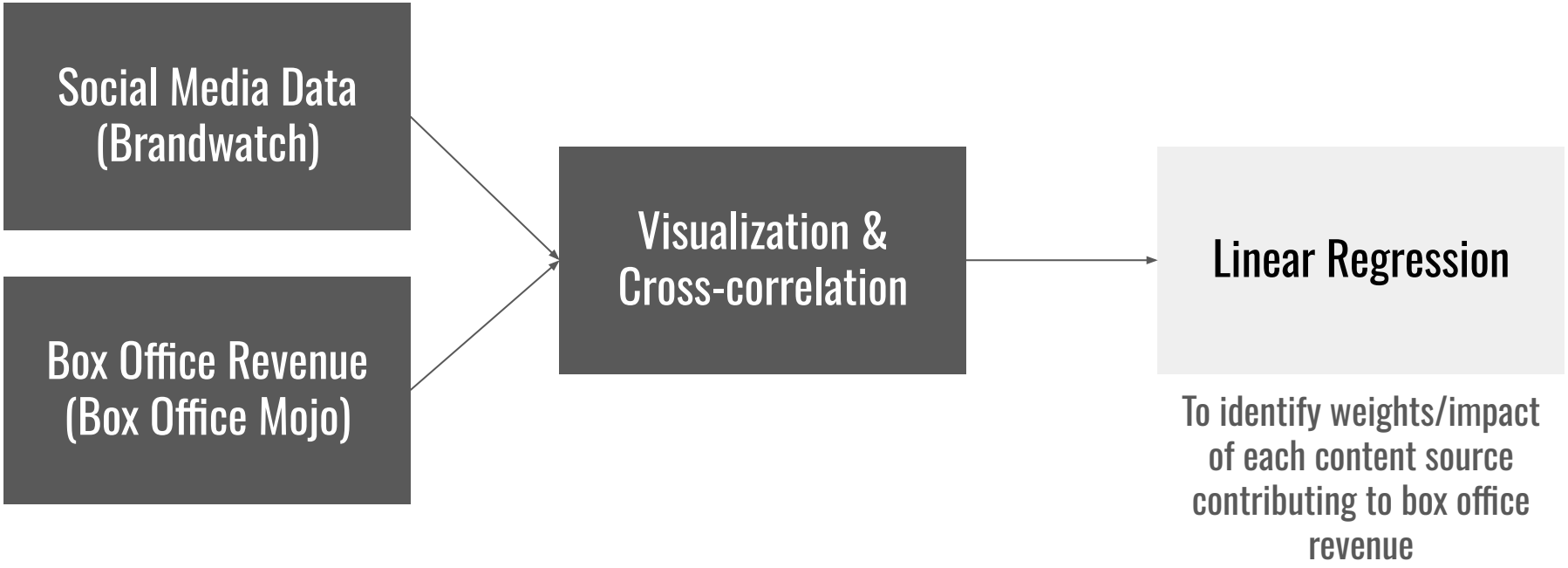
Appendix

Correlation Analysis Methodology & Findings

Post-Release Correlation Model



Correlation Analysis Methodology

Step 1: Write ‘word of mouth’ query on Brandwatch

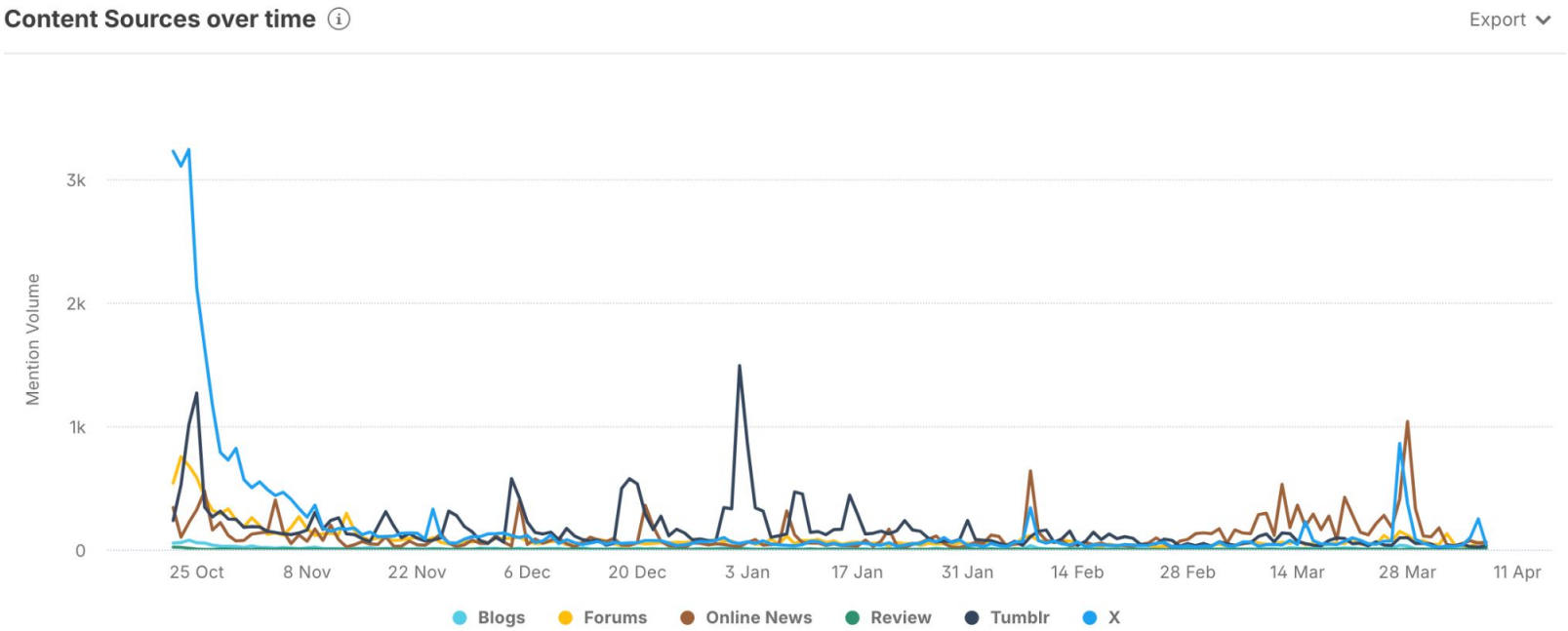
Write your query

```
1 (("Dune" OR "Dune movie" OR "#dune" OR "Dune (2021)" OR "Dune: Part One (2021)"
  OR "#dunemovie"OR "#dunefilm" OR "Dune Part 1" OR "Dune: Part 1" OR ("Dune"
  NEAR/10 "denis") OR ("Dune" NEAR/10 "zendaya") OR  ("dune" NEAR/10 "timothee
  chalamet") OR  ("dune" NEAR/10 "oscar isaac") OR "new denis villeneuve movie"
  OR "new dune" OR "atreides" OR ("Denis villeneuve" NEAR/10 "Frank Herbert"))
2 AND
3 ("just tried" OR "highly recommend" OR "absolutely love" OR "amazing" OR
  "impressed by" OR "my favorite movie" OR "best movie" OR "amazing experience"
  OR "better than" OR "prefer over" OR "top choice" OR "recommend" OR "suggest"
  OR "incredible" OR "fantastic" OR "unbelievable" OR "disappointed" OR "worst"
  OR "let down" OR "not recommend" OR "dont recommend" OR "overrated" OR
  "underwhelming" OR "regret" OR "critique" OR "negative review" OR "not worth"
  OR "skip" OR "bad experience" OR "just watched" OR "new fav" OR "loved it" OR
  "impressive" OR "cried a lot" OR "wow" OR "hated it" OR "disappointed" OR
  "positive review" OR "five stars" OR "waste of time" OR "love story" OR "best
  adaptation" OR "perfect" OR "IMAX" OR "must watch" OR "avoid watching" OR
```

Suggest AI-powered keywords: **Off** | Find location codes | Keyboard shortcuts 81442 characters left

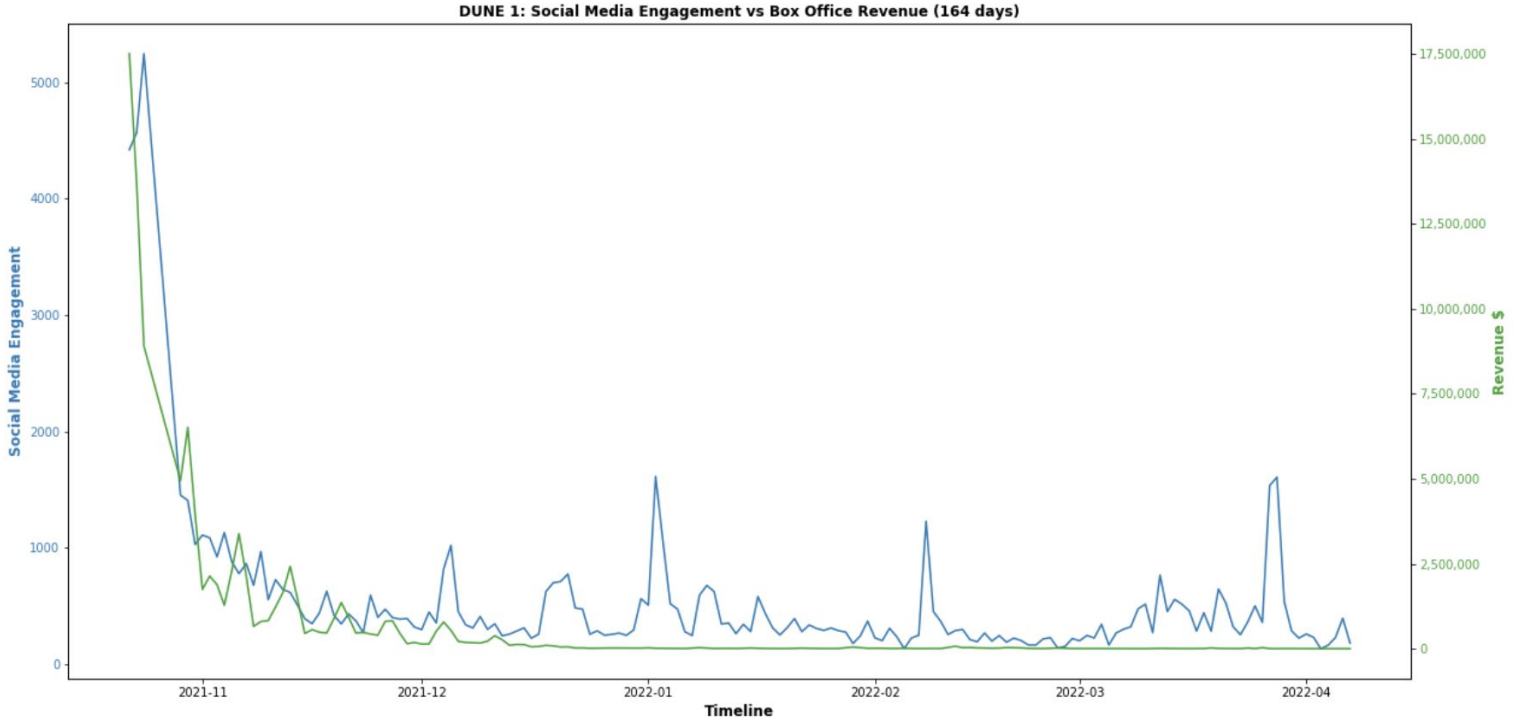
Correlation Analysis Methodology

Step 2: Export Social Media Engagement data for the theatrical release period



Correlation Analysis Methodology

Step 3: Visualize Social Media Engagement & Box Office Revenue together



Correlation Analysis Methodology

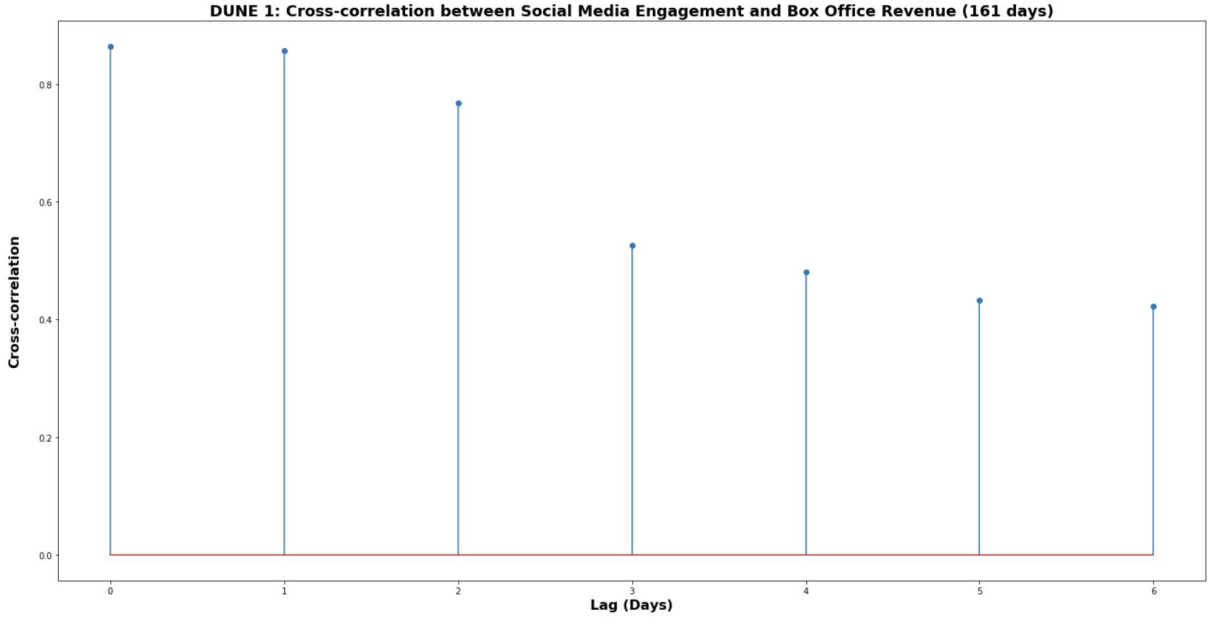
Step 4: Run Correlation Code to identify the intensity of correlation and identify how long social media engagement stays relevant for

```python
#series1 -> social media engagement
#series2 -> revenue
def cross_correlation(series1, series2, lag=0):
    return series1.corr(series2.shift(lag))

# Example usage:
lags = range(0, 7)  # Example lag values from 0 to 7 days
cross_corr_values = {}
for lag in lags:
    cross_corr_values[lag] = cross_correlation
    (combined_df['total'], combined_df['revenue'], lag)
```

```python
import statsmodels.api as sm
from statsmodels.tsa.stattools import grangercausalitytests

# Combine datasets into a single DataFrame for the Granger causality test
combined_df = pd.concat(
    [engagement_ts['total'], bo_ts['revenue']], axis=1)
combined_df.columns = ['total', 'revenue']

# Perform the Granger causality test
granger_test_results = grangercausalitytests(
    combined_df, maxlag=15, verbose=True)
```

```
Granger Causality
number of lags (no zero) 1
ssr based F test:         F=62.8480 , p=0.0000  , df_denom=160, df_num=1
ssr based chi2 test:   chi2=64.0264 , p=0.0000  , df=1
likelihood ratio test: chi2=54.0045 , p=0.0000  , df=1
parameter F test:         F=62.8480 , p=0.0000  , df_denom=160, df_num=1

Granger Causality
number of lags (no zero) 2
ssr based F test:         F=17.0491 , p=0.0000  , df_denom=157, df_num=2
ssr based chi2 test:   chi2=35.1841 , p=0.0000  , df=2
likelihood ratio test: chi2=31.8397 , p=0.0000  , df=2
parameter F test:         F=17.0491 , p=0.0000  , df_denom=157, df_num=2
```

```
Maximum Pearson correlation coefficient: 0.8636602622706788
Lag associated with Maximum Pearson correlation coefficient: 0
```

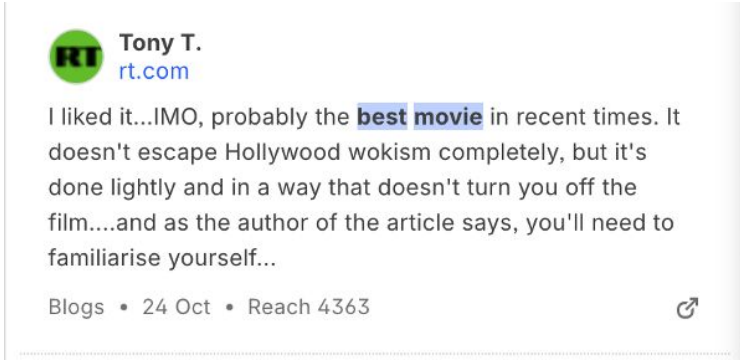


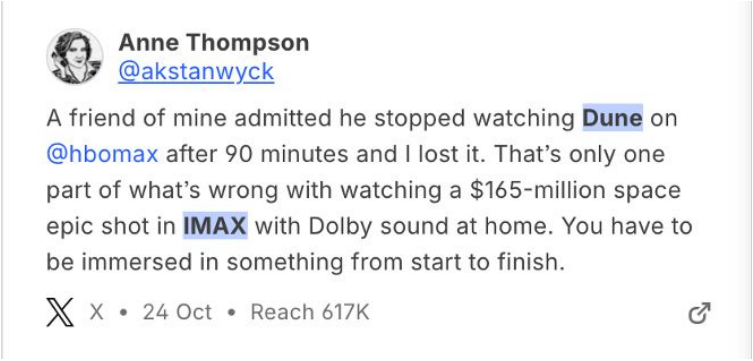
Correlation Analysis Methodology

Step 5: Regress to find top platforms contributing to revenue spikes and find evidence through brandwatch

```
# Extract the coefficients (excluding the intercept) and sort them by their absolute values
coefficients = model.params.drop('const').abs().sort_values(ascending=False)

# Print the sorted coefficients to identify the top contributing features
print("\nTop Contributing Features:")
print(coefficients)
```

```
Top Contributing Features:
X              1.789114e+06
Forums         5.857200e+05
Blogs          5.276553e+05
Tumblr         6.739212e+04
Online News    5.837038e+04
Review         4.908968e+04
dtype: float64
```

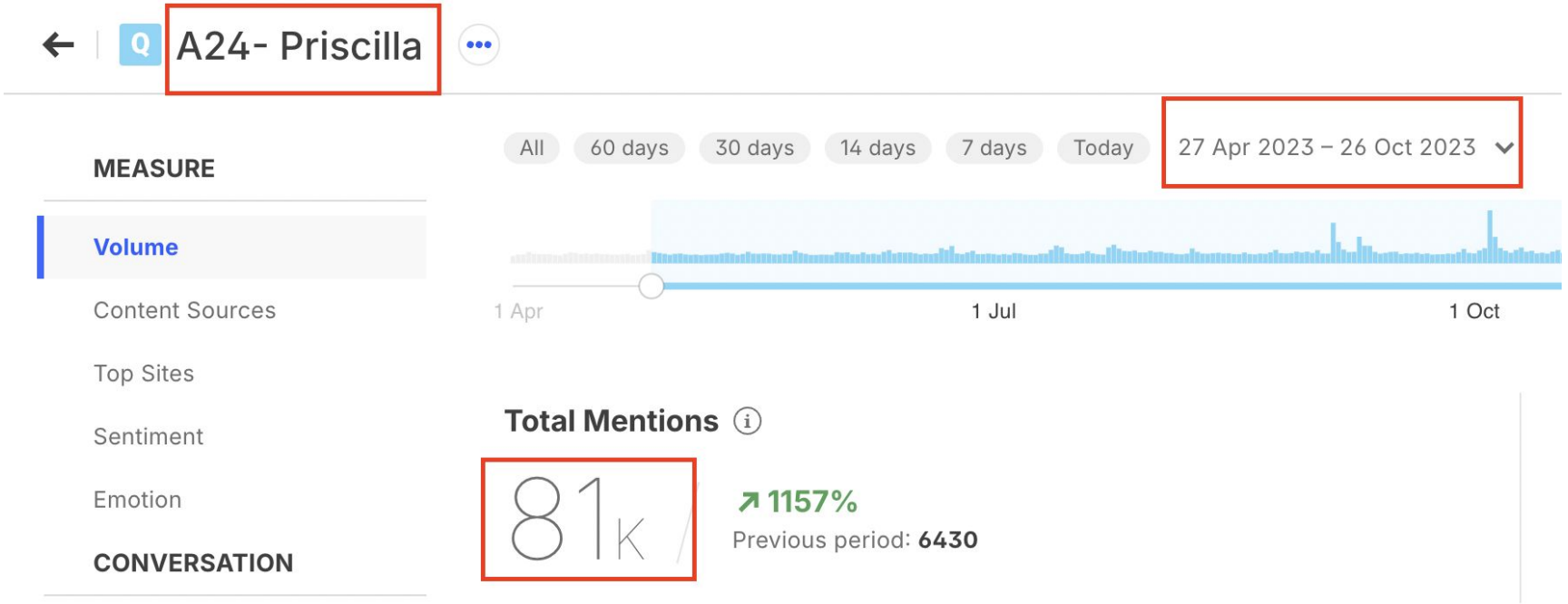




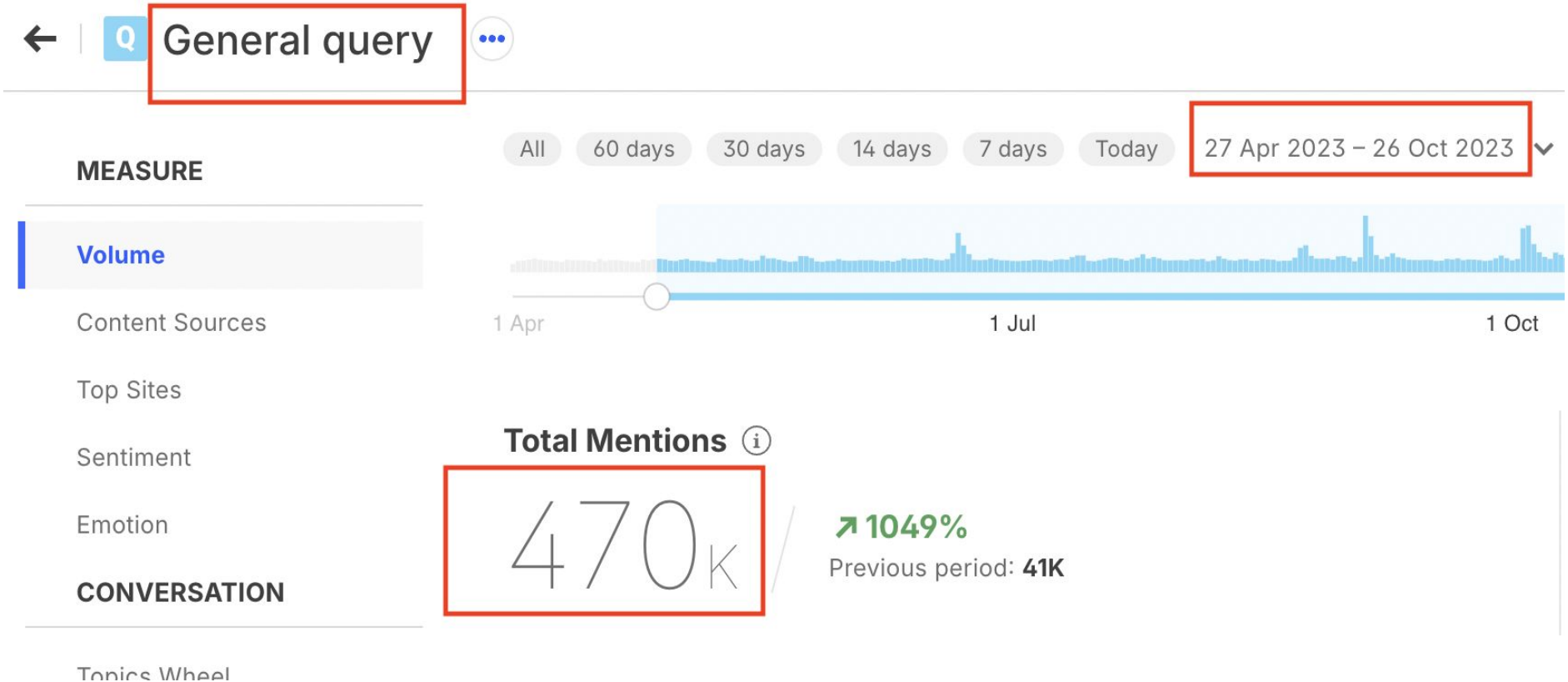
Intent % Methodology

Intent % Methodology

Step 1: For each movie, ‘word of mouth’ query showing intent to watch/not watch is executed for pre-release duration (6 months) and the total mentions are noted



Step 2: For the same movie, a general query to capture all social media chatter is executed for pre-release (6 months) and total mentions are noted.



Step 3: Pre-release Intent % would be total mentions of word mouth query/total mentions of general query.

Step 4: Step 1-3 are repeated for the duration of the movie's theatrical release to calculate post release intent % and see if there is an **increase** or **decrease.**

Intent % was calculated for all movies. Results are below

Oppenheimer

Pre-release : 16%

Post-release : 41.3%

Barbie

Pre-release : 11.5%

Post-release : 13.6%

Dungeons and Dragons

Pre-release : 3.1%

Post-release : 5%

Civil War

Pre-release : 4.9%

Post-release : 8.7%

Insidious- The Red Door

Pre-release : 5.3%

Post-release : 15%

Dune 1

Pre-release : 2.7%

Post-release : 2.4%

Five nights at Freddy's

Pre-release : 4.7%

Post-release : 5.4%

A24: Iron Claw

Pre-release : 11.9%

Post-release : 16.7%

A24: Past Lives

Pre-release : 20.2%

Post-release : 20.6%

Late Night with Devil

Pre-release : 57%

Post-release : 42%

Sentiment Analysis Methodology

YouTube Trailers Used

Film	Video Name	Video Release Date	Date Extracted	Views (as of extraction date)	# of comments (as of extraction date)	# of comments analyzed	URL
Barbie	Teaser Trailer	12/12/22	4/12/24	15,394,215	12,063	500	https://www.youtube.com/watch?v=8zIf0XvoL9Y
Barbie	2nd Teaser Trailer	4/4/23	4/12/24	24,343,110	12,493	500	https://www.youtube.com/watch?v=GRyt3Ov4zz0
Barbie	Main Trailer	5/25/23	4/12/24	83,374,991	37,842	500	https://www.youtube.com/watch?v=pBk4NYhWNMM
Oppenheimer	Official Trailer	12/18/22	4/12/24	47,700,597	16,742	500	https://www.youtube.com/watch?v=bK6ldnjE3Y0
Oppenheimer	New Trailer	5/8/23	4/12/24	70,008,390	34,011	500	https://www.youtube.com/watch?v=uYPbbksJxIg
Insidious: The Red Door	Official Trailer	4/19/23	4/12/24	26,387,024	5,553	500	https://www.youtube.com/watch?v=ZuQuOnYnr3Q
Insidious: The Red Door	Final Trailer	6/6/23	4/12/24	5,609,726	1,361	500	https://www.youtube.com/watch?v=gexw4P68kbg
Five Nights at Freddy's	Teaser Trailer	5/16/23	4/12/24	31,378,316	87,411	500	https://www.youtube.com/watch?v=f-zqS2CiZqw
Five Nights at Freddy's	Official Trailer	6/27/23	4/12/24	42,409,844	65,305	500	https://www.youtube.com/watch?v=0VH9WCFV6XQ
Five Nights at Freddy's	Official Trailer 2	8/30/23	4/12/24	24,835,382	29,130	500	https://www.youtube.com/watch?v=Z_T0o5uNrlY
Late Night with The Devil	Teaser Trailer	2/8/24	4/12/24	1,315,218	1,057	500	https://www.youtube.com/watch?v=TiwvEtimLzQ
Late Night with The Devil	Official Trailer	3/6/24	4/12/24	1,120,764	804	500	https://www.youtube.com/watch?v=cvt-mauboTc

Civil War	Official Trailer	12/13/23	4/12/24	18,095,510	29,719	500	https://www.youtube.com/watch?v=aDyQxtg0V2w
Civil War	Official Trailer 2	2/20/24	4/12/24	12,208,865	11,731	500	https://www.youtube.com/watch?v=cA4wVhs3HC0
Civil War	Official Final Trailer	4/10/24	4/12/24	8,577,257	1,260	500	https://www.youtube.com/watch?v=c2G18nIVpNE
The Batman	DC Fandome Teaser	8/22/20	4/13/24	42,074,533	104,575	500	https://www.youtube.com/watch?v=NLOp_6uPccQ
The Batman	Main Trailer	10/16/21	4/13/24	61,697,813	96,612	500	https://www.youtube.com/watch?v=mqqft2x_Aa4
D&D: Honor Among Thieves	First Trailer	7/21/22	4/14/24	24,485,798	13,740	500	https://www.youtube.com/watch?v=liMinixSXII
D&D: Honor Among Thieves	Main Trailer	01/23/23	4/14/24	14,793,938	4,405	500	https://www.youtube.com/watch?v=HGvv-Hhft3U
Dune	Teaser Trailer	09/09/20	4/14/24	45,115,670	66,026	500	https://www.youtube.com/watch?v=n9xhJrPXop4
Dune	Main Trailer	7/22/21	4/14/24	35,528,424	36,088	500	https://www.youtube.com/watch?v=8g18jFHCLXk
Past Lives	Trailer	02/22/23	04/17/24	9,140,573	4,483	500	https://www.youtube.com/watch?v=kA244xewjcI&lc=Ugzj6BUudbyYVAf2scV4AaABAg
Priscilla	Main Trailer	10/03/23	04/17/24	12,181,706	5,171	500	https://www.youtube.com/watch?v=DBWk6BohVXk&lc=UgzChKOxL9iUb3lhaJB4AaABAg
Priscilla	Teaser Trailer	06/21/23	04/17/24	2,241,300	2,986	500	https://www.youtube.com/watch?v=gxbZyvCJc6U&lc=UgyA6B3pjVNMoeQgrBR4AaABAg
Iron Claw	Teaser Trailer	10/11/23	04/17/24	21,258,329	9,202	500	https://www.youtube.com/watch?v=8KVsaoveTbw&lc=UgznFbLkcrx8xUtYrhN4AaABAg

Sentiment Analysis Methodology

Step 1: YouTube Comment scraping with Octoparse

- Utilized Octoparse software to scrape YouTube comments of official teasers and trailers for the following films:
  - Barbie
  - Oppenheimer
  - Insidious: The Red Door
  - Five Nights at Freddy's
  - Late Night with The Devil
  - Civil War
  - The Batman
  - D&D: Honor Among Thieves
  - Dune
  - Priscilla
  - Iron Claw
  - Past Lives
- Out of ~800 - 32,000 comments, we used a sample size of ~500 comments

Sentiment Analysis Methodology

Step 2: Sentiment analysis with ChatGPT

- **For each trailer, we inputted all comments into Chat GPT and asked the following prompts for analysis:**

1. Please combine Part 1, Part 2, and Part 3 and provide aspect-based sentiment analysis, providing entity, themes, and associated sentiment as well
2. Can you please provide a distilled analysis which looks at the intent of the comments in relation to watching the move in a theater based on the trailer
3. What specific elements of the trailer seem to be drawing people into watching the movie
4. Are there any specific elements that seem to make people not want to watch the movie in theaters

Sentiment Analysis Methodology

Step 2: Sentiment analysis with ChatGPT (cont.)

- **Final prompt to synthesize findings across all films in a given genre:**

  PLEASE COMBINE THE DATA FOR [FILM 1, FILM 2, FILM 3]. I am trying to gauge the intent of commenters online wanting to see a movie in theaters.

  Based on the following data please synthesize and find overarching key elements and entities that answer these questions:.

  1. provide aspect-based sentiment analysis, providing entity, themes, and associated sentiment as well. Focus on the top 3-5 driving factors.

  2. Providea distilled analysis which looks at the intent of the comments in relation to watching the move in a theater based on the trailer. Focus on the top 3-5 driving factors.

  3. What specific elements of the trailer seem to be drawing people into watching the movie. Focus on the top 3-5 driving factors.

  4. Are there any specific elements that seem to make people not want to watch the movie in theaters. Focus on the top 3-5 driving factors.

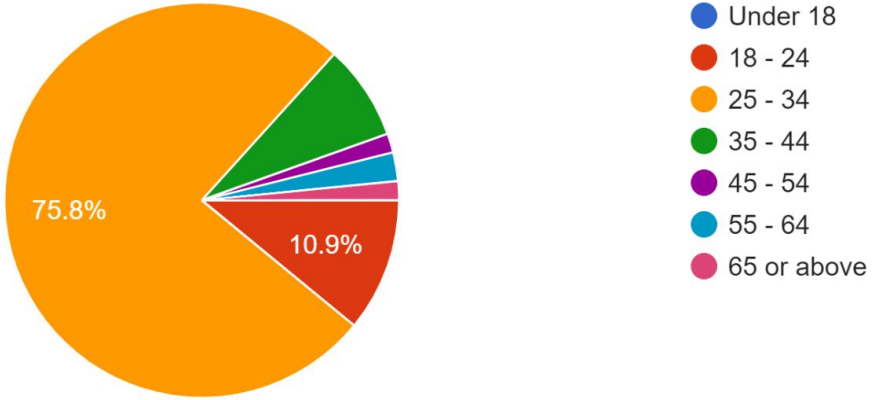
  The Data:

  [Paste ALL feedback from movie by movie analysis]

Survey Appendix

What is your age?

128 responses

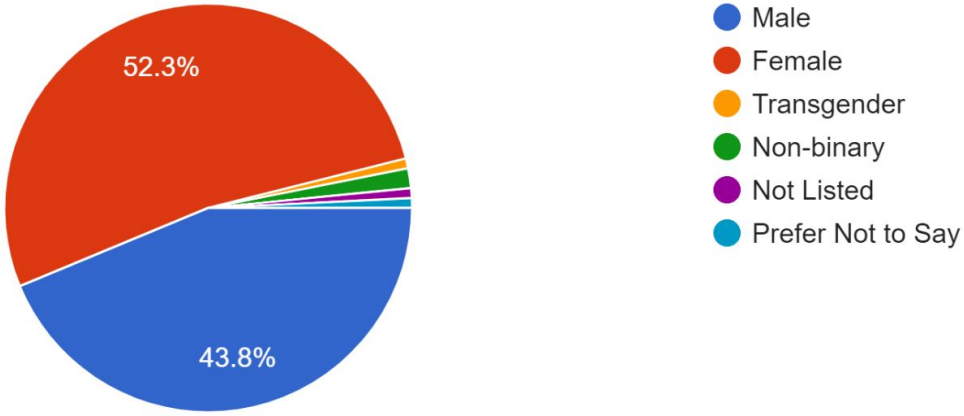


- -18 0% / 0
- 18 - 24 10.9% / 14
- 25 - 34 75.8& / 97
- 35 - 44 7.8& / 10
- 45 - 54 1.6% / 2
- 55 - 64 2.3% / 3
- 65+ 1.6% / 2

Demographic (½)

What gender do you most identify with?

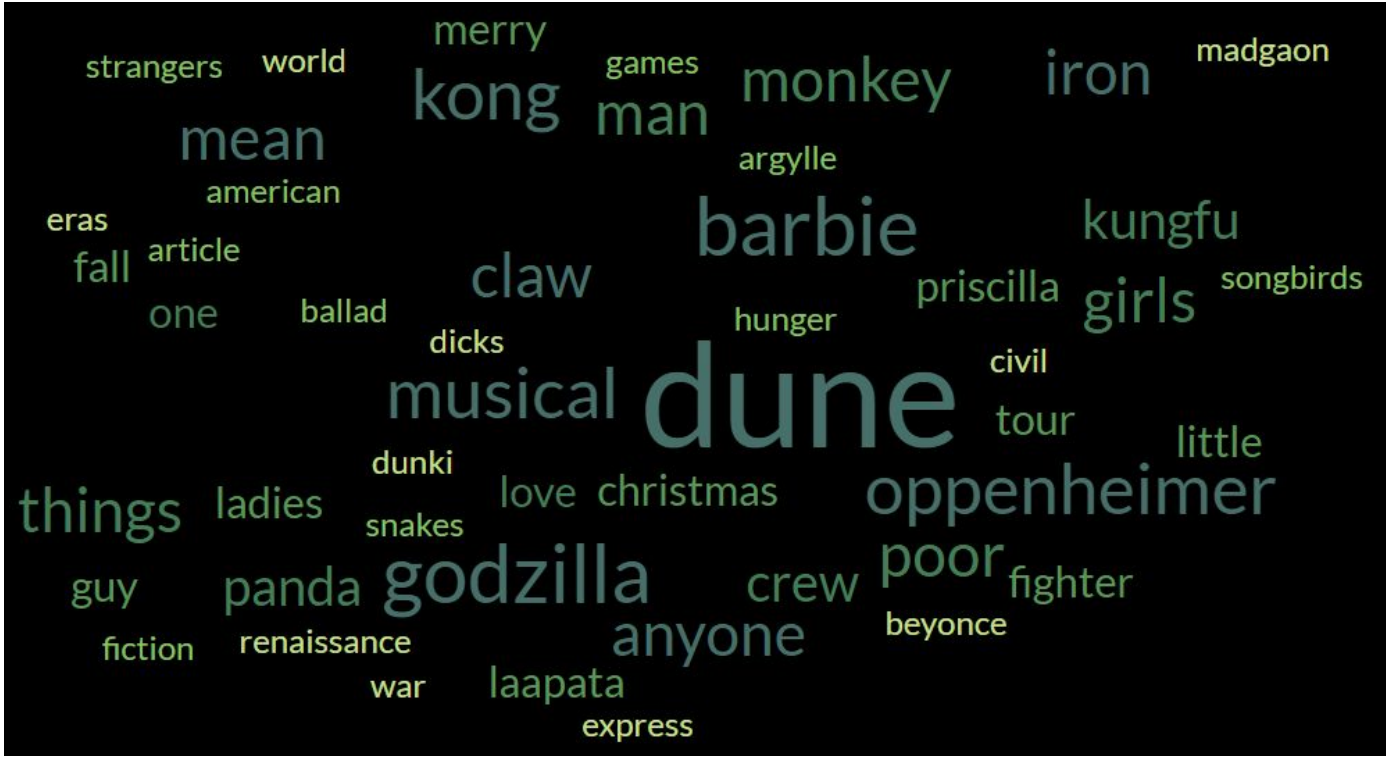
128 responses



Demographic (2/2)

- Female (52.3% : 67/128)
- Male (43.8% : 56/128)
- Non-Binary/Other (3.9% : 5/128)

- 79.2% / 103 people say social media/other opinions influenced their moviegoing decision/movie choice
- These are reported films:



Not Influenced

- The Iron Claw (72% : 67/93)
- Priscilla (65.6% : 59/90)
- Past Lives (55.6% : 50/90)
- The Batman (40.9% : 38/93)
- Dungeons & Dragons: Honor Among Thieves (58.7% : 54/92)
- Five Nights at Freddy's (68.2% : 60/88)
- Insidious: The Red Door (70.3% : 64/91)
- Late Night with the Devil (78.9% : 71/90)

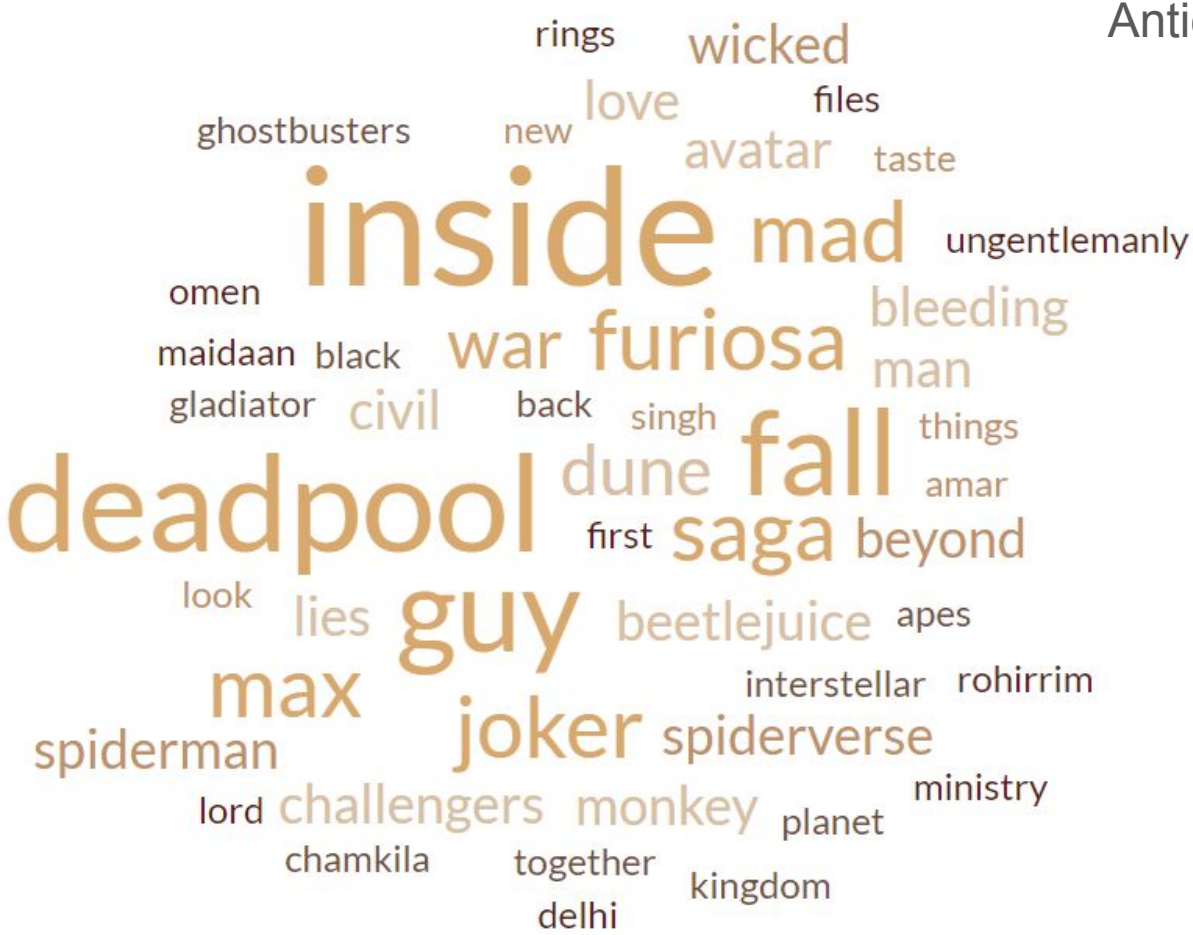
Balanced

- Dune Part One (33% : 31 vs. 46.9% : 44/94)

Influenced

- Barbie (46.5% : 46/99)
- Oppenheimer (31.3% : 30/96 + 21.9% : 21/96)

Anticipated Movies



Recent Releases Viewed:

- Dune Part Two (43.1% : 56/130)
- 42.3% of respondents did not see any of the movies tested
- Kung Fu Panda 4 (14.6%)
- Monkey Man (10%)
- Godzilla x Kong: The New… (9.2%)