

Social Media Analysis for UNICEF NL

A Data-Driven Approach to Boosting Engagement

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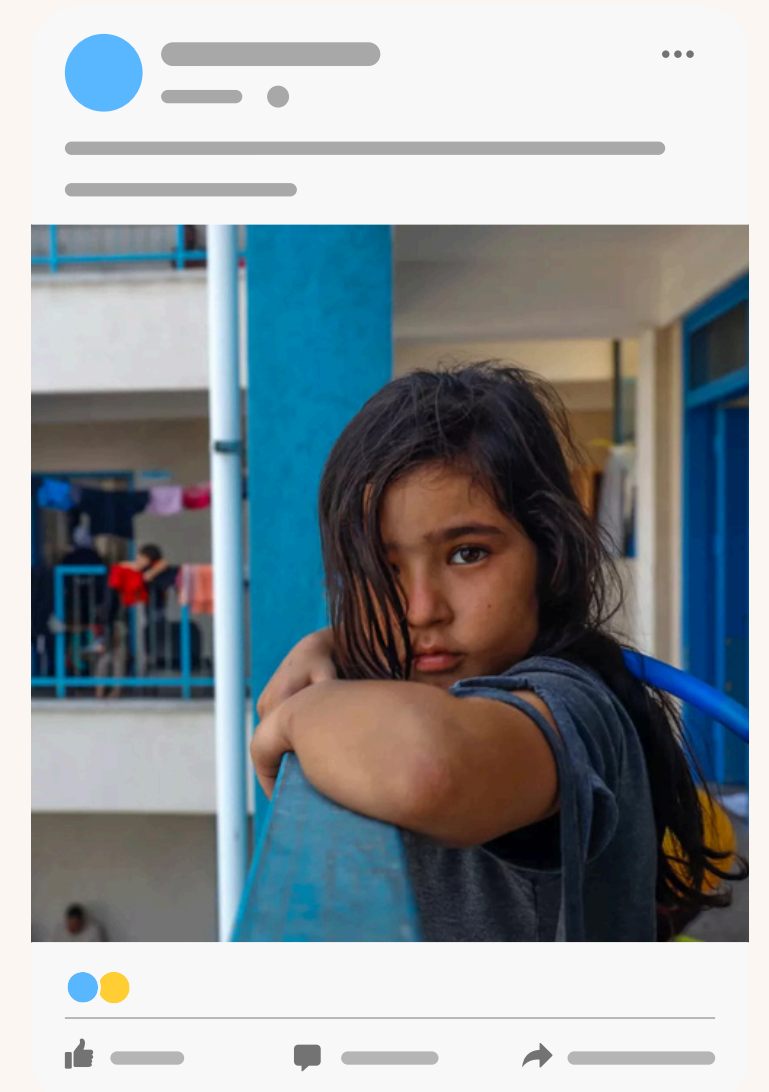
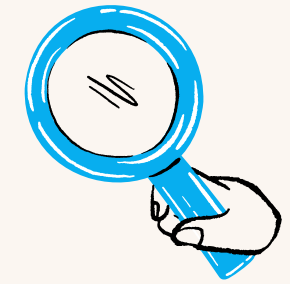
EXPLORING SOCIAL MEDIA ENGAGEMENT

Social media is a powerful tool for driving awareness and inspiring action.

Why do some UNICEF NL posts generate high engagement, while others go unnoticed?

This study investigates what makes a UNICEF NL social media post successful.

Exploring the key elements that influence engagement and audience interaction



What makes social media posts more engaging than others?

This analysis focuses on key factors that shape social media engagement

EMOTIONAL APPEALS

Escalas (2009) and Nash et al. (2023)

Narratives trigger stronger emotional connections, leading to higher engagement

SENTIMENT

Chang & Lee (2010)

Negative framing can generate immediate action
Positive framing sustains long-term support

VISUAL CONTENT

Kim & Yang (2022)

Bright, warm colors tend to increase engagement
Muted tones evoke professionalism but lower interaction rates

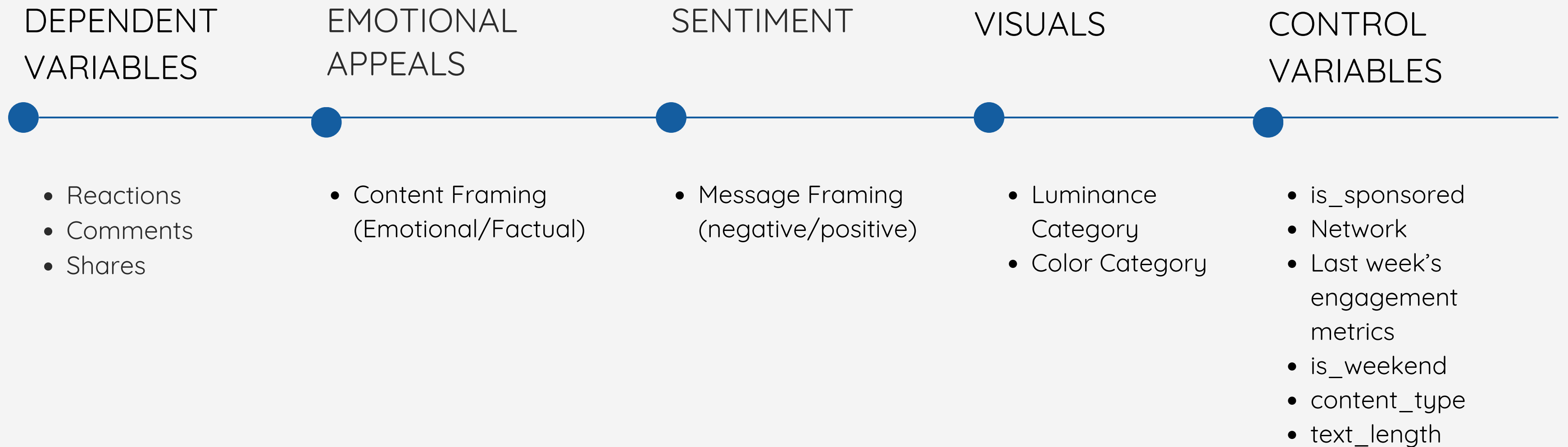
METHODOLOGY

Random Forest is a machine learning technique that builds multiple decision trees to improve prediction accuracy.

- Provides feature importance, helping identify key engagement drivers.
- Handles large datasets well and is robust to noise.
- Performs well with mixed data.

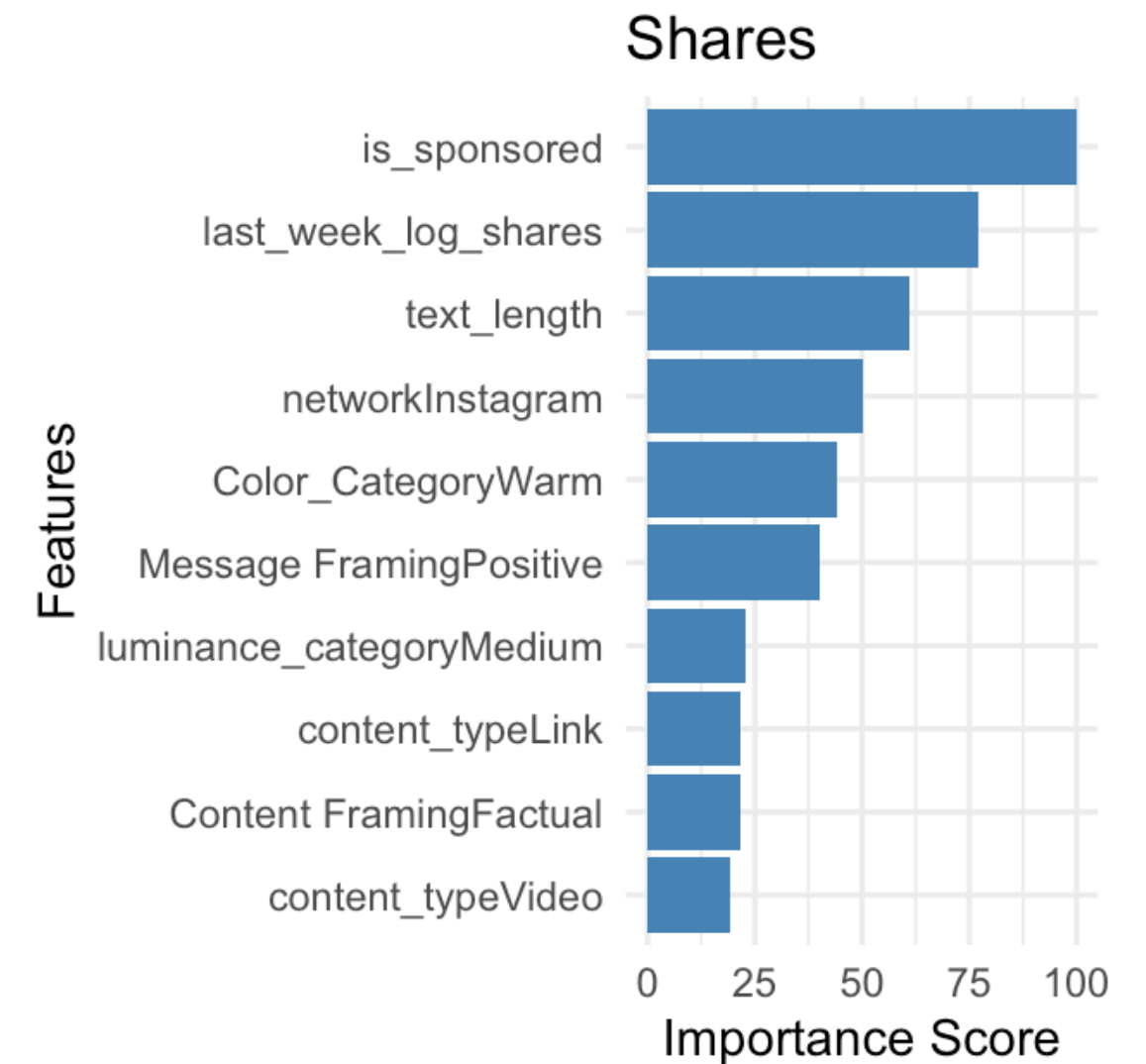
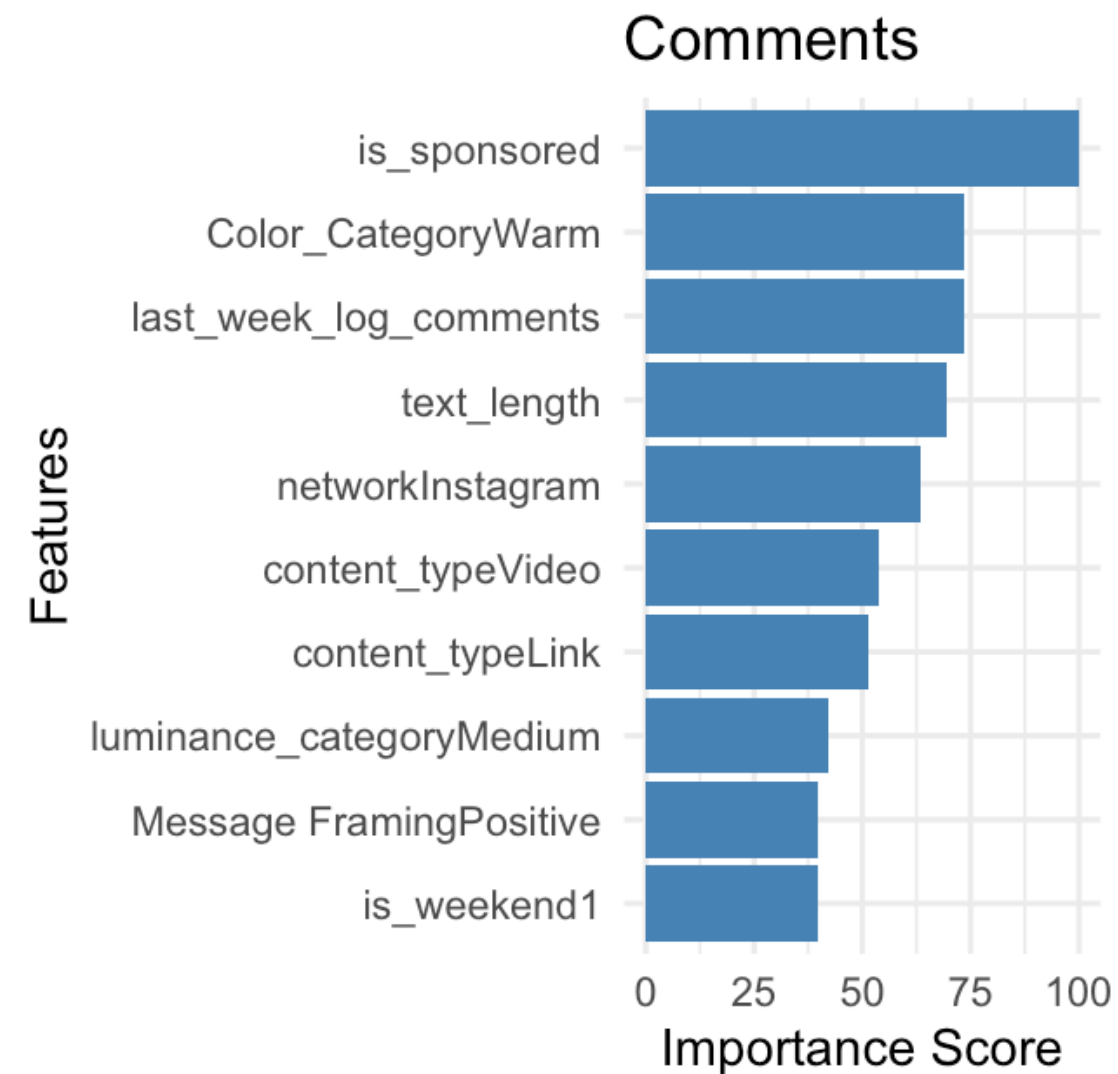
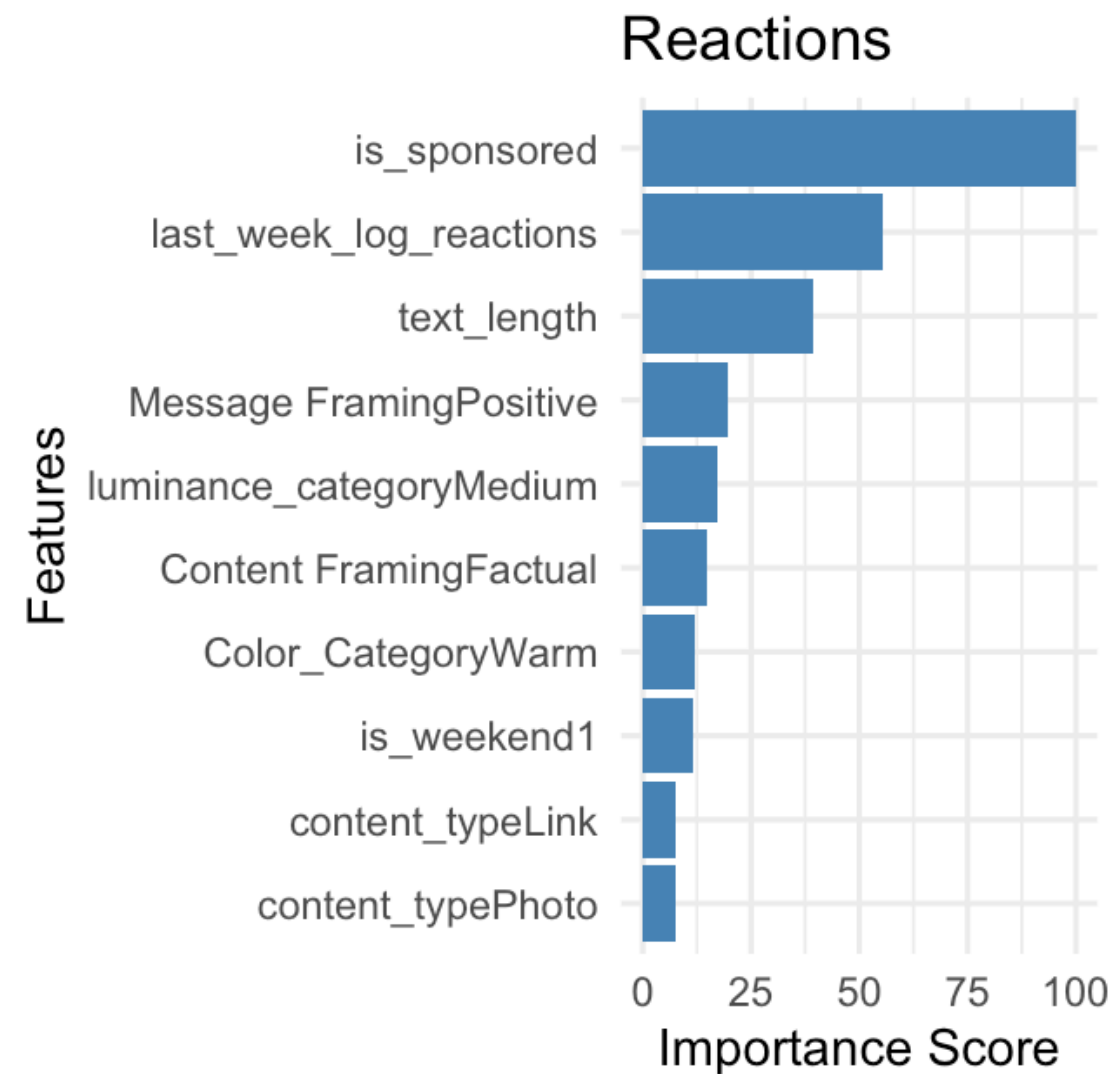


VARIABLES USED IN ANALYSIS



INSIGHTS FROM RANDOM FOREST MODEL

Top 10 Most Important Features for Engagement (Random Forest)



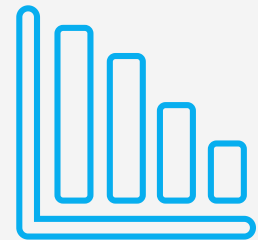
Post Framing

Post framing influences how people perceive and interact with content

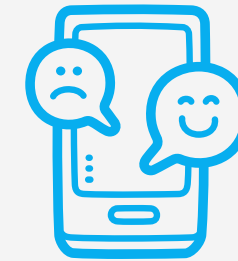
THE ROLE OF POST FRAMING

WHAT DRIVES ENGAGEMENT?

Analysis of content type, message tone, and emotions to optimize UNICEF NL's social media engagement.



**DO FACTUAL
POSTS PERFORM
BETTER THAN
EMOTIONAL
ONES?**



**DOES A NEGATIVE
OR POSITIVE
MESSAGE
GENERATE MORE
ENGAGEMENT?**

AN EXAMPLE OF CONTENT FRAMING

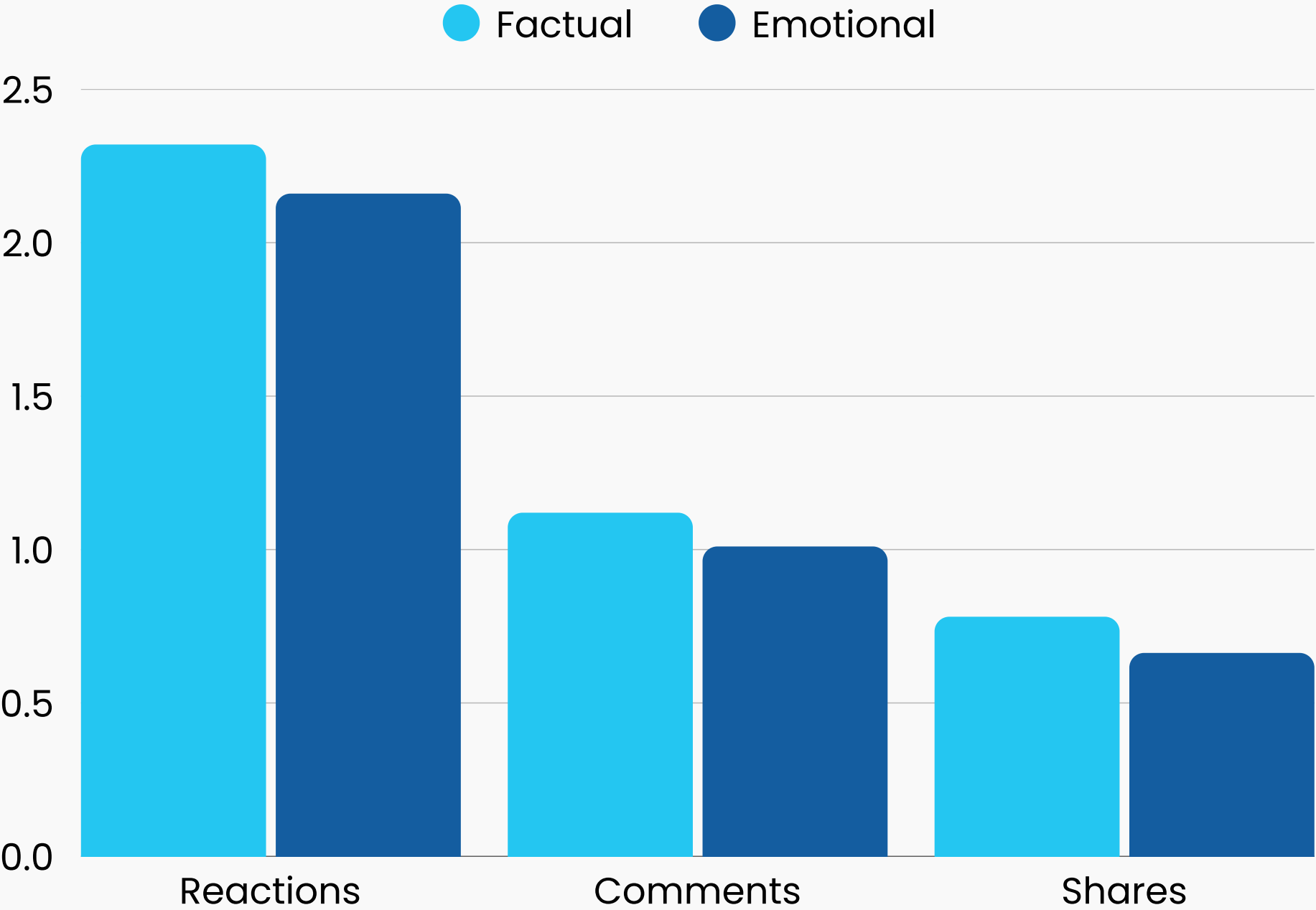
Factual Post

Over 700 children under five die daily from unsafe water. UNICEF provides clean water and hygiene education to save lives. 💧 #CleanWaterForAll #UNICEF

Emotional Post

Amina, 5, used to walk 6 km for water. Now, thanks to UNICEF, she can go to school and dream of a better future. ✨ #ActNow #UNICEF

CONTENT FRAMING ANALYSIS



Random Forest Results

Feature Importance of Content Framing		
Engagement Metric	Importance (%IncMSE)	Rank Among Features
Reactions	28.39	6
Shares	20.09	9
Comments	17.99	11

- **Factual posts** consistently generate higher engagement across all metrics.
- Reactions are the most influenced metric, followed by shares and comments.
- Content framing has a measurable impact, but its relative importance varies among different engagement metrics.

AN EXAMPLE OF MESSAGE FRAMING



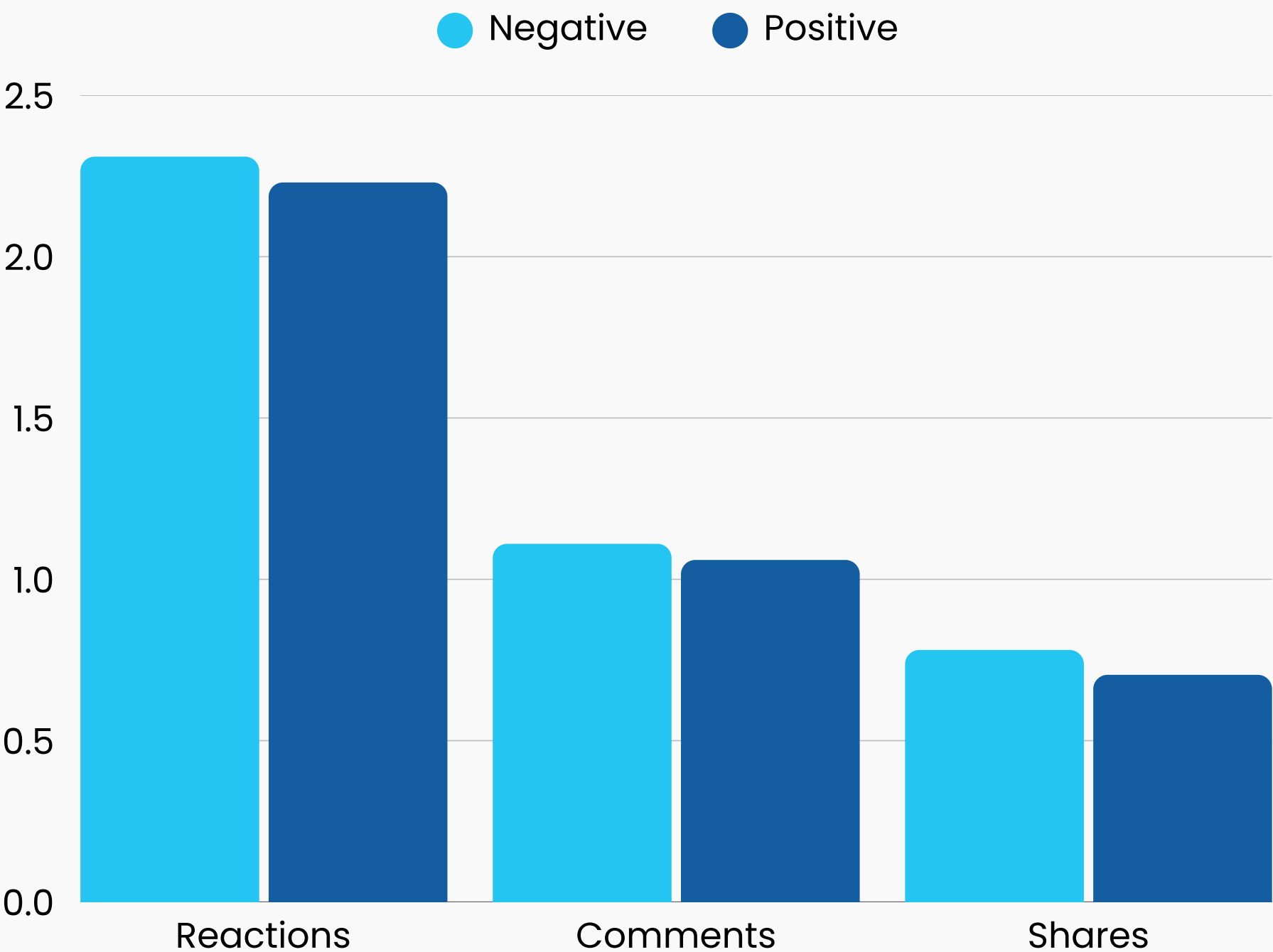
Positive Framing

Together, we can ensure every child has access to clean water and education. Join us creating a brighter future!

Negative Framing

Millions of children face hunger and lack access to clean water. Without urgent help, their future is at risk. Act now!

MESSAGE FRAMING ANALYSIS



Random Forest Results

Feature Importance of Message Framing		
Engagement Metric	Importance (%IncMSE)	Rank Among Features
Reactions	32.84	4
Shares	31.52	6
Comments	20.22	9

- Negative message framing slightly increases engagement across all metrics.
- Reactions are the most impacted, followed by shares and comments.
- Message framing plays a role, but its effect is smaller compared to other factors.

Visual Content

Visual elements play a key role in capturing attention and driving engagement

THE ROLE OF VISUAL CONTENT

WHAT DRIVES ENGAGEMENT?



**HOW DO THE
COLORS USED
IN SOCIAL
MEDIA POSTS
AFFECT
ENGAGEMENT
LEVELS FOR
UNICEF NL?**



**DOES HIGHER
LUMINANCE IN
SOCIAL MEDIA
IMAGES LEADS TO
GREATER
AUDIENCE
ENGAGEMENT?**

Variable Creation

1

**Downloading
Images**

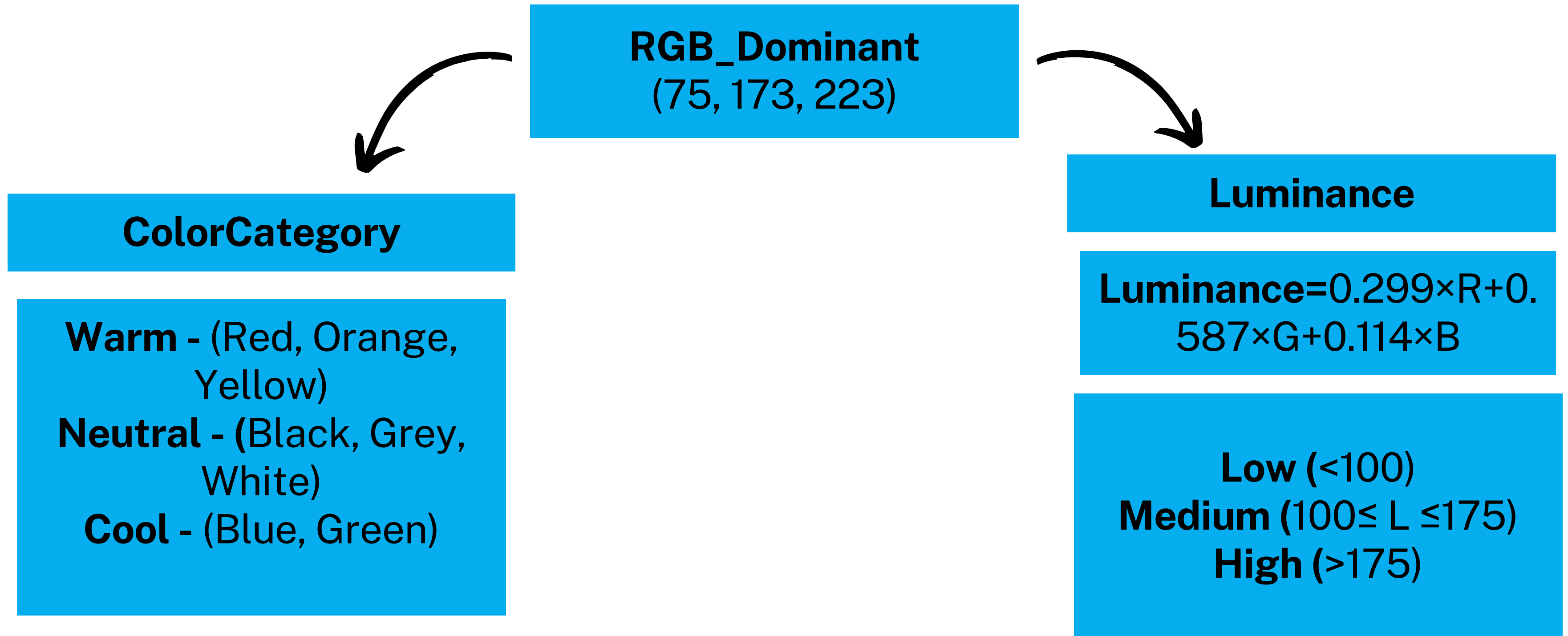
2

GoogleAPI

3

RGB_Dominant

Variable Creation



VISUAL LUMINANCE ANALYSIS



Random Forest Results

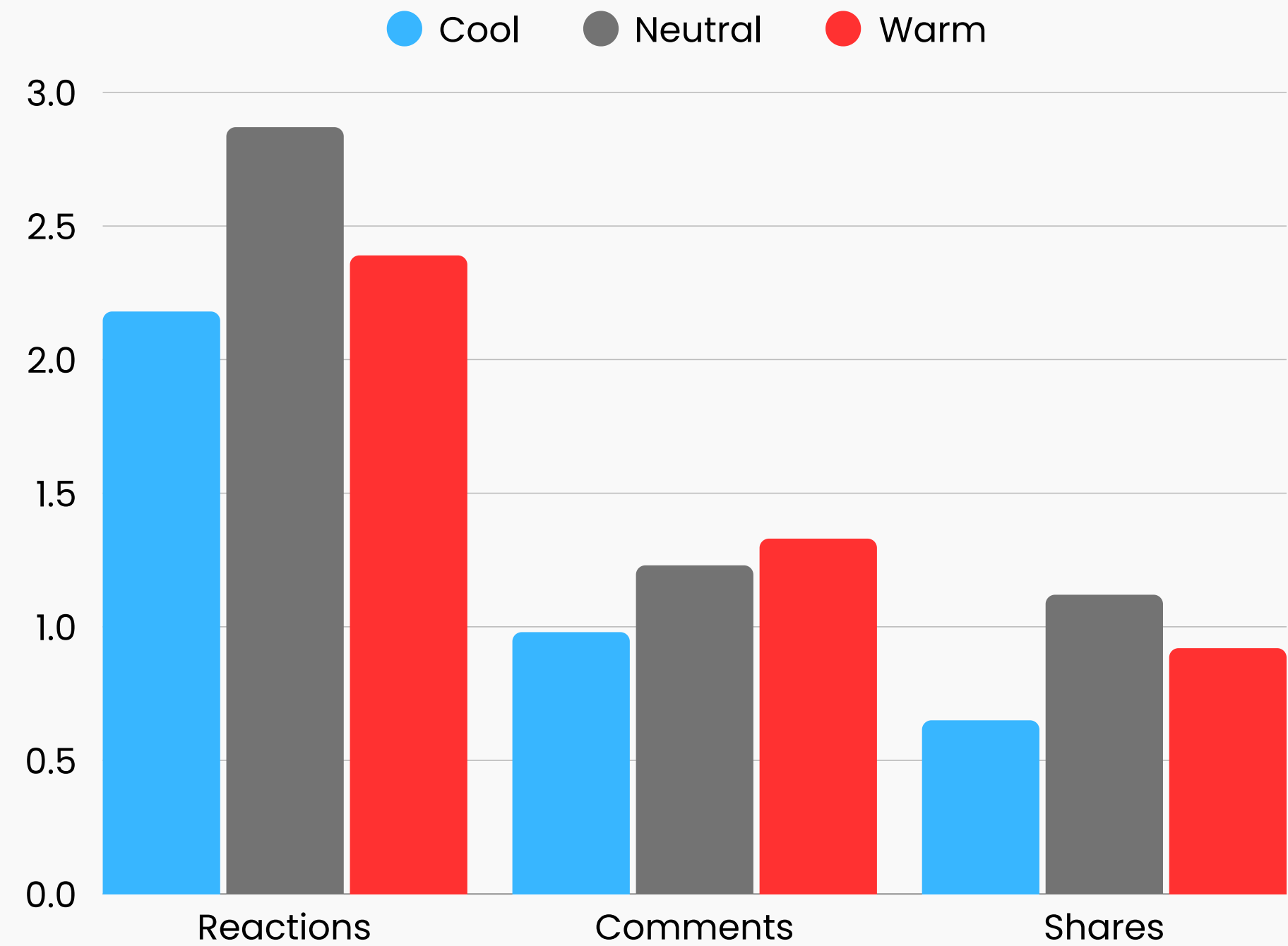


Feature Importance of Luminance Category			
Engagement Metric	Luminance Category	Importance (%IncMSE)	Rank Among Features
Reactions	Medium	30.79	5
Comments	Medium	21.14	8
Shares	Medium	20.84	7
Reactions	High	19.78	12
Shares	High	11.72	13
Comments	High	6.21	13

- Medium luminance is a key predictor for engagement (most important).
- High luminance has a lower impact on engagement.
- Low luminance performs similarly to high luminance (but is least important).
- Avoid medium luminance.

VISUAL COLOR ANALYSIS

Random Forest Results



Feature Importance of Color Category			
Engagement Metric	Color Category	Importance (%IncMSE)	Rank Among Features
Shares	Warm	33.90	5
Comments	Warm	33.52	2
Reactions	Warm	25.35	7
Reactions	Neutral	14.53	13
Shares	Neutral	13.50	12
Comments	Neutral	4.62	14

- Warm Colors Drive Engagement
- Shares & Comments Are Most Influenced
- Neutral Colors Perform Well for Reactions and shares
-
- Cool Colors Have the Lowest Impact
- Strategic Use of Colors Matters

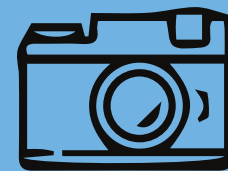
CONTROL VARIABLES ANALYSIS



text_length - number of characters



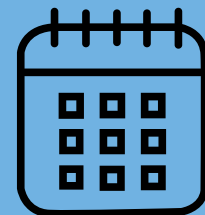
Network - platform (X, instagram, facebook etc)



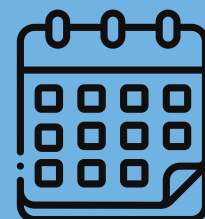
content_type - link, photo, video etc.



is_sponsored - yes/no



is_weekend - yes/no



Last week's engagement metrics -
measures momentum

Top 10 Most Important Features for Engagement (Random Forest)

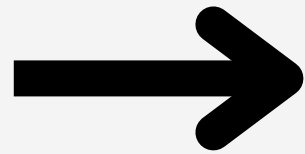


- Sponsorship strongly affects engagement -> Ad Fatigue, Lower Organic Reach, Less connection.
- Past engagement drives future engagement -> Reinforces momentum effect.
- Platform & Posting time have an influence -> timing and platform strategies matter!
- Text-Length matters -> increase passive reactions and decrease comments shares.



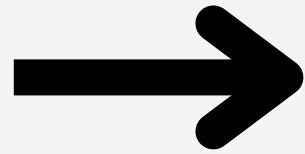
Recommendations

CONTROL VARIABLES



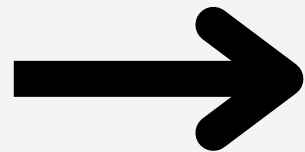
- Avoid too many sponsored posts and prioritize organic posts
- Take advantage of the momentum effect

EMOTIONAL APPEALS



- Use factual posts for higher engagement

SENTIMENT



- Use negative framing for higher engagement

VISUAL CONTENT



- Use warm colors for urgent matters
- Use neutral colors for informational posts
- Avoid medium luminance

Thank you.

unicef  | for every child