

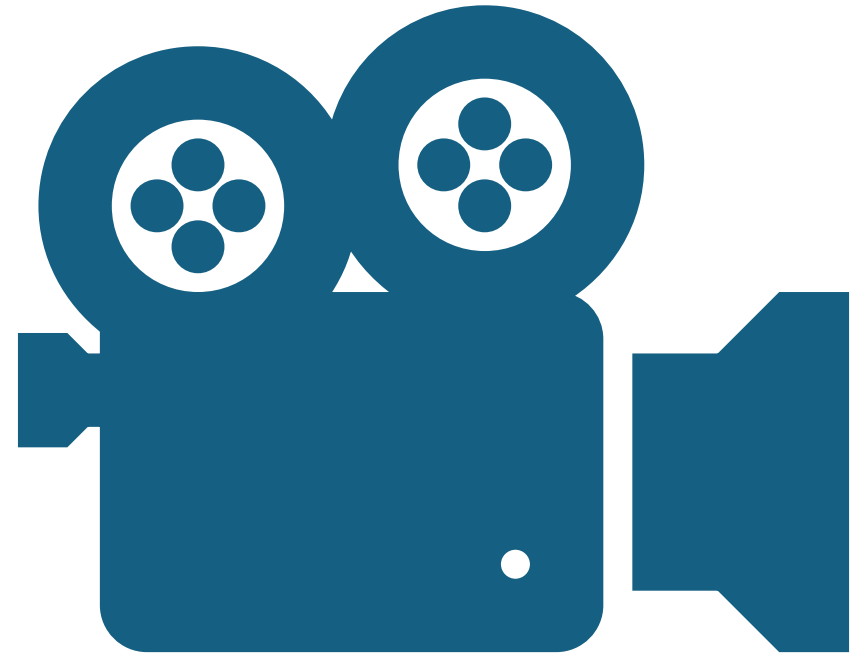
TikTok Analysis

**Presented By
Shih-Chieh Ku**

Shireesha Thyaranahalli Narayana

Introduction

In the digital age, social media platforms connect individuals and foster communities. TikTok, with its short-form video content, has become a dominant force. Understanding TikTok engagement patterns is essential for content creators, marketers, and researchers to optimize strategies and maximize reach. This analysis focuses on key metrics: average weekly engagement rates, like engagement rates, comment engagement rates, and total likes.



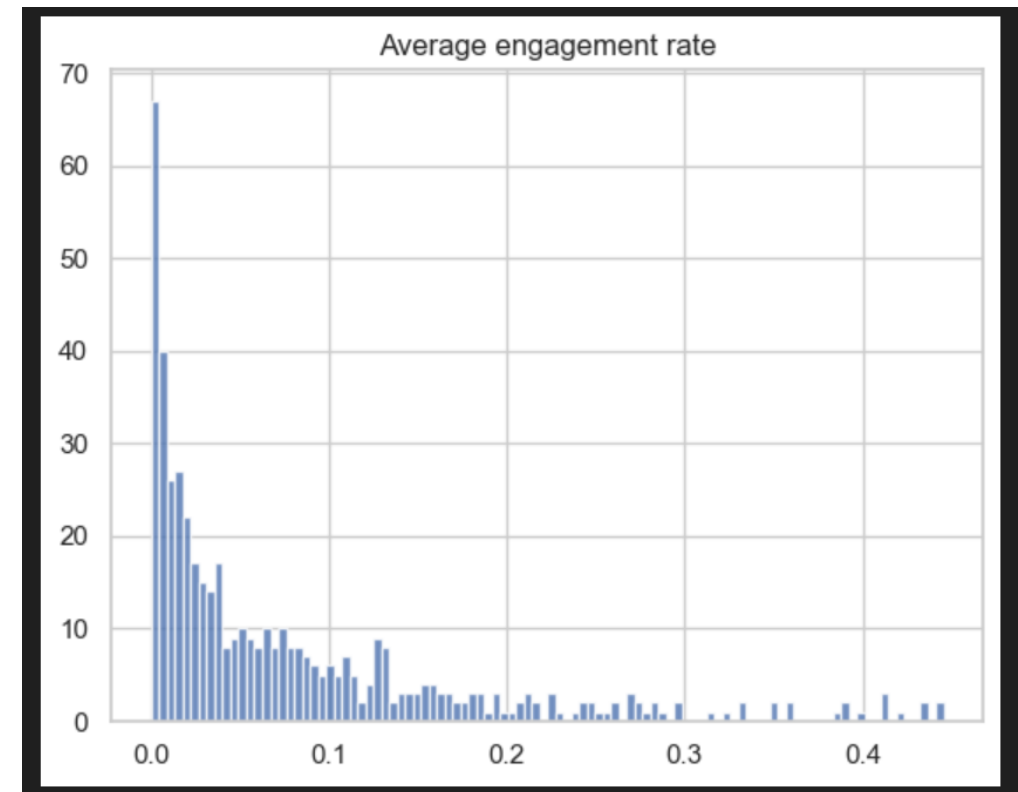
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	timestamp	account_id	nickname	biography	avg_engage	comment_engage	like_engage	bio_link	is_verified	followers	following	likes	videos_count	create_time	id	top_videos_url	profile_pic_url						
2	#####	a.r.m.y664	â, â, â	nazywam s	0.04963	0.004473	0.045157	null	FALSE	1755	1443	1586	20	null	6.79E+18	https://www	https://www	https://p77-sign-va.tiktokcdn.com/musically-maliva-obj/1659430134					
3	#####	a2_9r	Ø¸ÙŠÛ...Û	Ø-Ø³Ø¸Ø	0.059322	0.004358	0.054964	null	FALSE	354	1422	3843	225	null	7.02E+18	https://www	https://www	https://p16-sign-va.tiktokcdn.com/tos-maliva-avt-0068/9df31563b7b					
4	#####	ti.po.chec	All	ÐÐ°Ñ,Ð	0.001399	5.83E-05	0.001341	null	FALSE	1960	243	24000	228	null	6.83E+18	https://www	https://www	https://p58-sign-sg.tiktokcdn.com/aweme/720x720/tos-alisg-avt-006					
5	#####	nutrifersar	L.N Fernar	NutriÃ³log	0.469767	0.004651	0.465116	null	FALSE	43	41	100	5	null	6.81E+18	https://www	https://www	https://p16-sign-va.tiktokcdn.com/tos-maliva-avt-0068/6dde4f063a1					
6	#####	bhgdee	DðŸ²²	lg-	0.122283	0.008152	0.11413	null	FALSE	276	2262	126	4	null	6.81E+18	https://www	https://www	https://p16-sign.tiktokcdn-us.com/tos-useast5-avt-0068-tx/394ab310					
7	#####	preyah_	Preyah	Singer	0.008076	4.78E-05	0.008028	https://you	FALSE	108200	385	2000000	462	null	6.74E+18	https://www	https://www	https://p16-sign-useast2a.tiktokcdn.com/tos-useast2a-avt-0068-gisc					
8	#####	anastasiaz	Anastasia	Pro	0.001783	9.66E-06	0.001773	null	TRUE	871100	268	9000000	688	null	6.62E+18	https://www	https://www	https://p16-sign-va.tiktokcdn.com/musically-maliva-obj/1644206284					
9	#####	_sanek_5t	Aleks	ÐšÐ Ð~Ð	0.005706	0.000652	0.005054	null	FALSE	3701	2961	1667	75	null	6.83E+18	https://www	https://www	https://p58-sign-sg.tiktokcdn.com/aweme/720x720/tos-alisg-avt-006					
10	#####	_rinm	noi_29l	ØŸÙŠÛÛ~	0.35	0.025	0.325	null	FALSE	16	91	26	5	null	6.97E+18	https://www	https://www	https://p16-sign-sg.tiktokcdn.com/aweme/720x720/tos-alisg-avt-006					
11	#####	_k_1_ji_ji_e	_k_1_ji_ji_e	null	0.47619	0.047619	0.428571	https://t.m	FALSE	14	116	18	3	null	6.99E+18	https://www	https://www	https://p58-sign-sg.tiktokcdn.com/aweme/720x720/tiktok-obj/70045					
12	#####	xrb_010	Undercove	ðŸ†;ðŸ†±	0.18057	0.004116	0.176454	null	FALSE	1737	76	31300	21	null	6.98E+18	https://www	https://www	https://p16-sign-useast2a.tiktokcdn.com/tos-useast2a-avt-0068-eutt					
13	#####	soyon_on	SOYON_Ol	à!-à!%à!²	0.01343	0.000577	0.012853	null	FALSE	1336	1233	1025	36	null	7.06E+18	https://www	https://www	https://p16-sign-sg.tiktokcdn.com/aweme/720x720/tos-alisg-avt-006					
14	#####	laurenwolf	Lauren Wo	Hi besties	0.080566	0.00016	0.080406	https://link	TRUE	1000000	786	92300000	1117	null	6.72E+18	https://www	https://www	https://p16-sign.tiktokcdn-us.com/tos-useast5-avt-0068-tx/fe4101bf					
15	#####	mybeautifl	Tik Toker	No bio yet	0.002668	0.00014	0.002528	null	FALSE	6231	4459	29500	301	null	6.6E+18	https://www	https://www	https://p16-sign-va.tiktokcdn.com/musically-maliva-obj/1594805258					
16	#####	itshoneydc	@itshoney	Let me hel	0.05474	0.000299	0.05444	https://link	FALSE	288400	120	2300000	334	null	6.81E+18	https://www	https://www	https://p16-sign-va.tiktokcdn.com/tos-maliva-avt-0068/716941e80da					
17	#####	curlheadl	Hennessey	Hair	0.185317	0.000512	0.184805	null	FALSE	40400	1132	248700	33	null	6.8E+18	https://www	https://www	https://p16-sign.tiktokcdn-us.com/tos-useast5-avt-0068-tx/4315255					

Data Overview

The dataset includes columns for timestamp, account ID, nickname, biography, average weekly engagement rate, comment engagement rate, like engagement rate, bio link, verification status, followers, following, likes, video count, creation time, ID, top videos, URL, and profile picture URL.

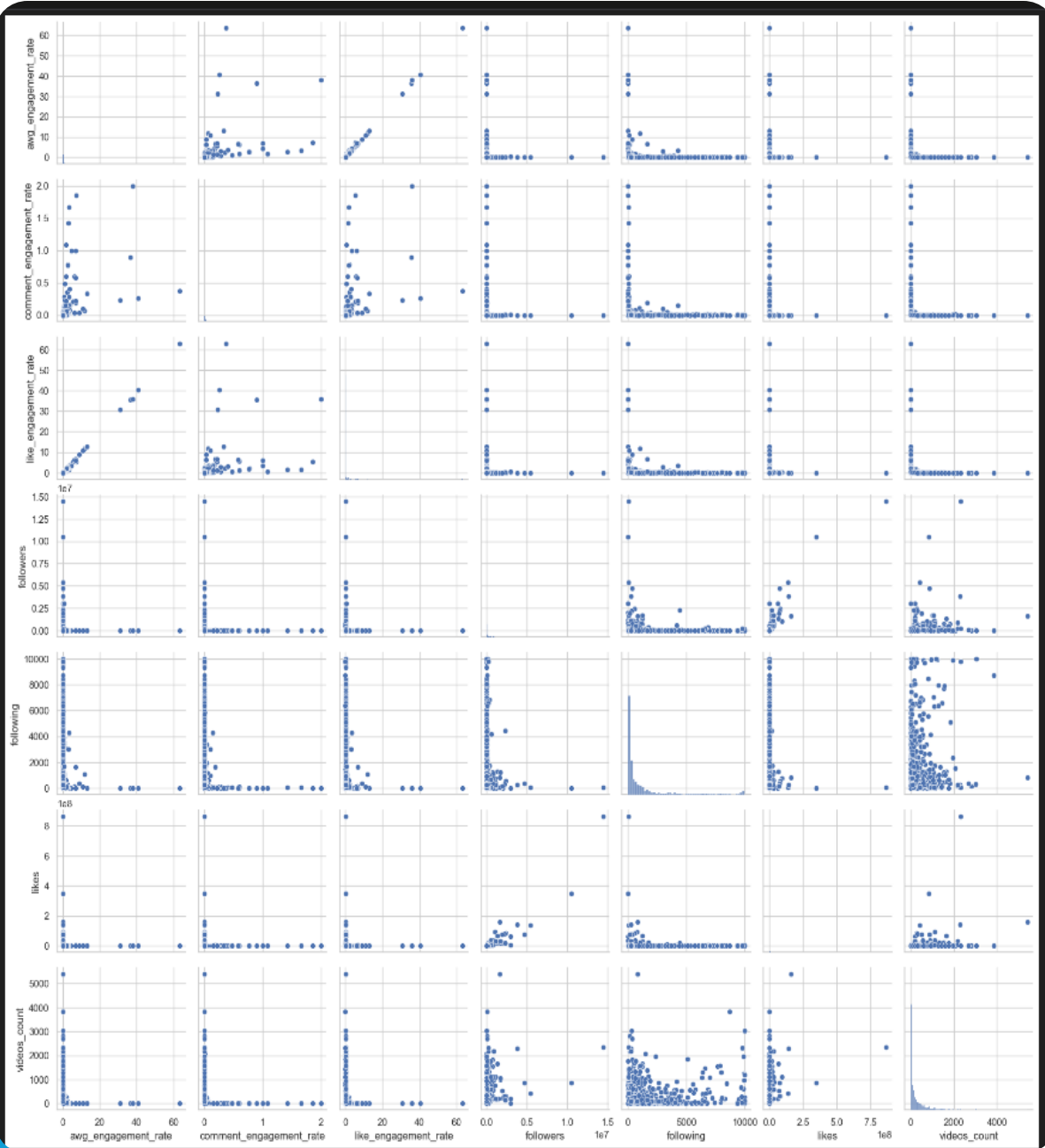
Data Exploration - Average Engagement

- The highest bar in the histogram indicates the most frequent average engagement rate. The peak frequency occurs at approximately 0.01, with around 70 occurrences.
- The majority of users have an average engagement rate between 0 and 0.05.
- The median engagement rate is approximately 0.02.
- This data shows that most TikTok users in this dataset have low engagement rates, with a small number of outliers exhibiting significantly higher engagement. This suggests potential areas for improvement and targeted strategies to boost user engagement.

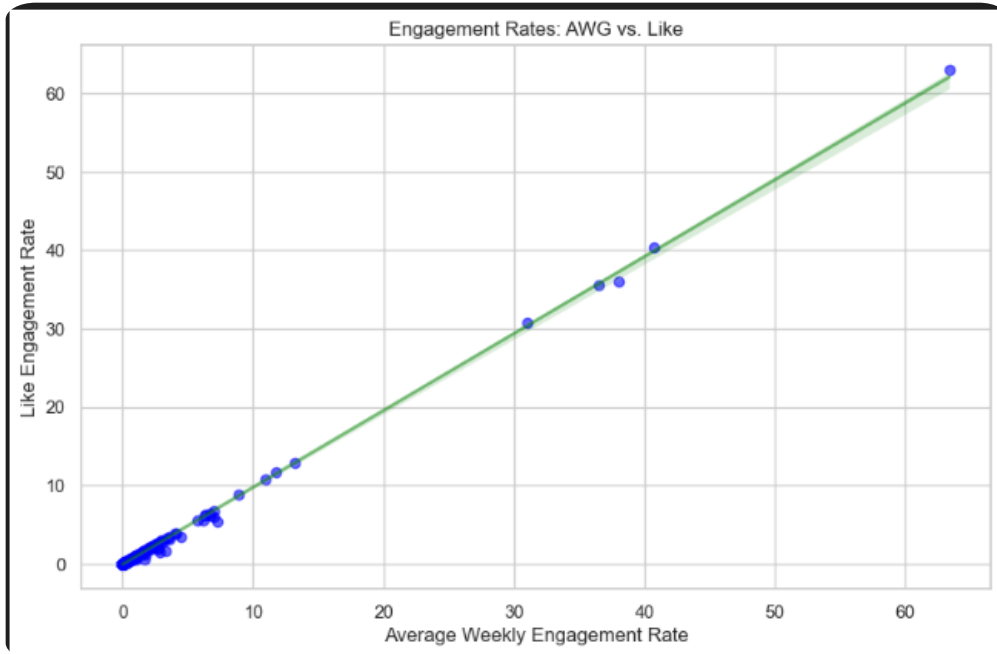


Data Exploration

- **Likes rate vs. Avg engagement rate:** There is a linear trend indicating a positive correlation. Higher average engagement rates tend to correspond with higher like engagement rates.
- **Like rate vs. Comment rate:** Shows a positive correlation, suggesting that profiles with higher comment engagement rates tend to have higher like engagement rates.
- **Followers vs. likes rate:** There is a clustering of data points indicating that profiles with more followers tend to have a varied like engagement rate, but higher follower counts seem to loosely correlate with higher like engagement rates.
- **Likes vs. Followers:** There is a positive correlation indicating that profiles with more followers tend to receive more likes.
- **Videos count vs. Followers:** There is a positive trend showing that profiles with more videos tend to have more followers.



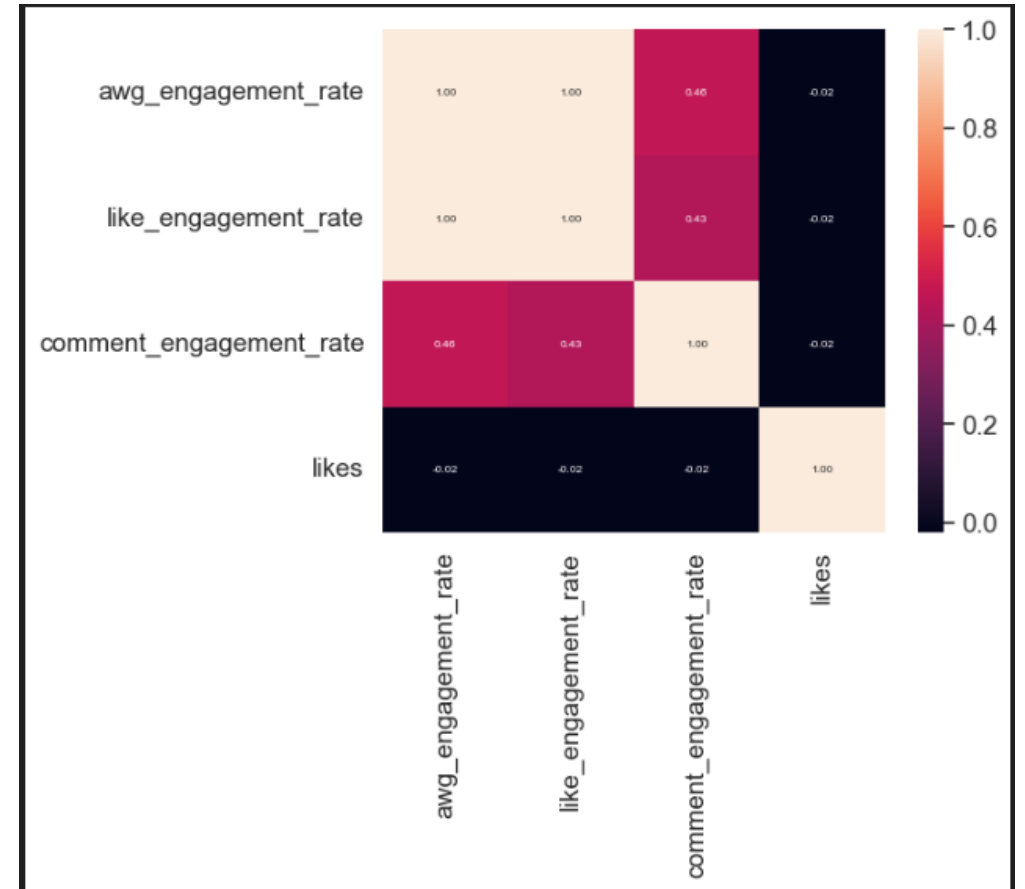
Data Exploration



- The plot shows a strong positive linear relationship between avg engagement rate and like engagement rate. As the average weekly engagement rate increases, the like engagement rate also increases.
- The regression line (green) fits well with the scatter points, indicating that a linear model is appropriate for describing the relationship between these two variables.

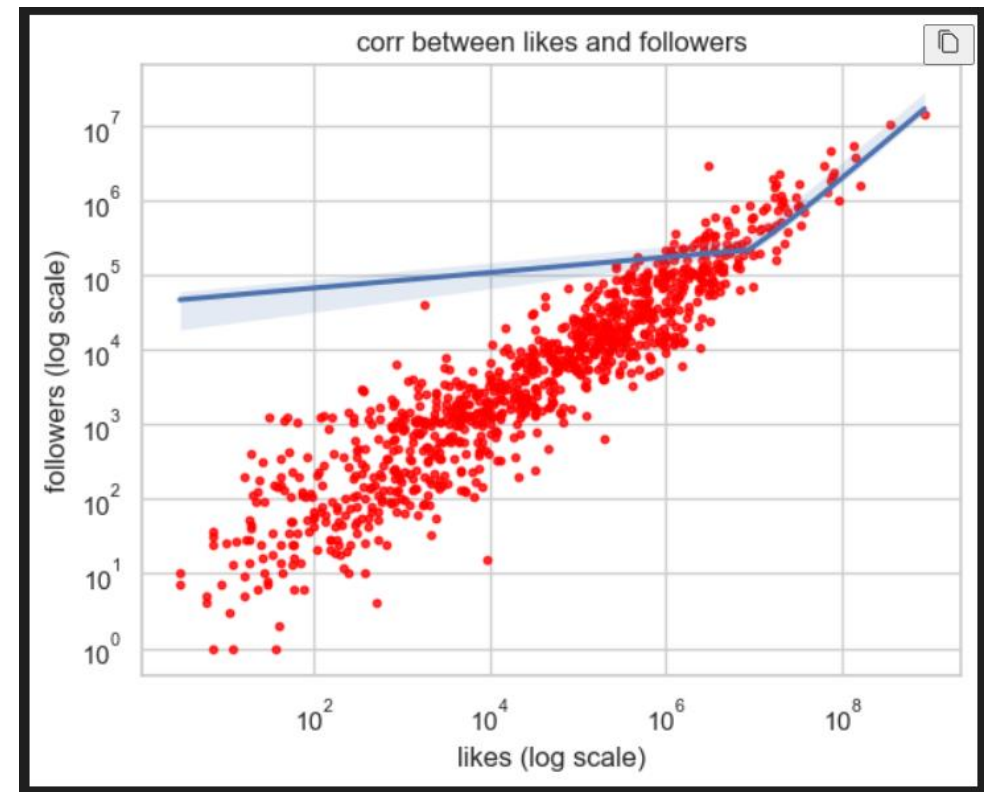
Heat Map

- Avg engagement rate and like engagement rate have a perfect positive correlation (1.00), indicating a strong linear relationship.
- Moderate positive correlation(0.49) between avg engagement rate and comment engagement rate
- . Avg engagement rate and likes show a very low correlation (0.02), indicating that the number of likes does not have a significant linear relationship with the average weekly engagement rate.



Correlation Between likes and followers

- **Positive Correlation:** There is a clear positive correlation between the number of likes and the number of followers. As the number of likes increases, the number of followers also tends to increase.
- **Regression Line:** The blue regression line indicates the overall trend in the data. The shading around the line represents the confidence interval for the regression fit, showing where the actual values are likely to fall.



Modeling

Average engagement rate is over vs the user is an active user

1. **CatBoost Classifier:** CatBoost is a gradient boosting algorithm that works well with categorical features and generally provides strong performance.
Accuracy: 100%
2. **KNN:** KNN is a simple, instance-based learning algorithm that classifies data points based on the majority vote of their k-nearest neighbors.
Accuracy: 67%
3. **Logistic Regression:** Regression is a linear model used for binary classification.
Accuracy Score: 55%

	Model	Accuracy Score	F1 score	Precision	Recall
0	CatBoost Classifier	1.00	1.000000	1.000000	1.000000
0	KNN	0.67	0.637363	0.630435	0.644444
0	Logistic regression	0.55	0.000000	0.000000	0.000000

Modeling

Predict the like engagement rate from the average engagement rate.

- Points closer to the diagonal line indicate better model performance, where actual values closely match predicted values.
- The majority of the points lie close to each other, indicating a reasonably good prediction by the model.
- Some discrepancies are evident, particularly at higher engagement rates, suggesting areas where the model may need improvement.



Business Decision and Marketing Strategies



- **Data-Driven Content Creation:** Use insights from engagement metrics (such as average weekly engagement rate, like engagement rate, and comment engagement rate) to guide content creation. This ensures that content aligns with what drives the highest engagement.
- **Invest in Feature-Rich Profiles:** Profiles with detailed biographies, verified status, and active links tend to attract more engagement. Encouraging users to complete their profiles could lead to higher overall engagement rates.
- **Targeted Campaigns:** Utilize the insights from engagement rates to design targeted marketing campaigns. For instance, campaigns can be focused on profiles with high engagement rates to maximize the reach and effectiveness of advertisements.
- **Engagement Optimization:** Encourage content creators to focus on producing content that garners high like and comment engagement rates. Providing creators with data-driven insights on what type of content performs best can help in optimizing their content strategy.
- **Influencer Partnerships:** Collaborate with influencers who have high engagement rates. Influencer marketing can be more effective if influencers are selected based on their engagement metrics rather than just follower counts.
- **Content Diversification:** Analyze the types of content that yield the highest engagement and encourage diversification in content creation. For example, if certain topics or formats (like challenges or educational content) are performing well, promote these trends.
- **Regular Analysis and Feedback:** Implement a system for regular analysis of engagement metrics and provide feedback to content creators and marketers. This continuous improvement loop will help in adapting strategies to the ever-evolving trends on TikTok.



Conclusion

- By focusing on data-driven insights, TikTok can make informed business decisions that enhance user engagement and optimize marketing strategies. This approach not only improves the user experience but also maximizes the effectiveness of marketing efforts, ultimately driving growth and success on the platform.



Thank you