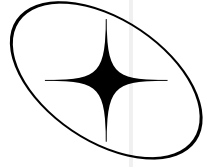


PRE-ANALYSIS

Research
Stakeholder
Data collection
Feature preprocessing

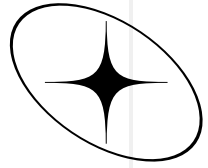
POST-ANALYSIS

ML Methodologies
research
Training Model
Predicting Accuracy



How we collected the data (Scraped and Sources),
preprocessed it, and then some preliminary analysis

DATASET AND FEATURE PRE PROCESSING



SOURCE OF OUR DATA

We sourced our dataset **directly from the university's official social media accounts**. Instagram, being a primary platform for our student engagement, was our main focus. The platform, with its visual-centric approach, **provided us with a diverse range of data elements, from post captions and hashtags to likes and comments**. This data doesn't just mirror our outreach initiatives but also **encapsulates the reactions and engagements of our audience, making it central to our analysis**.

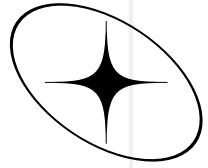
We were also able to source **official data from the Plaksha's Engagement Team** which gave us **month-wise metrics on the number of followers, Growth(%), Engagement(%), No. of posts, Top post(Posts with the highest impressions)** since the inception of the university



[/plakshauniversity](#)



Plaksha's Communication Team



ETHICAL CONSIDERATIONS

Respecting Privacy: While our dataset is derived from public posts the university made, we were cautious about user privacy. **We recognize that comments, even if public, represent individual opinions. In all our analyses and representations, we maintained the utmost respect for this individual expression.**

Maintaining Data Integrity: We ensured that our data remained authentic and genuine. **Any modifications or clean-ups were done judiciously, ensuring the original essence of the data remained untouched.** We believe that any misrepresentation could lead to misleading insights.

DATA EXTRACTION - WEB SCRAPING



ID	All	Caption	Count	Comments	Dimensions	Dimensions	Display URL/DisplayURL	First Comment	Hashtags	ID	Image	% Specimen	Label	Comment/Status/Comments	Like Count/Retweet/Count	Location ID/State/Location No	Members	Owner Full	
1	1 null	Why join Plaksha? Because you study the most inter-discipline 0 items	14		1000	1000	https://www.instagram.com/p/CB.../		18 items	2	20770	18	0 items	0 items	184	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
2	2 null	#StudentsOfPlaksha Our students are so much more than just 0 items	1		1000	1000	https://www.instagram.com/p/CB.../		15 items	3	300700	18	0 items	1 item	162	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
3	3 null	#YearReview As we move into 2021, we want to pause and lo 0 items	3		1017	1000	https://www.instagram.com/p/CB.../	Creat	11 items	3	307400	18	0 items	3 items	170	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
4	4 null	On #WorldMentalHealthDay Dr. Shashi Sharma reminds us 10 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	5,710400	18	0 items	0 items	50	undefined	undefined	0 items	Plaksha Un
5	5 null	#ShapingBright Minds #Plakshaexperience - where academic 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		8 items	0	3,00100	18	0 items	0 items	70	undefined	undefined	2 items	Plaksha Un
6	6 null	The entrepreneurial ecosystem at Plaksha drives innovation a 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		3 items	0	3,00100	18	0 items	0 items	41	6,211,730+14	Plaksha Un 1 item	Plaksha Un	
7	7 null	#TUPConversations2020 Down the memory lane to our Techno 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		0 items	0	3,00710	18	0 items	0 items	60	undefined	undefined	7 items	Technology
8	8 null	Beyond each innovation is an engineer balancing precision with 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		7 items	0	3,16000	18	0 items	0 items	28	undefined	undefined	0 items	Plaksha Un
9	9 undefined	Collaboration for research and innovation has a transformative 0 items	1		1017	1000	https://www.instagram.com/p/CB.../		5 items	0	3,19000	18	0 items	1 item	122	6,211,730+14	Plaksha Un 1 item	Plaksha Un	
10	10 null	#ShapingBright Minds Bright minds seek transformative experi 0 items	4		1000	1000	https://www.instagram.com/p/CB.../	Very cool T	7 items	0	3,19000	18	0 items	4 items	99	6,211,730+14	Plaksha Un 2 items	Plaksha Un	
11	11 null	The world engineer originates from the Latin word 'ingenera' = 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		7 items	0	3,16000	18	0 items	0 items	50	undefined	undefined	0 items	Plaksha Un
12	12 null	In the whispers of stories, we find reflections of ourselves. By 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		4 items	0	3,16140	18	0 items	0 items	40	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
13	13 null	We all want to unlock the secret to success. #Inventing bring 0 items	0		1107	640	https://www.instagram.com/p/CB.../		2 items	0	3,10700	18	0 items	0 items	61	undefined	undefined	1 item	Technology
14	14 undefined	Welcoming the incoming #Plaksha_tech_leaders Program C! 8 items	0		1017	1000	https://www.instagram.com/p/CB.../		3 items	0	3,17010	18	8 items	0 items	89	undefined	undefined	4 items	Technology
15	15 null	#PlakshaFounders A remarkable day unfolded at Plaksha Univ 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		4 items	0	3,16000	18	0 items	0 items	60	6,211,730+14	Plaksha Un 2 items	Plaksha Un	
16	16 null	#PlakshaOrientation Glimpse of the orientation of the Btech 4 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,16100	18	0 items	0 items	93	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
17	17 undefined	#PlakshaThrive The MCRS Thrive Room at Plaksha University 4 items	3		1017	1000	https://www.instagram.com/p/CB.../		5 items	0	3,17000	18	8 items	3 items	141	6,211,730+14	Plaksha Un 4 items	Plaksha Un	
18	18 null	#PlakshaOrientation Inauguration of the Class of 2021 at 0 items	1		1000	1000	https://www.instagram.com/p/CB.../	Please con	5 items	0	3,17000	18	0 items	1 item	86	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
19	19 undefined	#ClassOf2021 Welcome the incoming undergraduate cohort to 4 items	1		1017	1000	https://www.instagram.com/p/CB.../	#Plaksha	4 items	0	3,17000	18	8 items	1 item	290	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
20	20 undefined	On Friday and Saturday last week I did two sessions of the wo 2 items	1		1000	1000	https://www.instagram.com/p/CB.../	Thank you	10 items	0	3,20710	18	2 items	1 item	104	undefined	undefined	1 item	Page C/I
21	21 null	Happy 75th Independence Day! #Plaksha IndependenceDay 4 0 items	0		1145	1000	https://www.instagram.com/p/CB.../		3 items	0	3,16900	18	0 items	0 items	166	undefined	undefined	0 items	Plaksha Un
22	22 null	Celebrating #NationalSportsDay at Plaksha University! Our st 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,16000	18	0 items	0 items	128	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
23	23 undefined	#WorldPhotographyDay Check out these breathtaking moment 4 items	0		1017	1000	https://www.instagram.com/p/CB.../		5 items	0	3,17000	18	4 items	0 items	162	6,211,730+14	Plaksha Un 3 items	Plaksha Un	
24	24 null	#TUPConversations2020 Celebration is in the air as we gear up 10 items	0		1107	640	https://www.instagram.com/p/CB.../		4 items	0	3,16100	18	0 items	0 items	104	undefined	undefined	0 items	Technology
25	25 undefined	#TUPConversations2020 Who said academics can't be fun! Stu 7 items	0		1017	1000	https://www.instagram.com/p/CB.../		3 items	0	3,16010	18	7 items	0 items	181	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
26	26 null	#Statista We have some incredible news to share! Our very 0 items	1		1000	1000	https://www.instagram.com/p/CB.../		4 items	0	3,15110	18	0 items	1 item	56	undefined	undefined	2 items	Plaksha Un
27	27 null	#NationalStatisticsDay "The fundamental spirit of statistics is 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,16070	18	0 items	0 items	43	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
28	28 null	Together, we celebrate the indomitable spirit of skill building a 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,14700	18	0 items	0 items	62	undefined	undefined	0 items	Plaksha Un
29	29 null	#Statistaadmissions Our admission process extends beyond 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		4 items	0	3,13100	18	0 items	0 items	77	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
30	30 null	Our PSP students embarked on a 3-day Tech Trek with their 0 items	5		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,14000	18	0 items	5 items	111	21300000	Delhi	2 items	Plaksha Un
31	31 null	#TUPConversations2020 Jul 2 days to go! This year's convocat 0 items	0		1107	640	https://www.instagram.com/p/CB.../		4 items	0	3,16000	18	0 items	0 items	80	undefined	undefined	0 items	Technology
32	32 null	We're thrilled to welcome Dr. Siddharth, an Assistant Profess 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,15000	18	0 items	0 items	95	6,211,730+14	Plaksha Un 2 items	Plaksha Un	
33	33 null	Welcome, Class of 2021! As you embark on this transformative 0 items	3		1000	750	https://www.instagram.com/p/CB.../		5 items	0	3,16700	18	0 items	3 items	92	undefined	undefined	3 items	Plaksha Un
34	34 null	#PlakshaCare As a transformative institution, we recognize 0 items	4		1000	1000	https://www.instagram.com/p/CB.../	Plaksha	5 items	0	3,15900	18	0 items	3 items	137	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
35	35 null	As we navigate our journey, every stepping stone etches a uni 0 items	1		1000	1000	https://www.instagram.com/p/CB.../	Welcome	10 items	0	3,12000	18	0 items	1 item	84	6,211,730+14	Plaksha Un 1 item	Plaksha Un	
36	36 null	#WorldMentalHealthDay The winds of change are blowing your way! 10 items	0		1078	1000	https://www.instagram.com/p/CB.../		8 items	0	3,13040	18	0 items	0 items	31	undefined	undefined	0 items	Plaksha Un
37	37 null	At Plaksha, we are implementing tangible measures to ensure 0 items	1		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,11700	18	0 items	1 item	80	undefined	undefined	0 items	Plaksha Un
38	38 null	#PlakshaCare Superhero Hugs - a powerful yoga technique 10 items	2		1000	1000	https://www.instagram.com/p/CB.../	Om pr	17 items	0	3,14000	18	0 items	1 item	54	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
39	39 null	#PlakshaStructures Memory of the Land of Five Rivers. By Sa 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		10 items	0	3,12100	18	0 items	0 items	67	undefined	undefined	3 items	Plaksha Un
40	40 null	#StudentsSpeak Applying for B.Tech (Deadline is next week) are 0 items	1		1000	1000	https://www.instagram.com/p/CB.../	Priority	17 items	0	3,10010	18	0 items	1 item	167	undefined	undefined	0 items	Plaksha Un
41	41 null	Let's embark on a virtual journey through the corridors of know 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		9 items	0	3,11010	18	0 items	0 items	62	undefined	undefined	0 items	Plaksha Un
42	42 null	Plaksha stands for a greener, cleaner and healthier future! We 0 items	0		1077	1000	https://www.instagram.com/p/CB.../		9 items	0	3,11800	18	0 items	0 items	53	undefined	undefined	0 items	Plaksha Un
43	43 null	The final round opens today! Don't miss your last chance to jo 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		10 items	0	3,11600	18	0 items	0 items	57	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
44	44 null	#PlakshaStructures On the Brink - A sculpture by Marland Nio 0 items	1		1000	1000	https://www.instagram.com/p/CB.../	View	15 items	0	3,10000	18	0 items	1 item	86	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
45	45 null	#ShapingBright Minds Plaksha University is delighted to welco 0 items	2		1000	1000	https://www.instagram.com/p/CB.../	and you	8 items	0	3,10000	18	0 items	2 items	126	6,211,730+14	Plaksha Un 4 items	Plaksha Un	
46	46 null	Black in Data Science, Economics & Business (DBSEB) has a 0 items	5		1000	1000	https://www.instagram.com/p/CB.../	PhD	8 items	0	3,10000	18	0 items	3 items	1180	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
47	47 undefined	#ExperientialLearning Introducing Vellam - a team dedicated t 2 items	1		1000	1000	https://www.instagram.com/p/CB.../	Good going	16 items	0	3,10000	18	2 items	1 item	58	undefined	undefined	0 items	Plaksha Un
48	48 null	#CreatorsFirst When we dare to explore the unknown, we disc 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,10000	18	0 items	0 items	57	6,211,730+14	Plaksha Un 1 item	Plaksha Un	
49	49 null	#PlakshaInnovation Artificial intelligence is an emerging science 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		1 item	0	3,00700	18	0 items	0 items	51	undefined	undefined	0 items	Plaksha Un
50	50 null	#CornellAtPlaksha A historic moment as we proudly announce 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		11 items	0	3,00700	18	0 items	0 items	137	6,211,730+14	Plaksha Un 1 item	Plaksha Un	
51	51 null	#StudentsSpeak Why do students choose Plaksha 0 items	1		1020	1000	https://www.instagram.com/p/CB.../		16 items	0	3,10020	18	0 items	1 item	190	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
52	52 null	#Throwback Throwback to our esteemed founders 0 items	0		1020	1000	https://www.instagram.com/p/CB.../		15 items	0	3,004370	18	0 items	0 items	67	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
53	53 null	#InternationalDanceDay Celebrate the magic of me! 0 items	6		1020	1000	https://www.instagram.com/p/CB.../	and dance	16 items	0	3,09140	18	0 items	4 items	104	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
54	54 undefined	#ExperientialLearning Congratulations to Team Life 2 items	0		1000	1000	https://www.instagram.com/p/CB.../		21 items	0	3,10310	18	2 items	0 items	53	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
55	55 null	#StudentsSpeak Discover the exhilarating journey 0 items	1		1017	1000	https://www.instagram.com/p/CB.../	and home	11 items	0	3,123300	18	0 items	1 item	136	undefined	undefined	8 items	Plaksha Un
56	56 null	#WorldAthleticsDay It's World Athletics Day, and v 0 items	0		1018	1000	https://www.instagram.com/p/CB.../		16 items	0	3,097190	18	0 items	0 items	145	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
57	57 undefined	#FoundersOnCampus Students at Plaksha Univers 2 items	0		1000	1000	https://www.instagram.com/p/CB.../		17 items	0	3,084240	18	2 items	0 items	123	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
58	58 null	Eid Mubarak! #Plaksha #EidMubarak #Festive #On 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		5 items	0	3,086300	18	0 items	0 items	79	6,211,730+14	Plaksha Un 0 items	Plaksha Un	
59	59 null	#TechForImpact Dr. Chaitanya Lakshmi Indira, Asst 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		3 items	0	3,085810	18	0 items	0 items	44	6,211,730+14	Plaksha Un 2 items	Plaksha Un	
60	60 null	#NationalPhotographyDay Whether it's a study buddy or a s 0 items	2		1020	1000	https://www.instagram.com/p/CB.../		11 items	0	3,078490	18	0 items	2 items	149	6,211,730+14	Plaksha Un 1 item	Plaksha Un	
61	61 null	#AcceptingBTechApplications Round 4 for admissi 0 items	0		1000	1000	https://www.instagram.com/p/CB.../		12 items	0	3,086390	18	0 items	0 items	51	undefined	undefined	0 items	Plaksha Un

mer id	Owner Use	Product Typ	Short Code/ShortCode	Tagged User/stagedUsers	Timestamp	Type	URL	Video Duration/videoDuration	Video Play Count/videoPlayCount	Video URL/videoUrl	Video View C	
27484339816	plakshau clips		CiQbWJUNt	undefined	20/11/23 15:17	Video	https://www.instagram.com/ciQbWJUNt		107,066	8777	https://instagram.fcd3-1.fra.fbcdn.net/	3903
27484339816	plakshau clips		Cr2VnLy8R	undefined	05/05/23 10:30	Video	https://www.instagram.com/Cr2VnLy8R		156,203	6102	https://instagram.fcd3-1.fra.fbcdn.net/	2752
27484339816	plakshau clips		Cm8e1N6J8OR	1 item	03/01/23 15:50	Video	https://www.instagram.com/Cm8e1N6J8OR		202,203	8236	https://instagram.fcd3-1.fra.fbcdn.net/	3258
27484339816	plakshau clips		CyN0x8BmDs	undefined	10/10/23 16:34	Video	https://www.instagram.com/CyN0x8BmDs		60,48	1444	https://content.igae3-1.adn.instagram.com/	634
27484339816	plakshau clips		Cx-pf8Mo6	undefined	04/10/23 19:06	Video	https://www.instagram.com/Cx-pf8Mo6		88,086	1736	https://content.igae3-1.adn.instagram.com/	739
27484339816	plakshau clips		CxwLJyCyV	1 item	27/09/23 16:34	Video	https://www.instagram.com/CxwLJyCyV		79,84	1101	https://content.igae3-1.adn.instagram.com/	436
12265366660	plaksha, bc clips		CyAHE3ZDN	1 item	05/10/23 12:43	Video	https://www.instagram.com/CyAHE3ZDN		123,042	1618	https://instagram.fcd3-1.fra.fbcdn.net/	646
27484339816	plakshau clips		CxNz2Fagf	5 items	15/09/23 18:25	Video	https://www.instagram.com/CxNz2Fagf		33,002	1246	https://instagram.fcd3-1.fra.fbcdn.net/	439
27484339816	plakshau undefined		CxXz9F08b	undefined	19/09/23 15:59	Sidecar	https://www.instagram.com/CxXz9F08b	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		Cx2PH7yRyS	7 items	20/09/23 11:58	Video	https://www.instagram.com/Cx2PH7yRyS		55,843	1864	https://instagram.fcd3-1.fra.fbcdn.net/	886
27484339816	plakshau clips		CxNFJHFsDcp	5 items	15/09/23 13:47	Video	https://www.instagram.com/CxNFJHFsDcp		33,002	1170	https://instagram.fcd3-1.fra.fbcdn.net/	506
27484339816	plakshau undefined		Cx75eHJy_lu	1 item	09/09/23 21:02	Image	https://www.instagram.com/Cx75eHJy_lu	undefined	undefined	undefined	undefined	undefined
12265366660	plaksha, bc clips		Cxw2-xyxp1	2 items	22/09/23 10:51	Video	https://www.instagram.com/Cxw2-xyxp1		73,56	1964	https://content.igae3-1.adn.instagram.com/	650
12265366660	plaksha, bc undefined		CxwLJ277e6	4 items	28/09/23 17:16	Sidecar	https://www.instagram.com/CxwLJ277e6	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		CxmrVayrPo	2 items	13/09/23 19:28	Video	https://www.instagram.com/CxmrVayrPo		87,724	1413	https://instagram.fcd3-1.fra.fbcdn.net/	583
27484339816	plakshau clips		CxmdAJNp-v8	undefined	31/08/23 13:09	Video	https://www.instagram.com/CxmdAJNp-v8		49,76	1543	https://instagram.fcd3-1.fra.fbcdn.net/	736
27484339816	plakshau undefined		CxVAL9RS1CU	1 item	24/08/23 18:29	Sidecar	https://www.instagram.com/CxVAL9RS1CU	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		CxPz0z0V8K	undefined	22/08/23 17:47	Video	https://www.instagram.com/CxPz0z0V8K		25,92	1895	https://instagram.fcd3-1.fra.fbcdn.net/	812
27484339816	plakshau undefined		Cv_BFHylBOv	undefined	16/08/23 14:08	Sidecar	https://www.instagram.com/Cv_BFHylBOv	undefined	undefined	undefined	undefined	undefined
41180166	pepa]	undefined	CxpKfaw8BWO	1 item	26/08/23 10:52	Sidecar	https://www.instagram.com/CxpKfaw8BWO	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		Cv8w20Y87e	1 item	15/08/23 17:49	Image	https://www.instagram.com/Cv8w20Y87e	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		CxH26xYv17	7 items	29/08/23 18:16	Video	https://www.instagram.com/CxH26xYv17		34,96	2129	https://instagram.fcd3-1.fra.fbcdn.net/	1007
27484339816	plakshau undefined		CxH9WQdSpa	2 items	19/08/23 11:15	Sidecar	https://www.instagram.com/CxH9WQdSpa	undefined	undefined	undefined	undefined	undefined
12265366660	plaksha, bc clips		Cvg_18e9n4	1 item	04/08/23 13:45	Video	https://www.instagram.com/Cvg_18e9n4		29,953	2972	https://content.igae3-1.adn.instagram.com/	1236
27484339816	plakshau undefined		CvzTHKaf8GM	undefined	10/08/23 12:21	Sidecar	https://www.instagram.com/CvzTHKaf8GM	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		Cu88ey48	undefined	20/07/23 19:06	Image	https://www.instagram.com/Cu88ey48	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CuEJLlgo-KC	1 item	29/06/23 12:17	Image	https://www.instagram.com/CuEJLlgo-KC	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		Cu8QDuaNs	1 item	15/07/23 12:56	Video	https://www.instagram.com/Cu8QDuaNs		25,146	1840	https://content.igae3-1.adn.instagram.com/	753
27484339816	plakshau undefined		Cu0uYcXq_L	undefined	23/06/23 12:34	Image	https://www.instagram.com/Cu0uYcXq_L	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		CuJNcUWLBQ	20 items	05/07/23 18:12	Video	https://www.instagram.com/CuJNcUWLBQ		43,966	4370	https://instagram.fcd3-1.fra.fbcdn.net/	1589
12265366660	plaksha, bc clips		CvzQyv8NwDn	1 item	03/06/23 11:00	Video	https://www.instagram.com/CvzQyv8NwDn		30,206	2633	https://content.igae3-1.adn.instagram.com/	996
27484339816	plakshau undefined		Cu28q29Nhw	undefined	19/07/23 15:03	Image	https://www.instagram.com/Cu28q29Nhw	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		CvzHally4rQ	5 items	11/06/23 18:49	Video	https://www.instagram.com/CvzHally4rQ		73,877	1824	https://content.igae3-1.adn.instagram.com/	815
27484339816	plakshau clips		Cvz68Fhd	7 items	21/06/23 11:29	Video	https://www.instagram.com/Cvz68Fhd		57,466	2874	https://content.igae3-1.adn.instagram.com/	1427
27484339816	plakshau undefined		CvzQDJKdP2	1 item	19/06/23 10:56	Image	https://www.instagram.com/CvzQDJKdP2	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		Cv8w-8Dy	1 item	15/06/23 8:45	Image	https://www.instagram.com/Cv8w-8Dy	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CvLxtryup	undefined	07/06/23 13:09	Image	https://www.instagram.com/CvLxtryup	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		Cv8m0xq2H4	undefined	31/05/23 13:32	Image	https://www.instagram.com/Cv8m0xq2H4	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CvQ9UFxk8T	undefined	09/06/23 11:47	Image	https://www.instagram.com/CvQ9UFxk8T	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		Cv8EmCDudQ	5 items	23/05/23 14:10	Video	https://www.instagram.com/Cv8EmCDudQ		116,466	3579	https://instagram.fcd3-1.fra.fbcdn.net/	1801
27484339816	plakshau undefined		Cv-_H_ey8K	undefined	02/06/23 15:41	Image	https://www.instagram.com/Cv-_H_ey8K	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		Cv8wvryss	1 item	05/06/23 16:09	Image	https://www.instagram.com/Cv8wvryss	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		Cv8Ag28V5	undefined	01/06/23 16:56	Image	https://www.instagram.com/Cv8Ag28V5	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CvzDn2yNAV	1 item	24/05/23 15:42	Image	https://www.instagram.com/CvzDn2yNAV	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CvzpvX7yyK	3 items	02/06/23 11:51	Image	https://www.instagram.com/CvzpvX7yyK	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CvzQ9FuU8FP	1 item	19/05/23 11:54	Image	https://www.instagram.com/CvzQ9FuU8FP	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CvzTZ_8Qx8h	4 items	16/05/23 17:29	Sidecar	https://www.instagram.com/CvzTZ_8Qx8h	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CvWmRsaF3a8	1 item	31/07/23 12:48	Image	https://www.instagram.com/CvWmRsaF3a8	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		Cv7eagL39M	undefined	02/05/23 16:59	Image	https://www.instagram.com/Cv7eagL39M	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		CvzLqUA2uG	1 item	28/04/23 12:46	Video	https://www.instagram.com/CvzLqUA2uG		27,366	2678	https://instagram.fcd3-1.fra.fbcdn.net/	1140
27484339816	plakshau clips		CvzG4xjp2R	undefined	15/05/23 18:01	Video	https://www.instagram.com/CvzG4xjp2R		178,033	3603	https://content.igae3-1.adn.instagram.com/	1848
27484339816	plakshau clips		Cvz83QAre-r	undefined	03/05/23 12:44	Video	https://www.instagram.com/Cvz83QAre-r		134,4	2378	https://instagram.fcd3-1.fra.fbcdn.net/	761
27484339816	plakshau clips		Cvz8X58d0h	6 items	29/04/23 10:30	Video	https://www.instagram.com/Cvz8X58d0h		70,266	4295	https://content.igae3-1.adn.instagram.com/	1917
27484339816	plakshau undefined		CvzGcHKgyqbP	3 items	15/05/23 13:50	Sidecar	https://www.instagram.com/CvzGcHKgyqbP	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		CvYRAe09x	undefined	12/06/23 11:23	Video	https://www.instagram.com/CvYRAe09x		69,636	3086	https://instagram.fcd3-1.fra.fbcdn.net/	1244
27484339816	plakshau clips		Cr7aerpzIK	12 items	07/05/23 9:57	Video	https://www.instagram.com/Cr7aerpzIK		29,1	4039	https://instagram.fcd3-1.fra.fbcdn.net/	2063
27484339816	plakshau undefined		CrNzKKhyIT	undefined	18/04/23 13:04	Sidecar	https://www.instagram.com/CrNzKKhyIT	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CrU014B3qbE	1 item	22/04/23 10:11	Image	https://www.instagram.com/CrU014B3qbE	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau undefined		CrS_EY8yen4	undefined	21/04/23 17:02	Image	https://www.instagram.com/CrS_EY8yen4	undefined	undefined	undefined	undefined	undefined
27484339816	plakshau clips		Cvz4_mU8DWB	1 item	11/04/23 14:48	Video	https://www.instagram.com/Cvz4_mU8DWB		29,966	3052	https://content.igae3-1.adn.instagram.com/	1426
27484339816	plakshau undefined		CrVEq5WOLdD	undefined	22/04/23 12:30	Image	https://www.instagram.com/CrVEq5WOLdD	undefined	undefined	undefined	undefined	undefined

FEATURES PRESENT IN THE DATASET

```
['#', 'Alt', 'Caption', 'Child PostschildPosts', 'Comments  
CountcommentsCount', 'Dimensions HeightdimensionsHeight', 'Dimensions  
WidthdimensionsWidth', 'Display URLdisplayUrl', 'First CommentfirstComment',  
'Hashtags', 'ID', 'Images', 'Is SponsoredisSponsored', 'Latest  
CommentslatestComments', 'Likes CountlikesCount', 'Location IDlocationId',  
'Location NamelocationName', 'Mentions', 'Owner Full NameownerFullName',  
'Owner IDownerId', 'Owner UsernameownerUsername', 'Product TypeproductType',  
'Short CodeshortCode', 'Tagged UserstaggedUsers', 'Timestamp', 'Type', 'URL',  
'Video DurationvideoDuration', 'Video Play CountvideoPlayCount', 'Video  
URLvideoUrl', 'Video View CountvideoViewCount']
```

FEATURES EXTRACTED

```
# 650  
Caption 647  
Comments CountcommentsCount 650  
Hashtags 650  
Likes  
CountlikesCount 650  
Location  
NamelocationName 650  
Mentions 650  
Timestamp 650  
Type 650  
Video DurationvideoDuration 650  
Video Play CountvideoPlayCount 618  
Video View CountvideoViewCount 450
```

DATA EXPLORATION SUMMARY

The dataset comprises 657 data points and 12 selected features.
There are missing values in the dataset.

Here's a breakdown:

Caption: 10 missing entries

Comments Count: 7 missing entries

Hashtags: 7 missing entries

Likes Count: 7 missing entries

Location Name: 7 missing entries

Mentions: 7 missing entries

Timestamp: 7 missing entries

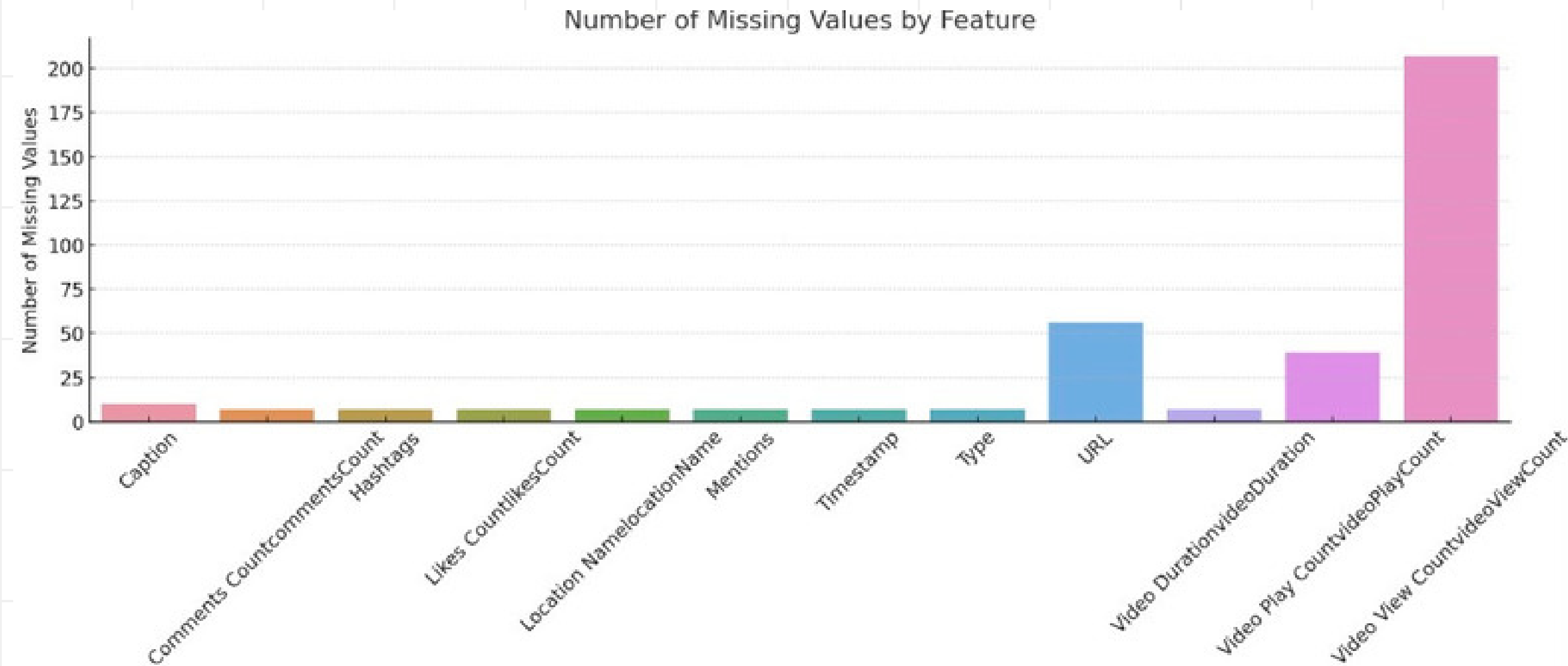
Type: 7 missing entries

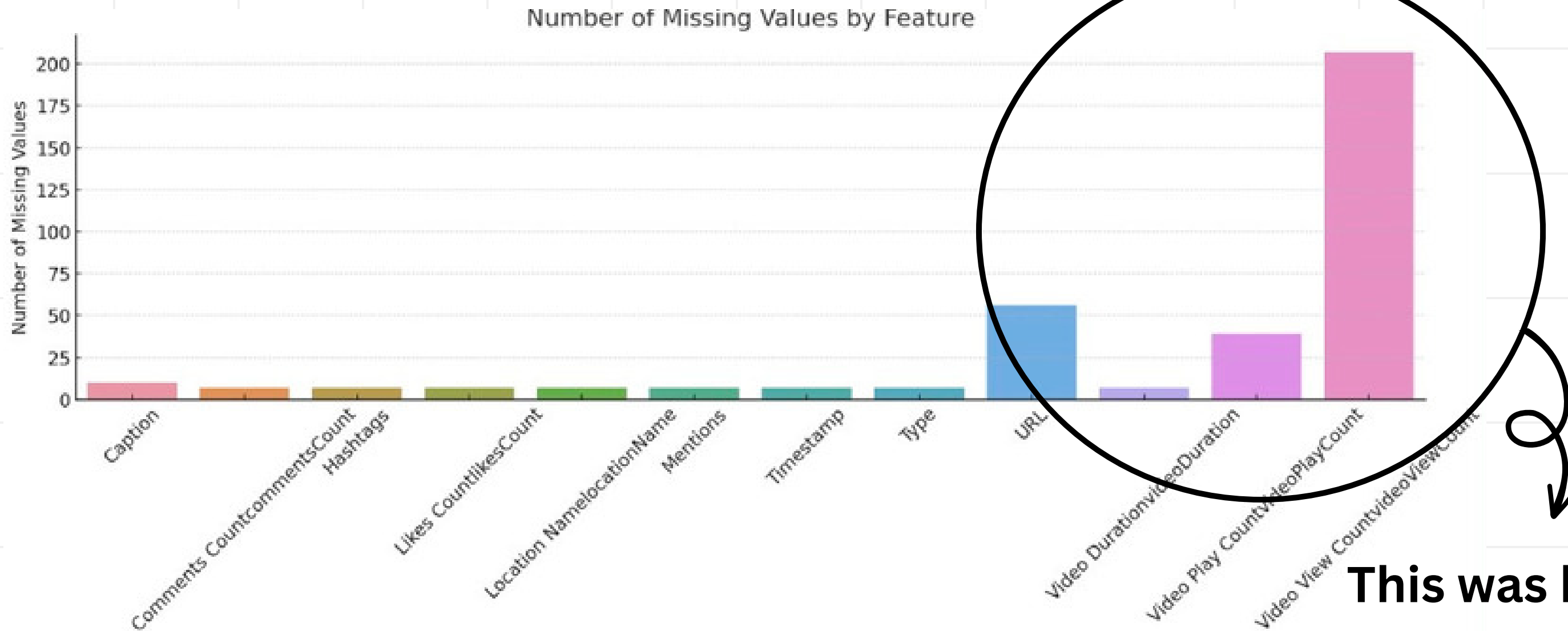
URL: 56 missing entries

Video Duration: 7 missing entries

Video Play Count: 39 missing entries

Video View Count: 207 missing entries





This was because of mix of data between images and videos

Separated Images and Videos into different Frames

MISSING VALUES

Caption (10 missing entries):

Nature of Data: Captions provide context to a post and are textual in nature.

Handling Strategy: For missing captions, we inferred that the post might not have had an accompanying text. Instead of leaving them blank, which might be misconstrued as data errors, we replaced the missing captions with a placeholder like "No Caption." This ensures clarity and avoids misinterpretations during analysis.

Comments Count, Likes Count, Video Duration, Video Play Count (7 missing entries each):

Nature of Data: These columns are numeric and represent engagement metrics.

Handling Strategy: A missing value here might **imply that the post did not receive any engagement or the metric wasn't recorded.** We filled such missing entries with the **median value of the respective columns.** The **median was preferred over the mean to reduce the influence of outliers.**

MISSING VALUES

Hashtags and Mentions (7 missing entries each):

Nature of Data: These are textual columns that indicate specific tags or user mentions associated with a post.

Handling Strategy: Missing values in these columns might suggest that the post did not have any hashtags or mentions. To ensure clarity, we replaced the missing values with the median of the hashtags

Location Name (7 missing entries):

Nature of Data: This is a textual column that indicates the **geographical tag** of a post.

Handling Strategy: Absence of a location name possibly indicates that the post wasn't geotagged. We replaced these missing values with "**Location Not Specified.**"

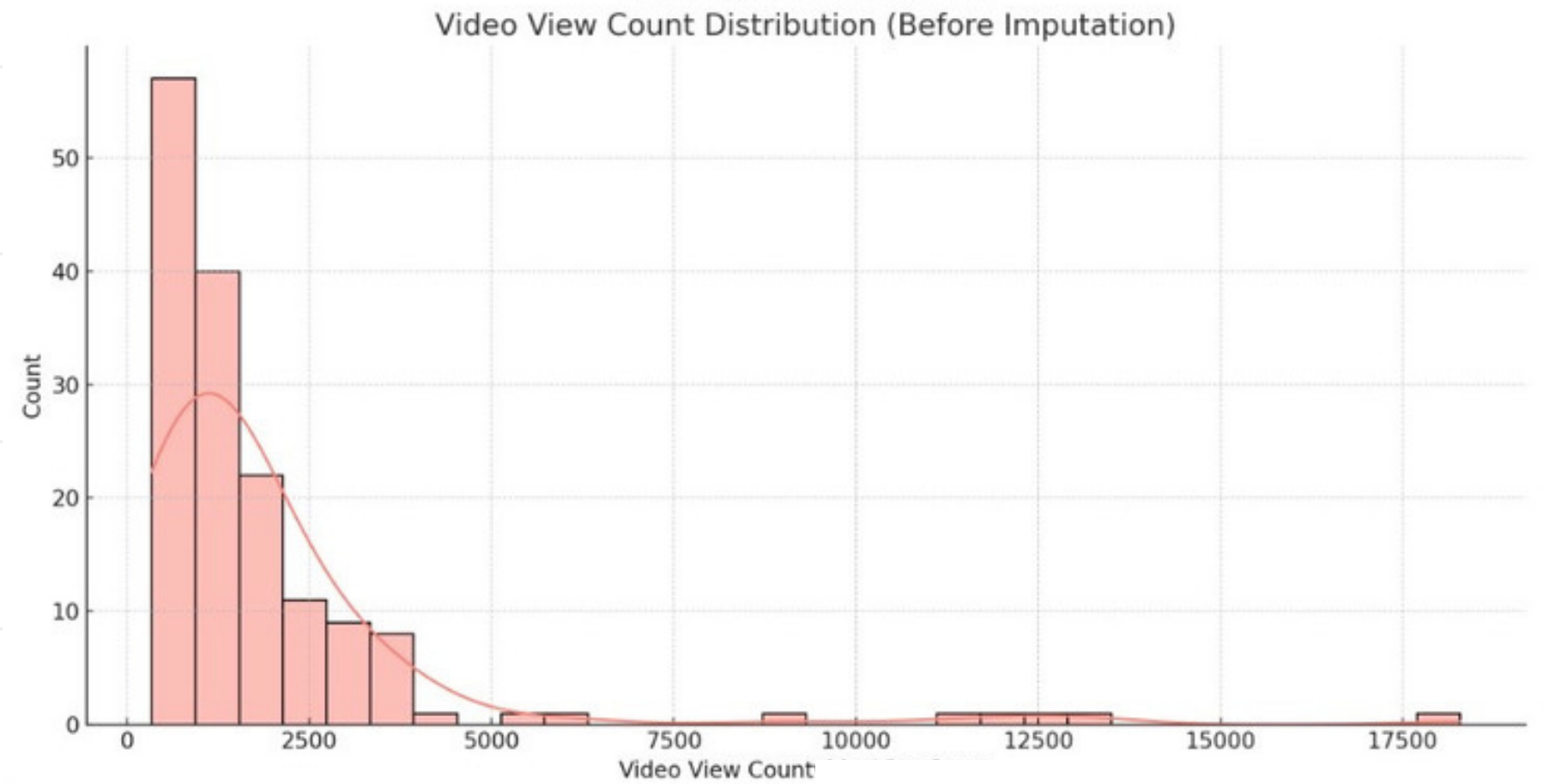
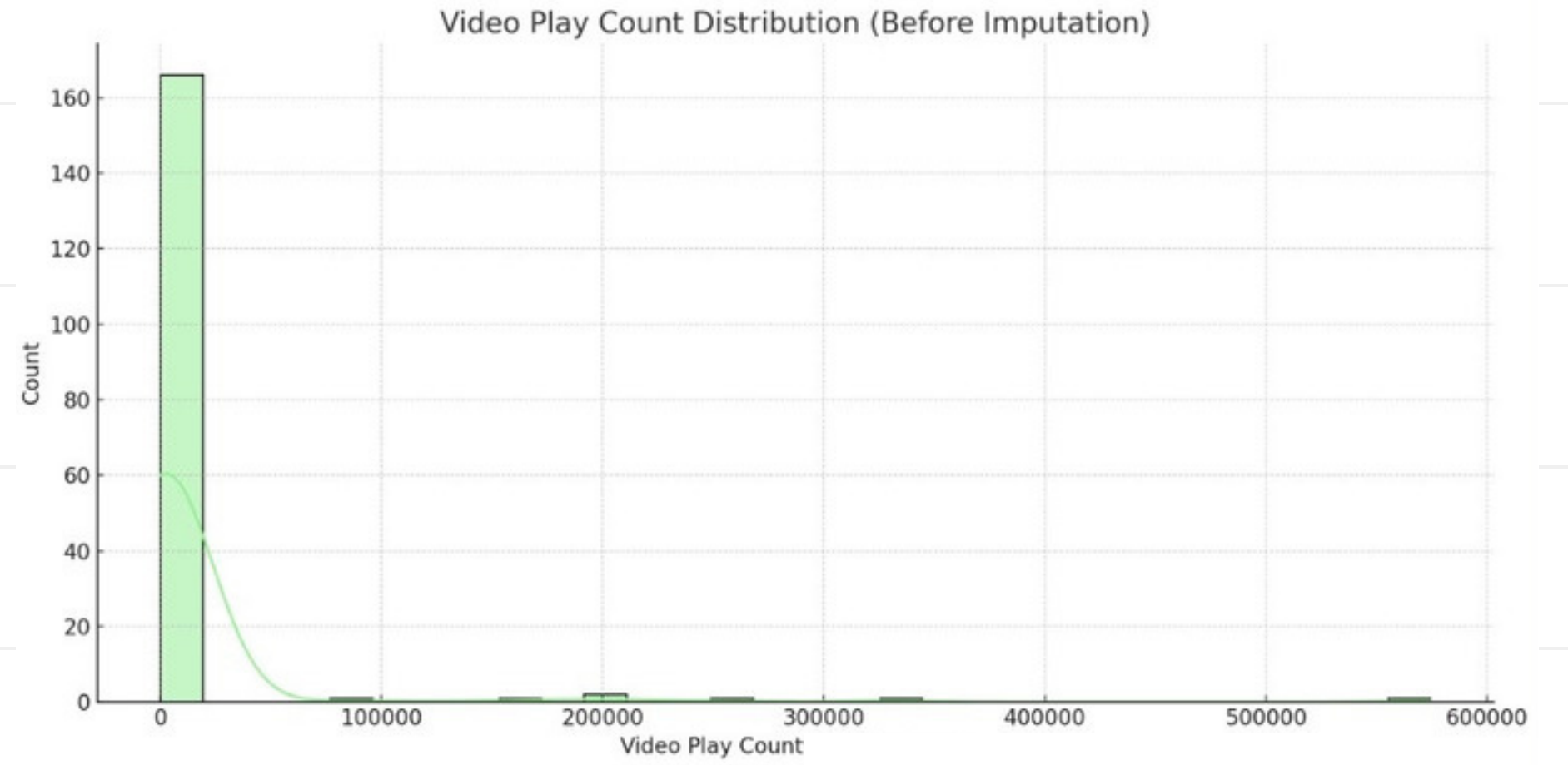
MISSING VALUES

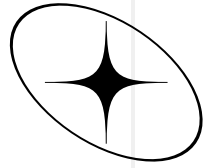
Timestamp and Type (7 missing entries each):

Nature of Data: Timestamp indicates the time of the post, and Type specifies if it's an **image, video, or another category**.

Handling Strategy: Missing timestamps or types are critical omissions. Considering their importance, we conducted a thorough check with our data source to ensure accuracy. If the accurate data wasn't recoverable, we considered **omitting** such records from **time-sensitive** or **type-specific** analyses..

**After separating
Images and Videos into
different Frames, we
can see how the
analysis for Video view
count changed**





FEATURES PRE-PROCESSING

Temporal Features:

Given the importance of the "Timestamp" feature, it can be broken down into more granular features such as:

Hour of the day: This can help determine optimal posting times.

Day of the week: To assess which days garner the most engagement.

Month: To capture any seasonality in the data.

Text Analysis on Caption:

Text Length: The number of words or characters in a caption might influence engagement.

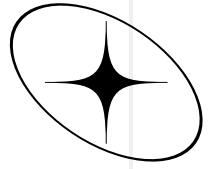
Engagement Ratio: Features like "Likes Count" and "Comments Count" can be normalized by the follower count (if available) to create an engagement ratio, which can be a more robust metric than raw counts.

Engagement Score:

Using the number of follower, likes and comments columns, we calculated the engagement score for each post

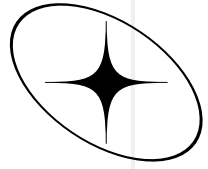
$$= ((\text{no. of likes} + \text{comments}) / \text{followers}) * 100$$

Timestamp
2021-12-17 18:17
1000000 10000
1000000 10000



How we collected the data (Scraped and Sources),
preprocessed it, and then some preliminary analysis

PRELIMINARY ANALYSIS



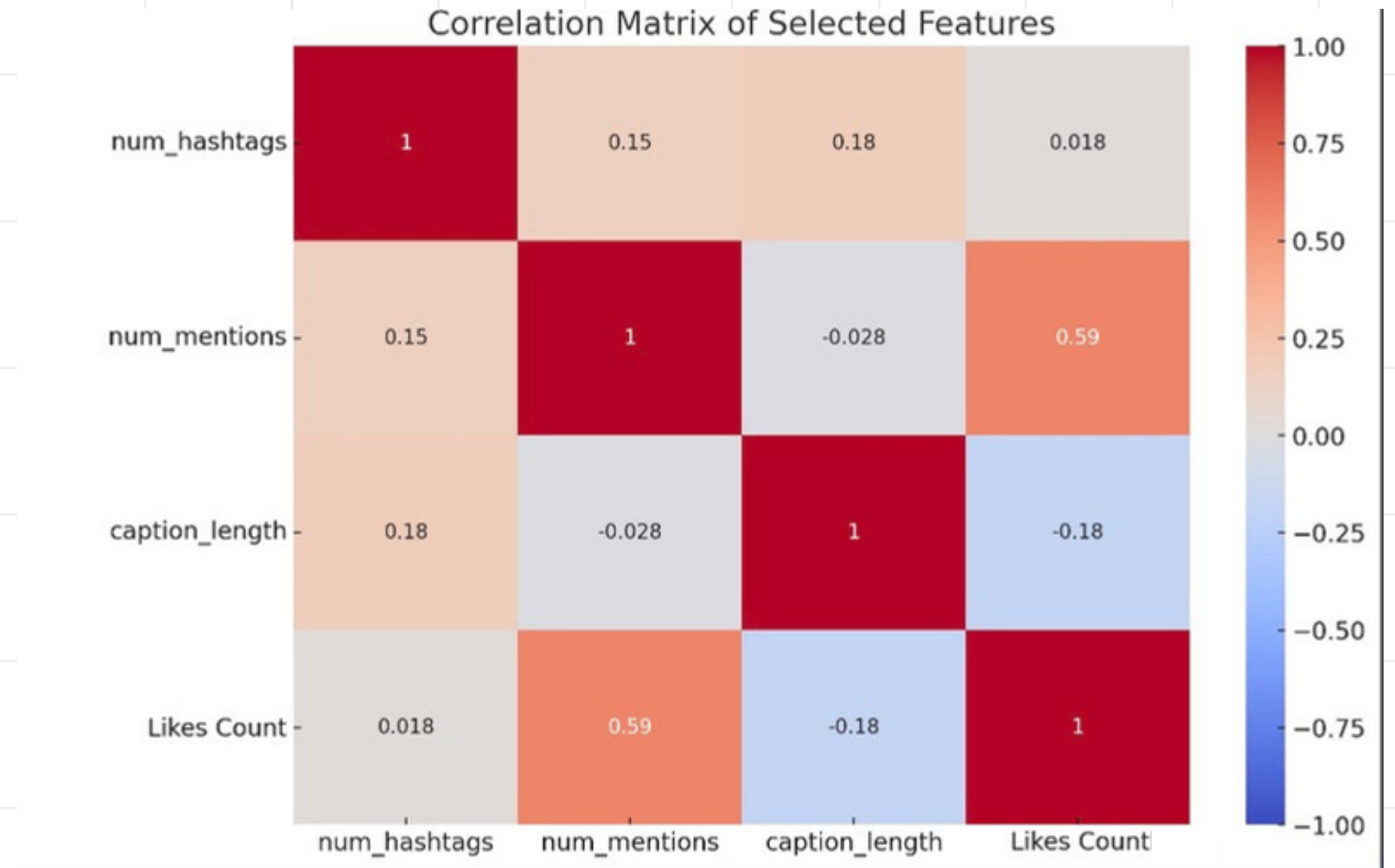
KEY FINDINGS

*parameter effects on likes

#Mentions: The number of mentions has effect on the likes garnered by the post, tagging founders/people with reach is creating viewership impact

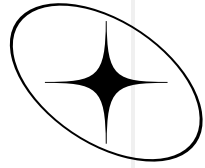
#Hashtags: Seemingly no co-relation suggests that the hashtags being used aren't that effective.

#Caption: Interestingly, shorter caption length result in better likes.



CORRELATION MATRIX

SH



KEY FINDINGS

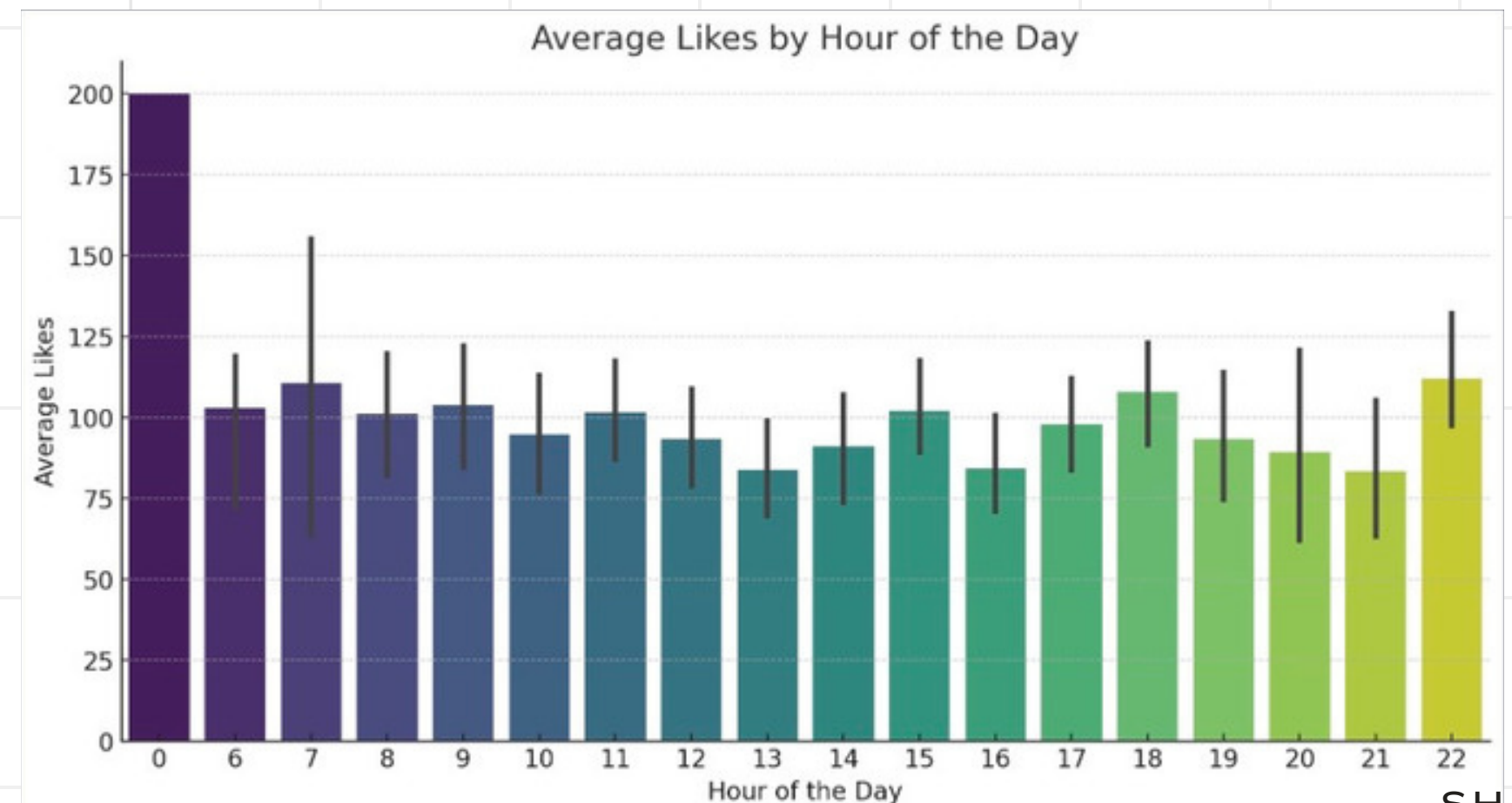
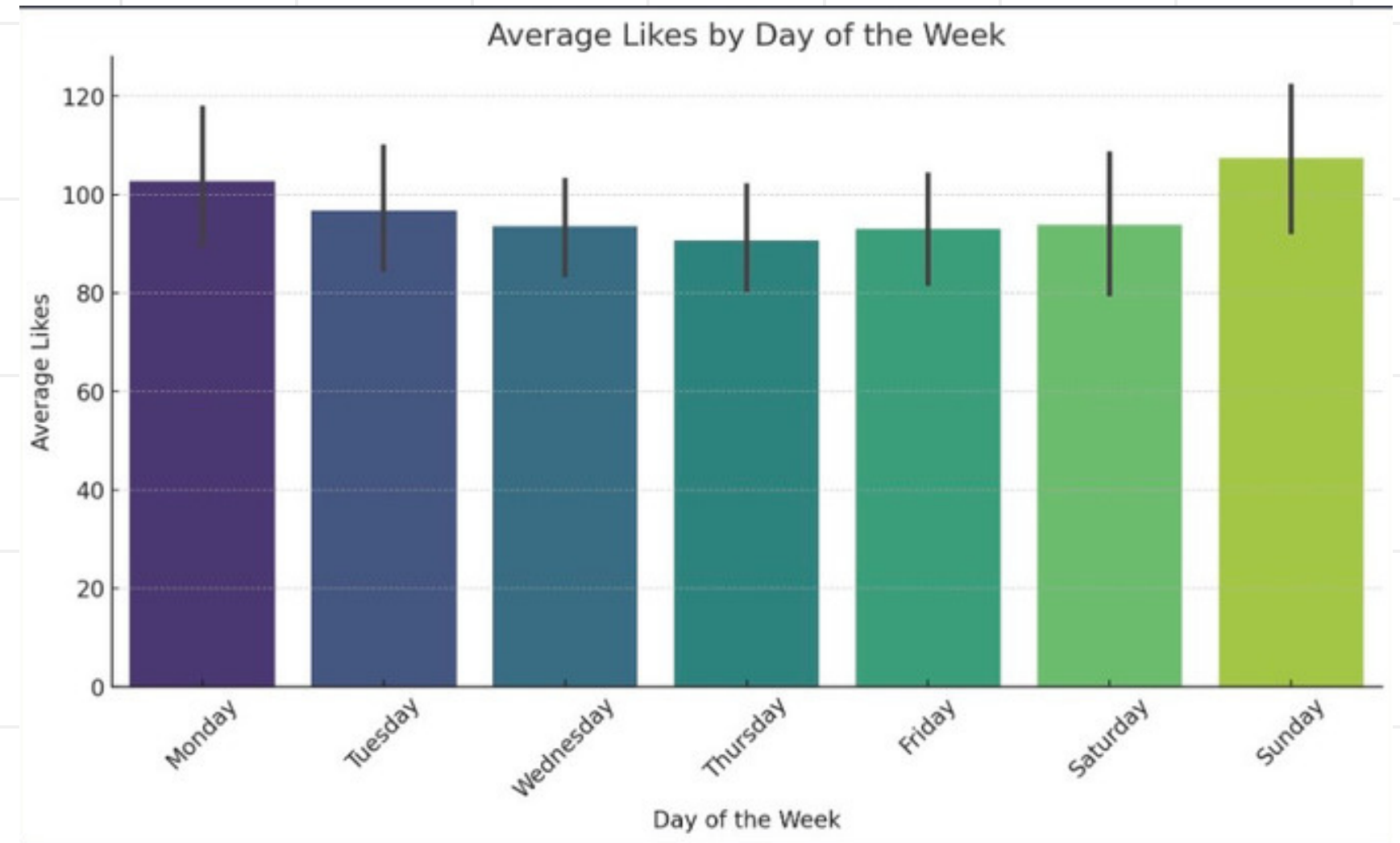
*Temporal feature effects on likes

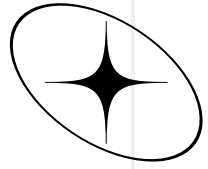
Average Likes by Day of the Week:

Posts made on **Wednesdays** and **Thursdays** seem to receive relatively lower average likes compared to other days.

Posts on **Sundays** and **Mondays** have the highest average likes.

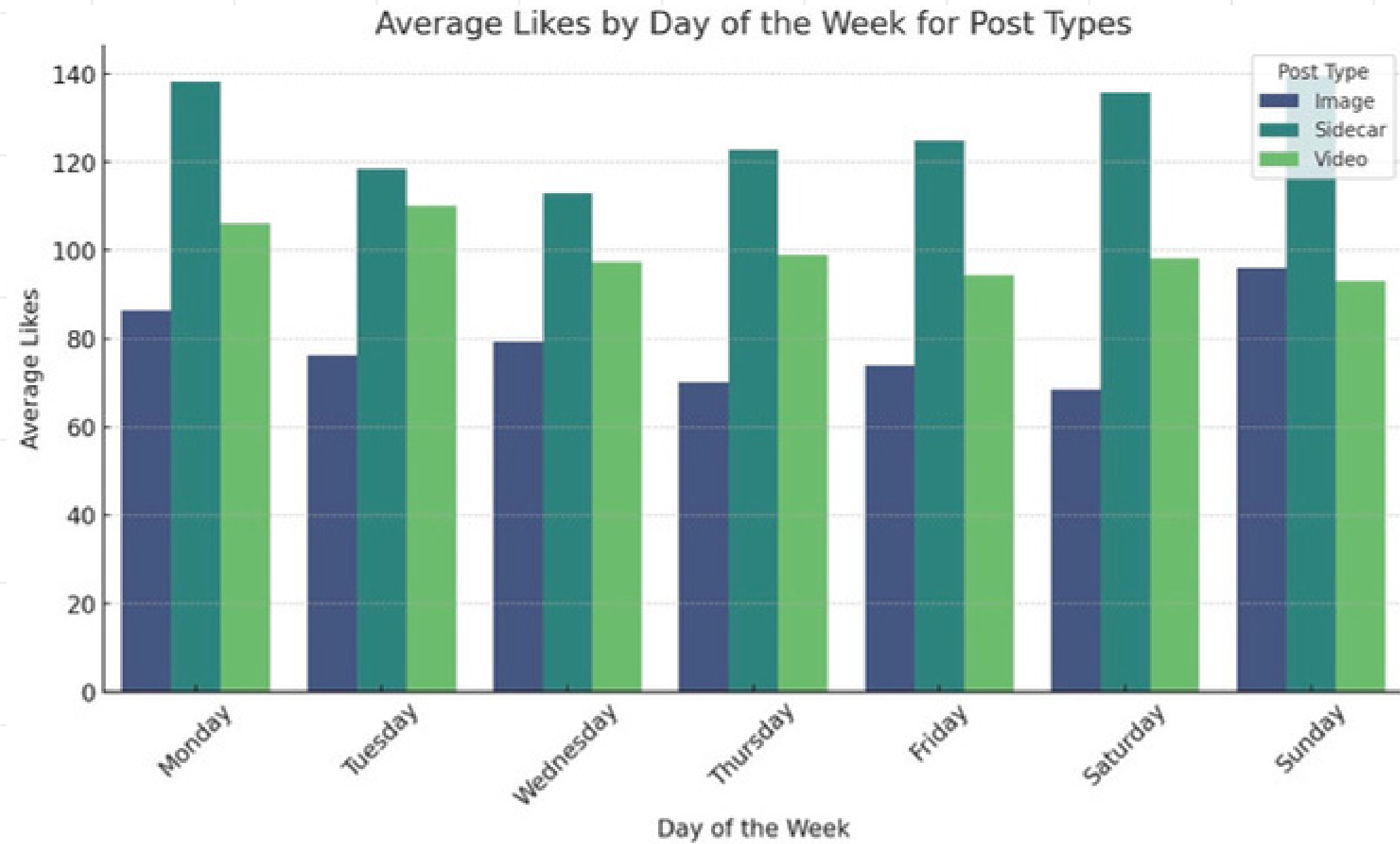
Average Likes by Hour of the Day: Posts made around **11pm-2am** tend to receive the highest average likes. The period from **1pm-2pm** and **8-10pm** sees a drop in average likes, suggesting that posts made during these hours might be less engaging or perhaps the audience is less active.

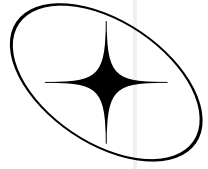




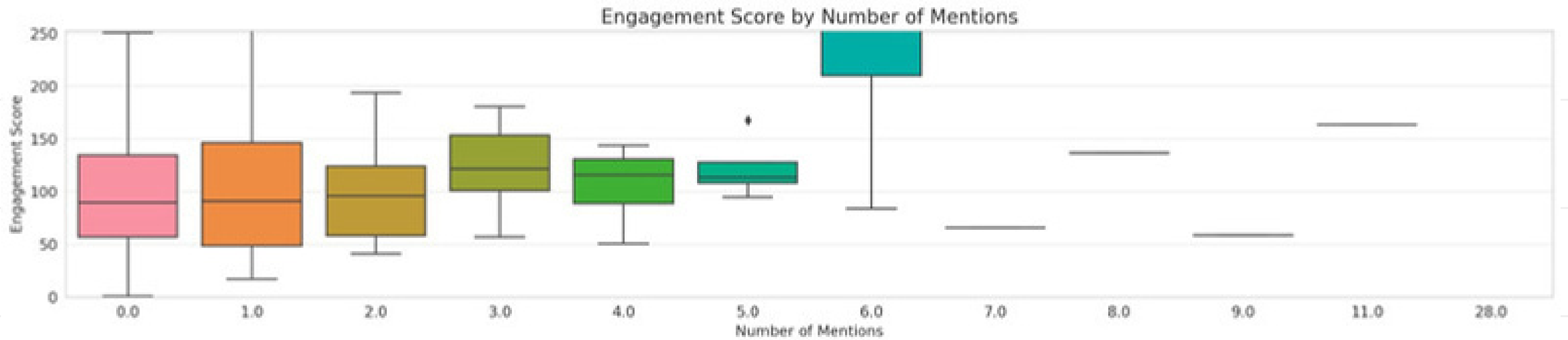
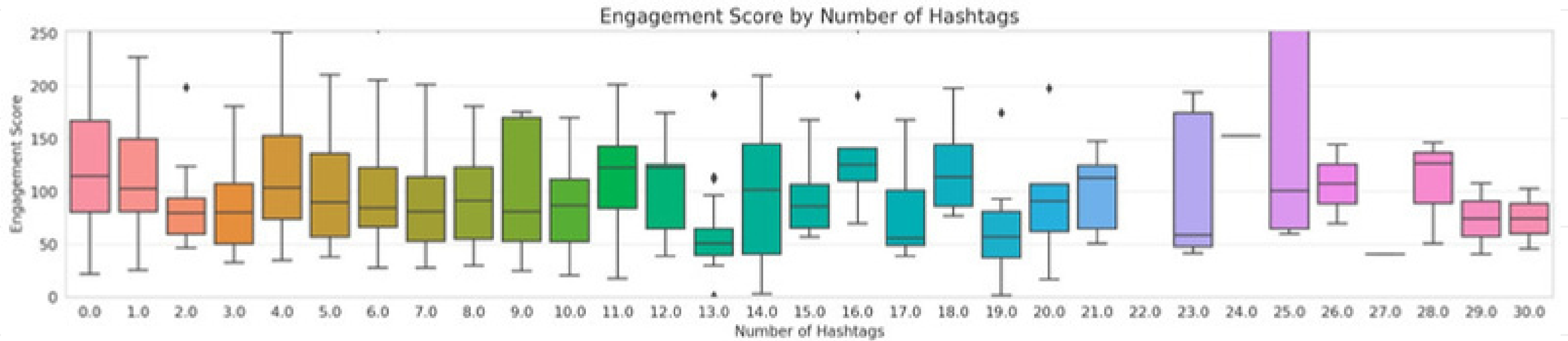
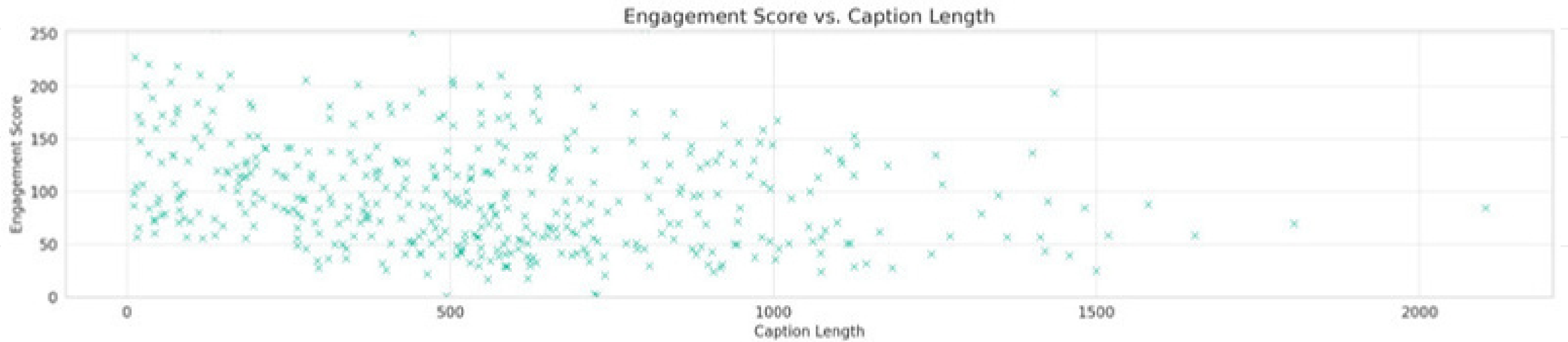
KEY FINDINGS

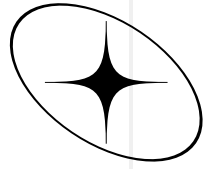
*Temporal feature & post type effects on likes





KEY FINDINGS





How we collected the data (Scraped and Sources),
preprocessed it, and then some preliminary analysis

MACHINE LEARNING METHODOLOGY



XGBOOST

XGBoost was rejected because it had a comparatively high variability. It was not able to capture the trends as effectively.

RMSE: 43.745462855712184

MAE: 33.58236751480708

R²: 0.30043806092947967

RANDOM FOREST REGRESSOR

WHY

Random Forest is an ensemble learning method that is **robust to overfitting** and **effective for classification problems**. It is particularly well-suited for datasets with complex structures and a **mix of numerical and categorical variables**, as is often the case with social media data.

HOW IT WORKS

Random Forest **builds multiple decision trees** during training and outputs the class that is the mode of the classes of the individual trees. It **introduces randomness by selecting random subsets** of features for splitting nodes, which increases diversity among the trees and results in a more generalizable model.

SENTIMENT ANALYSIS

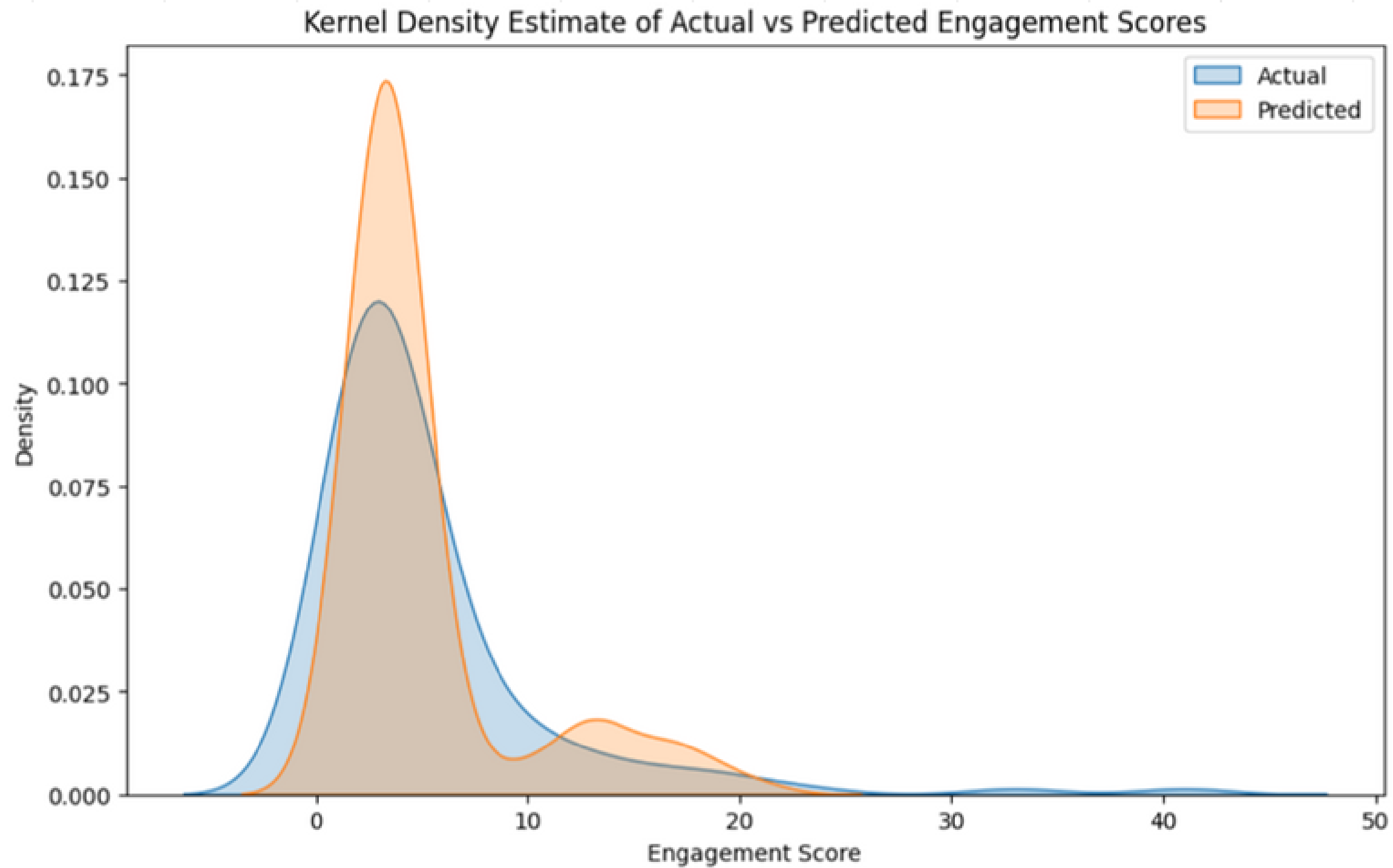
WHY

Sentiment analysis provides numerical data that **captures the emotional tone of the captions**, which can be important for predicting user engagement, like the number of likes. It can provide a deeper understanding of content impact.

HOW IT WORKS

Sentiment analysis typically involves evaluating the text to determine the **polarity** (positive, negative, neutral) and **subjectivity** (objective, subjective) of the content. Tools like TextBlob use a lexicon of sentiment-labeled words and phrases to compute sentiment scores.

RANDOM FOREST REGRESSOR



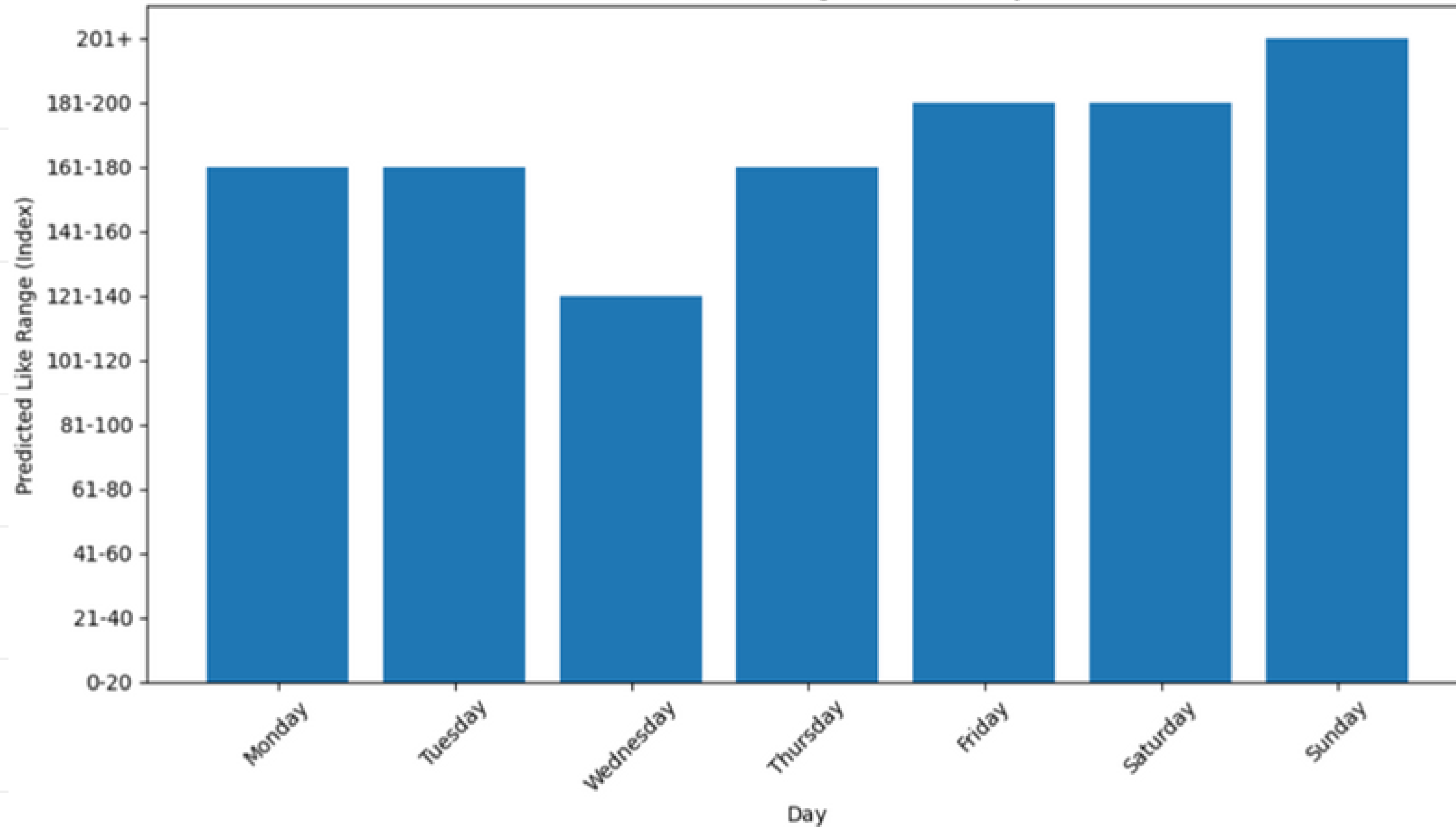
MAE - 2.099

RMSE - 1.90

R-SQUARED (R^2) - 0.6014

RANDOM FOREST CLASSIFIER - DAY OF THE WEEK

Predicted Like Ranges for Each Day

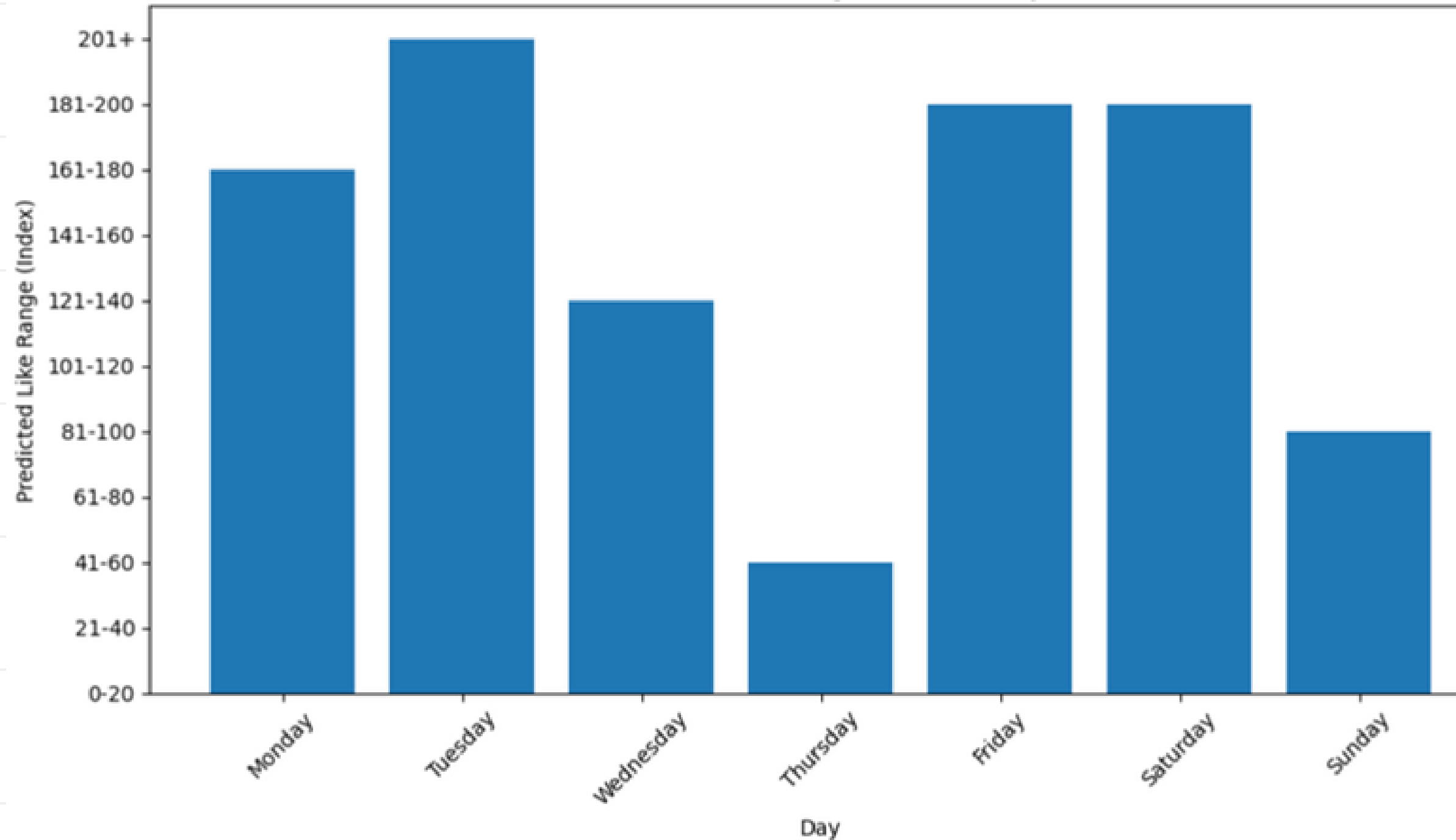


Accuracy: 0.7946428571428571
Precision: 0.7688311688311689
Recall: 0.8070217067543269
F1 score: 0.7774692627633804

9 AM

RANDOM FOREST CLASSIFIER - DAY OF THE WEEK

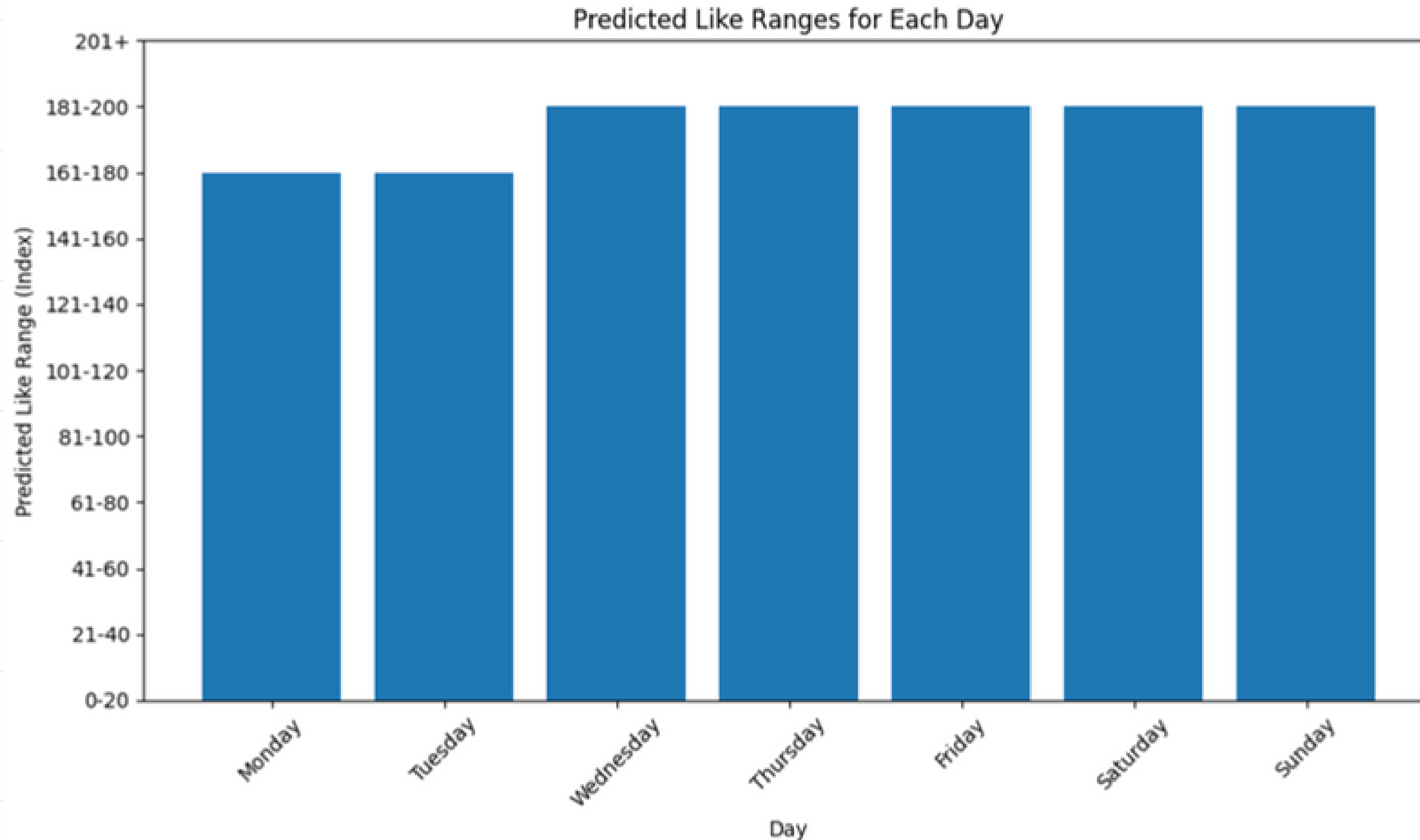
Predicted Like Ranges for Each Day



Accuracy: 0.7946428571428571
Precision: 0.7688311688311689
Recall: 0.8070217067543269
F1 score: 0.7774692627633804

4 PM

RANDOM FOREST CLASSIFIER - DAY OF THE WEEK

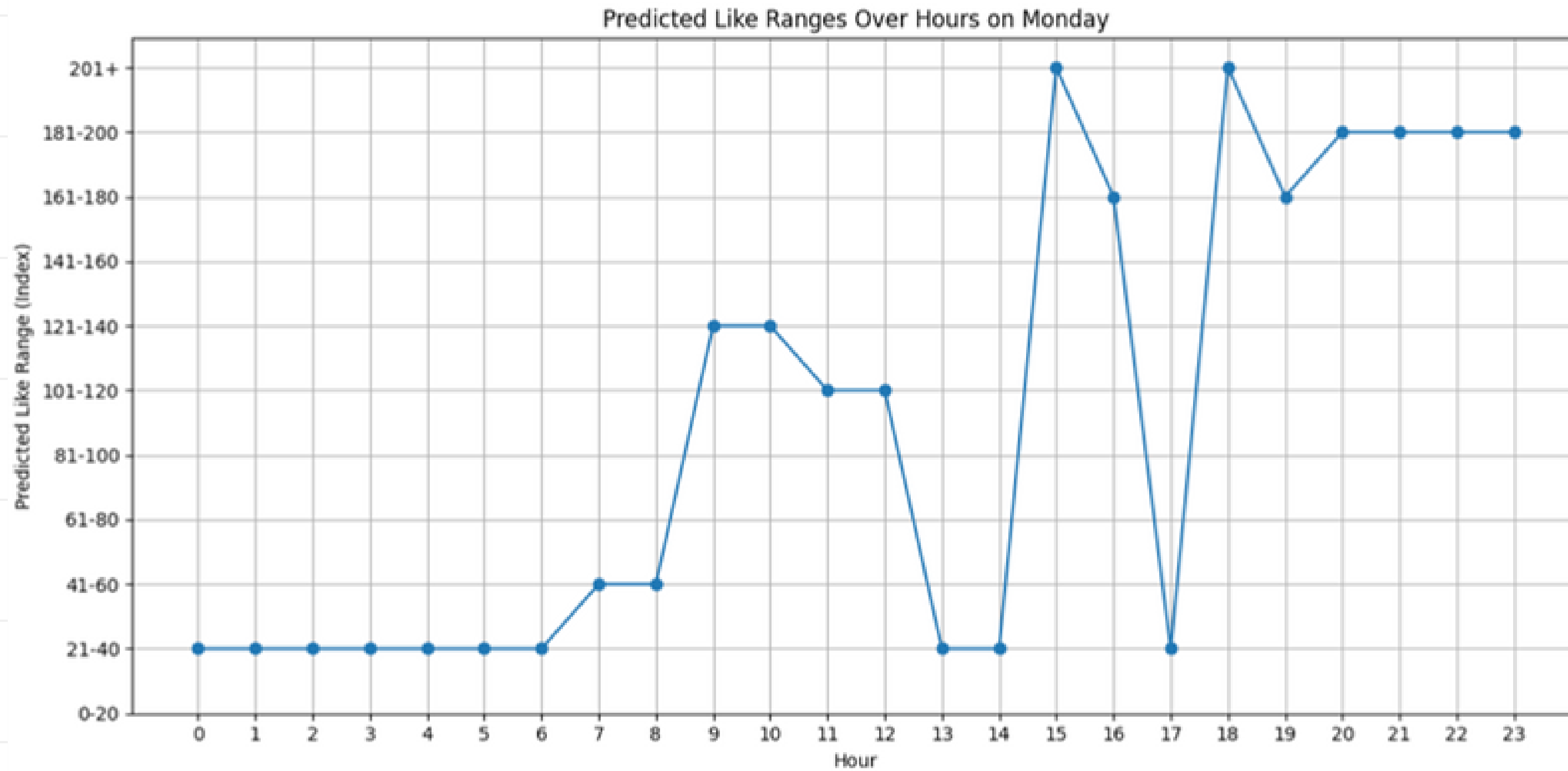


Accuracy: 0.7946428571428571
Precision: 0.7688311688311689
Recall: 0.8070217067543269
F1 score: 0.7774692627633804

10 PM

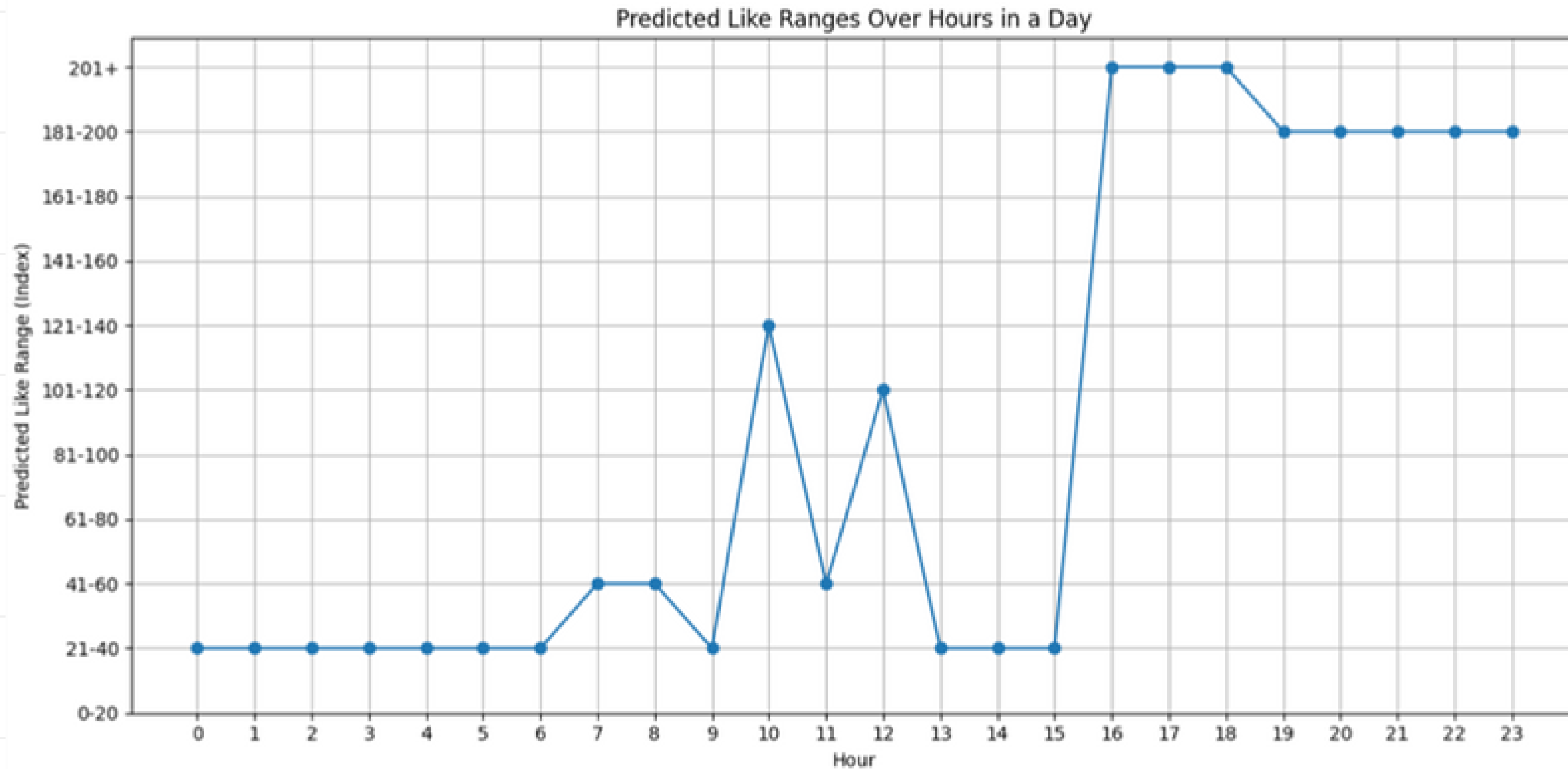
RANDOM FOREST CLASSIFIER - HOUR OF THE DAY

MONDAY



RANDOM FOREST CLASSIFIER - HOUR OF THE DAY

SUNDAY



INTERPRETATION AND DEPLOYABILITY:

MODEL EFFICACY

The model shows a **decent level of accuracy** and can be a valuable tool in predicting social media engagement. **The R-squared value, in particular, indicates a good level of explanatory power**, while the RMSE and MAE provide a realistic expectation of the model's prediction errors.

DEPLOYMENT AT PLAKSHA

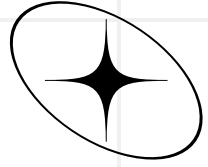
Given these metrics, the solution seems suitable for deployment at Plaksha to predict social media engagement. It could help in **strategizing marketing campaigns, content creation, or user engagement initiatives**.

HOW TO DEPLOY

The model can be integrated into **Plaksha's social media analytics framework**. This could involve setting up an **automated system** where the model regularly receives data (like posts, user interactions, etc.), processes it, and provides predictions and insights.

POTENTIAL CHALLENGES IN SCALING UP

As the solution scales, handling increased data volumes and real-time analytics can be challenging. **The model might need to be updated or retrained to handle larger, more diverse datasets.**



THANK YOU!