



Tweets Analysis:

– Russia & Ukraine War –



Freda Qifei Yuan, Mary Diermeier, Kata Mezo,
Yixin Liu, Kemal Olgun





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01 INTRODUCTION

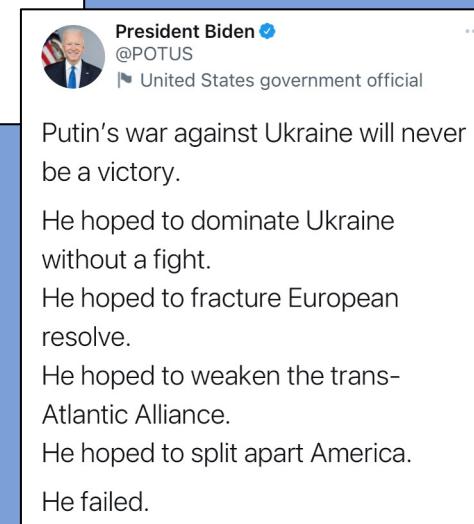
In this project, we chose to analyze the public's changing response to the conflict in Ukraine over time using Twitter as a tool to gauge large scale opinions and sentiment.

On February 24th, 2022, Russian President Valdimir Putin initiated the invasion of Ukraine, calling the attack a 'special military operation'. Many cities were targeted and more than 1.5 million civilians have been displaced. Many people took to social media to join the conversation.

Now we will explore the public's response over time...



UKRAINE'S 2ND LARGEST COUNTRY IN EUROPE AFTER RUSSIA. IT BOARDERS 7 COUNTRIES & IS THE ONLY THING BETWEEN RUSSIAN AGGRESSION & EUROPE. IF WE DONT ARM UKRAINE WITH TANKS, ETC. WE MAY LIVE 2 REGRET IT, BECAUSE RUSSIA WONT JUST BREATHE DOWN EUROPE'S BACK, IT WILL TRY N BREAK IT.



President Biden (@POTUS)
United States government official

Putin's war against Ukraine will never be a victory.

He hoped to dominate Ukraine without a fight.

He hoped to fracture European resolve.

He hoped to weaken the trans-Atlantic Alliance.

He hoped to split apart America.

He failed.

02 DATASET

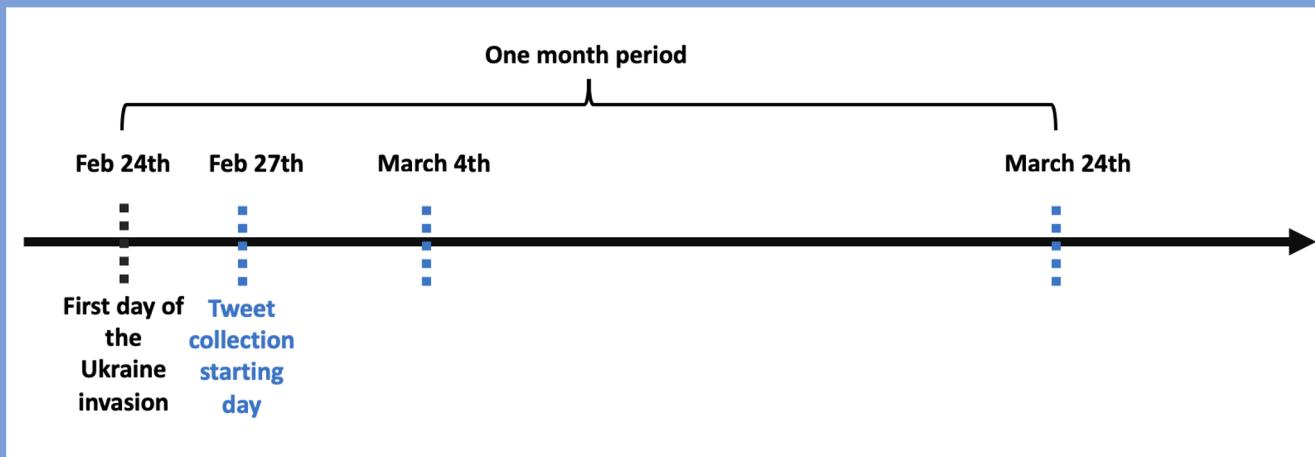
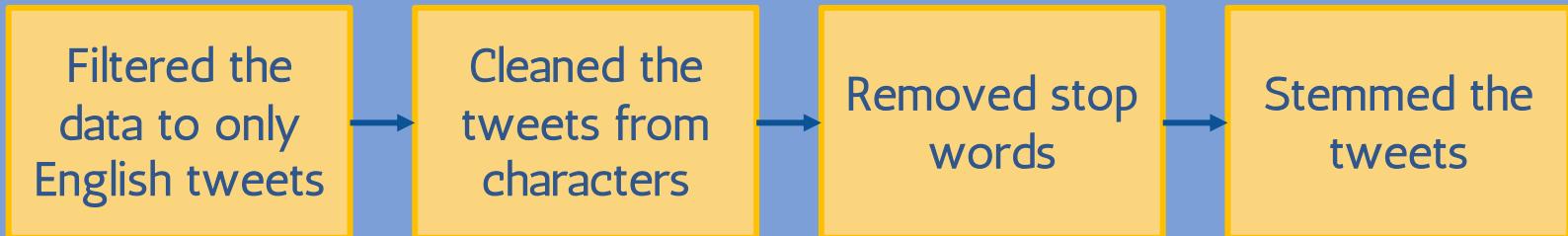
- Use of a Twitter streaming API to collect data in real time
- Reports of top hashtags, daily tweet frequency, and basic dataset statistics
- 200K average daily volume of tweets containing the key words from a total of 900K twitter users

Date	Keywords
27, Feb, 2022	russia , ukraine , putin , zelensky russian , ukrainian , keiv , kyiv
1, March, 2022	kharkiv
3, March, 2022	khorsan
4, March, 2022	zaporizhzhia, energodar

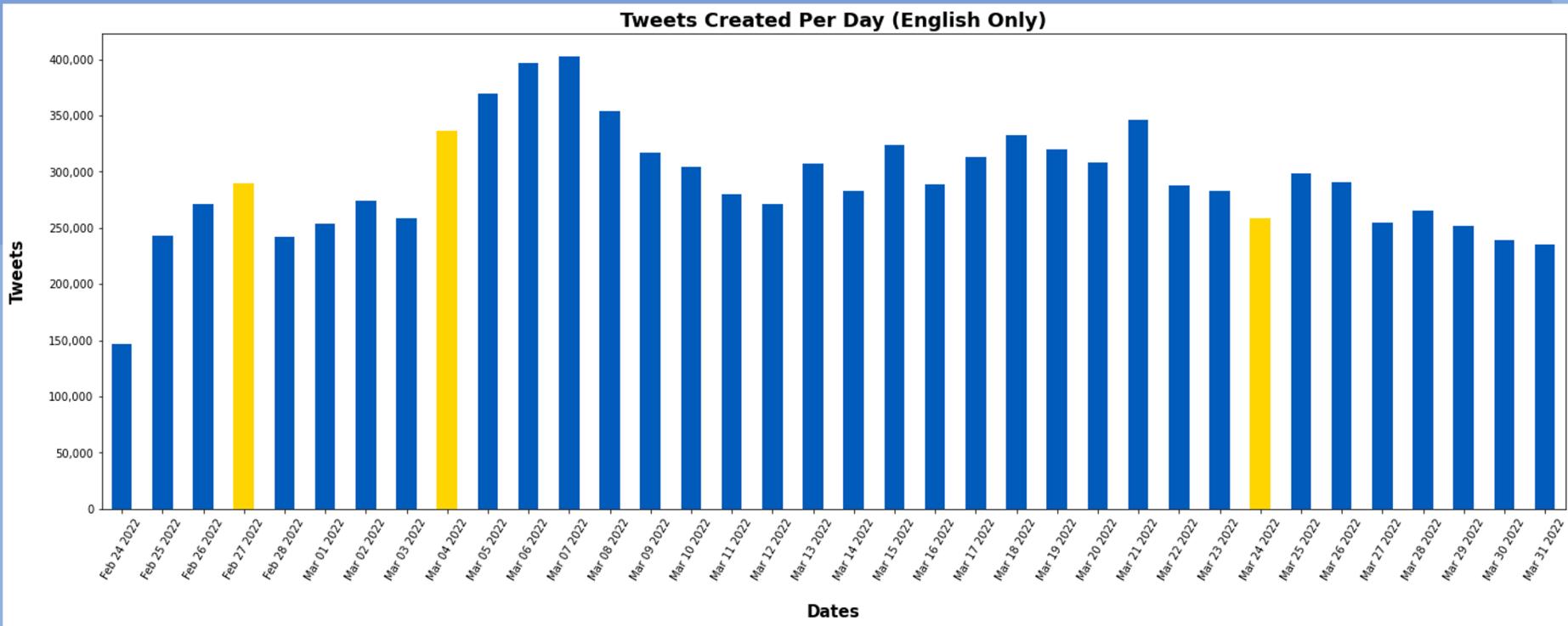
Data Collection Key Words

Unnamed: 0	location	username	followers	totaltweets	retweetcount	text	hashtags	language	clean	
0	0	NaN	CuttingEdgeDino	205.0	7624.0	0.0	@SenFeinstein you and your #oligarch cronies (...	[{"text": "oligarch", "indices": [27, 36]}, {"...]	en	senfeinstein oligarch croni r guilti war crime...
1	3	NaN	ShaunaO2011	266.0	18115.0	1.0	Their bloods are on the Russian hands.\nMilita...	[{"text": "Mariupol", "indices": [77, 86]}, {"...]	en	blood russian hand militari hospit mariupol uk...
2	4	Manchester, England	thewelshtudor	12.0	809.0	265.0	9:32 pm in #Ukraine. \n\nMy colleague from Sum...	[{"text": "Ukraine", "indices": [30, 38]}]	en	pm ukrain colleagu sumi name daryna left heart...
3	6	NaN	ArabNewsjp	25079.0	38653.0	0.0	#ICYMI: Loud applause resounded in the #UN Gen...	[{"text": "ICYMI", "indices": [0, 6]}, {"text": "...	en	icymi loud applaus resound un gener assembl ha...
4	8	Brooklyn, NY	paultaylor__	367.0	326.0	13.0	I'm donating 3 x signed A3 prints for #PhotoPr...	[{"text": "PhotoPrintDay", "indices": [57, 71]}]	en	donat x sign print photoprintday friday th mar...

03 PREPROCESSING



PRELIMINARY ANALYSIS



Preliminary Exploration

Tweet Count	
Day 1	227,513
Day 2	336,614
Day 3	258,060

Most retweets →
(Same for every day)

Day 2: originally have over 700k tweets, over half of them are from same id, repeated scam message -> remove these suspicious tweets, get 336k tweets in day 2

Patrick Moelleken  

.@ZelenskyUa's tv address to the Russian (!) people might be the most moving speech that I've ever seen in my entire life. The whole world needs to see, understand and share this crucial Ukrainian message.

#StandWithUkraine #Ukraine #Україна #Russia #Россия



Watch now at youtu.be

Today, I initiated a phone call with the president of the Russian Federation

▶ 22M views 0:02 / 9:04

President Zelensky's speech to the Russian people

Ukrainian President Volodymyr Zelensky's plea to the Russian people in video remarks posted early on Feb. 24 local time with English subtitles.

3:15 PM · Feb 24, 2022 · Twitter Media Studio

145.9K Retweets 14.1K Quote Tweets 359.3K Likes

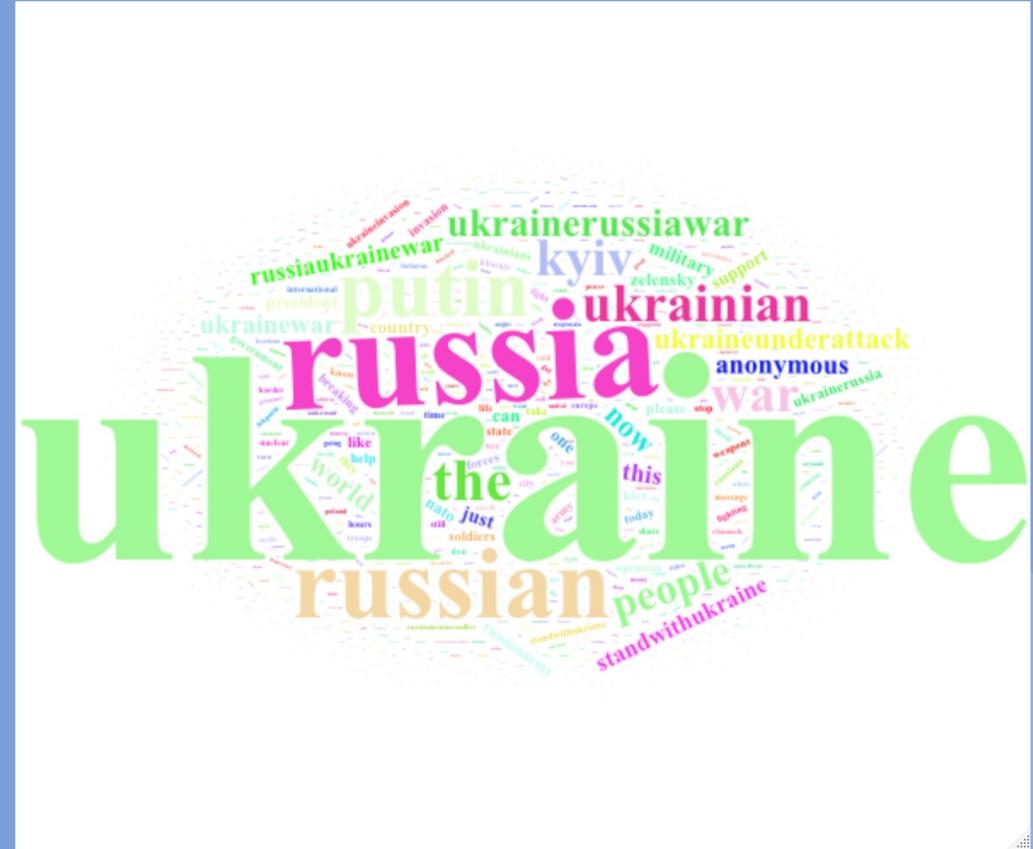


Awesome WordCloud

04 RESULT - WORDCLOUD

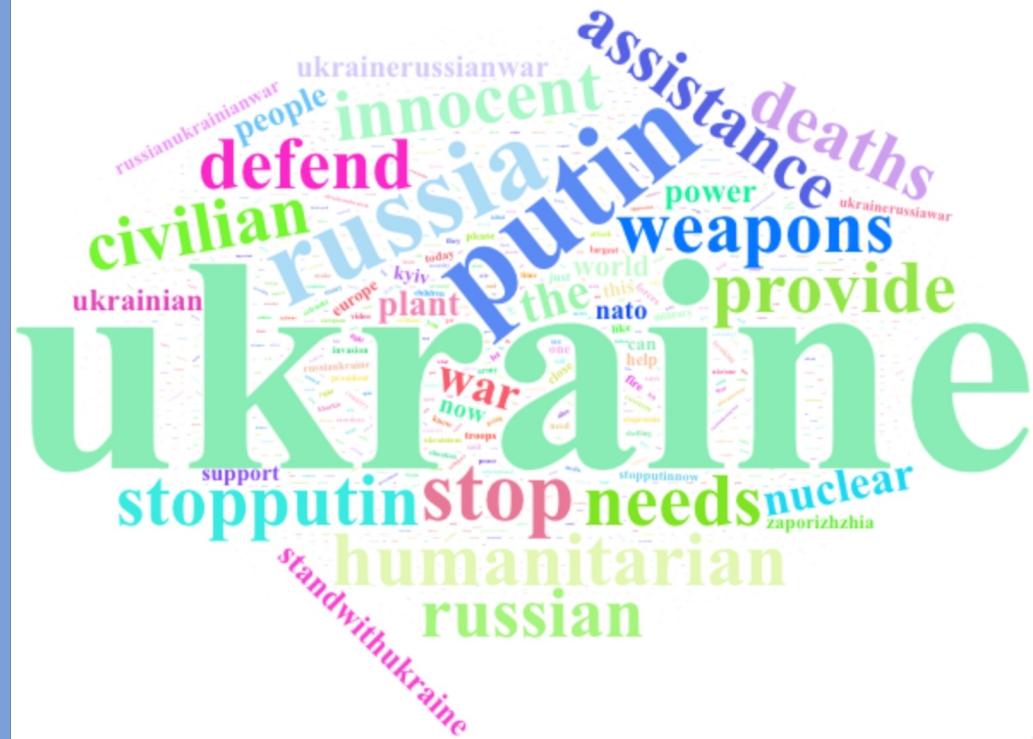
Feb 27th - Day 1

- Nothing definite
- Shock Response



March 4th - Day 2

- The most objective
- Call for humanitarian assistance



March 24th - Day 3

- Middle Ground
 - Sided with Ukraine



Most Popular Hashtags

express personal emotions or trending news topics



Day 1: general topics

- Only 1 sentimental
- most hashtags reflected facts



#standwithukraine
#ukraine #russia #putin
#ukrainerussiawar # kyiv



Day 2: more sentimental tags

- Increase to 5 sentimental
- new city name: tracking war updates

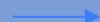


#standwithukraine
#stopputin #stoprussia
#stopputinnow #safeairliftukraine
#ukraine #russia #putin
#ukrainerussiawar #zaporizhzhia



Day 3: take a side

- 6 sentimental (new ones coming up)
- emerging news topics

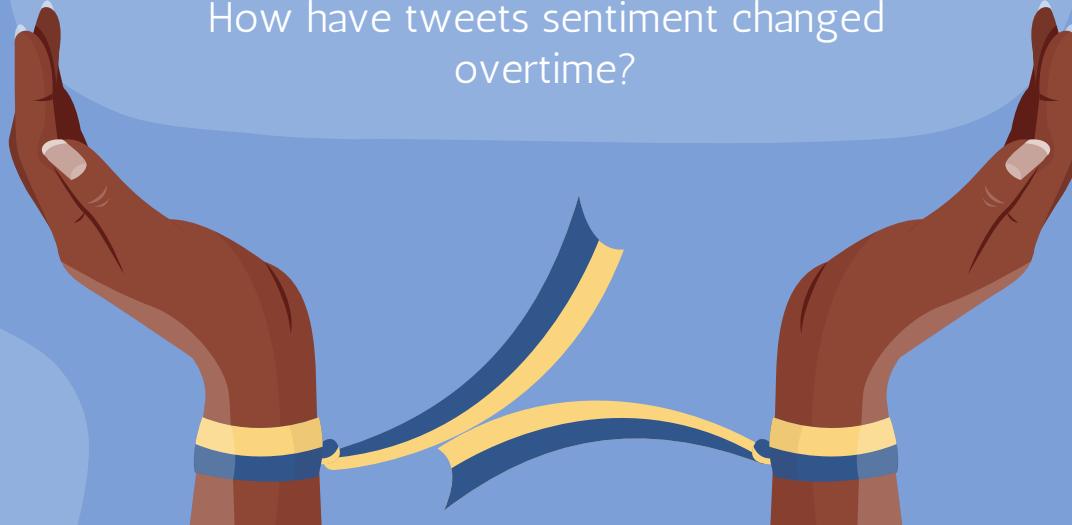


#standwithukraine #slavaukraine
#weareallukrainians #stoprussia
#stopputinwar #freeukraine
#nato #war #mariupol

04

Sentiment Analysis

How have tweets sentiment changed overtime?



Sentimental Tweet Demo

nltk SentimentIntensityAnalyzer

Compound Score

<0: Negative



=0: Neutral



Malka Napas @malka_napas

Thank you to all the people who care about Ukraine and all the people without knowing us personally! Thank you for helping our country through the arts. Thank you to those who care for a kind word. People, thank you for your kindness!!!

#Ukraine #StopWar #UkraineArt #StopPutinNOW



Jesse Abundis
@jessenovels

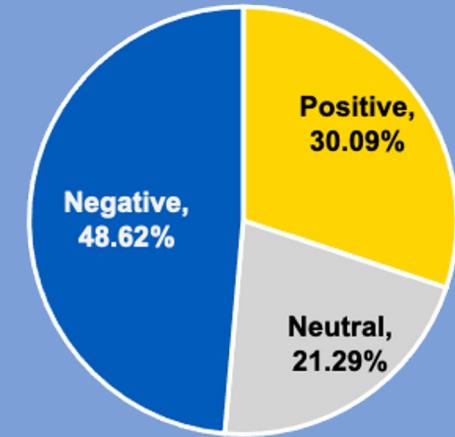
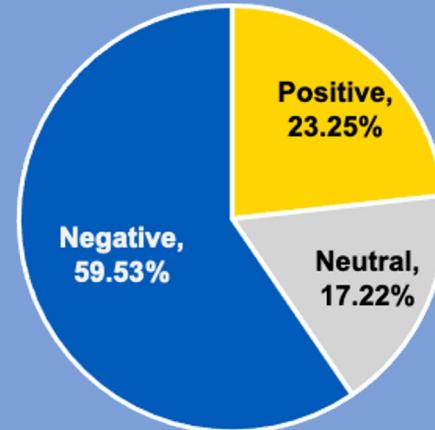
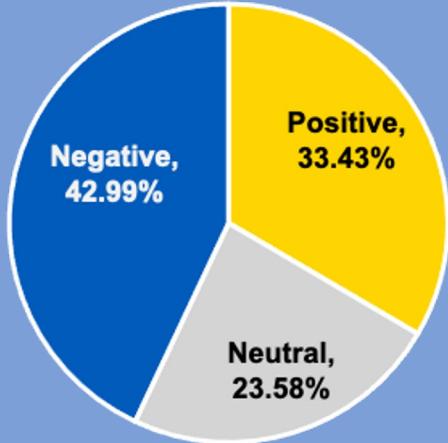
Fuck Biden. Fuck Putin. Fuck Zelensky. Fuck the Ukraine Neo-Nazi Azov that is running the Military. Fuck NATO. Fuck Capitalism. Fuck Neo-Cons. Fuck Corporate Dems. Fuck the Military Industrial Complex. Fuck Republicans n warhawks. Fuck the Bots. You're the problem. #Ukraine



Andrei Cezar
@AndreiCezar7

The Times: UK authorities plan to house refugees from Ukraine in confiscated mansions of Russian oligarchs. #Ukraine #StopWar #WW3

Positive vs. Negative



	Day 1	Day 2	Day 3
Mean	-0.0770	-0.2635	-0.1472
Std.Dev	-0.1472	0.5178	0.5125
Median	0.0000	-0.3400	0.0000

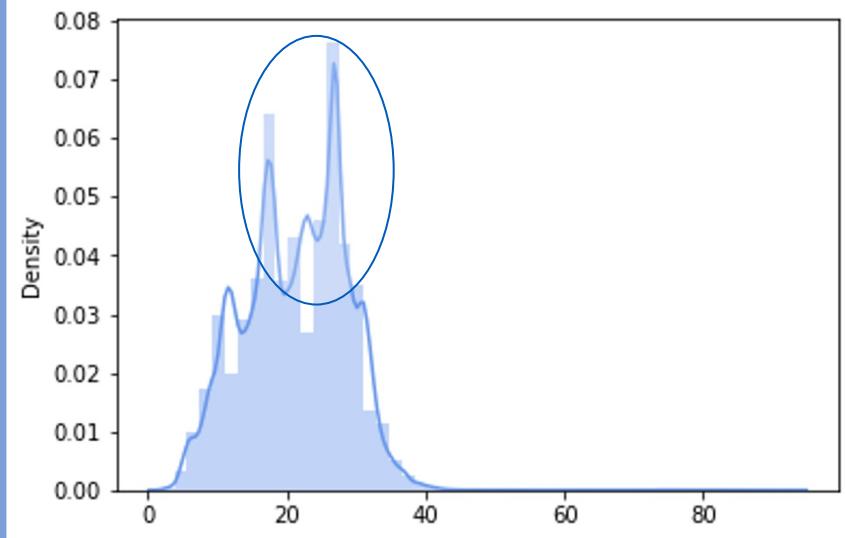
Tweet Length

By number of words:

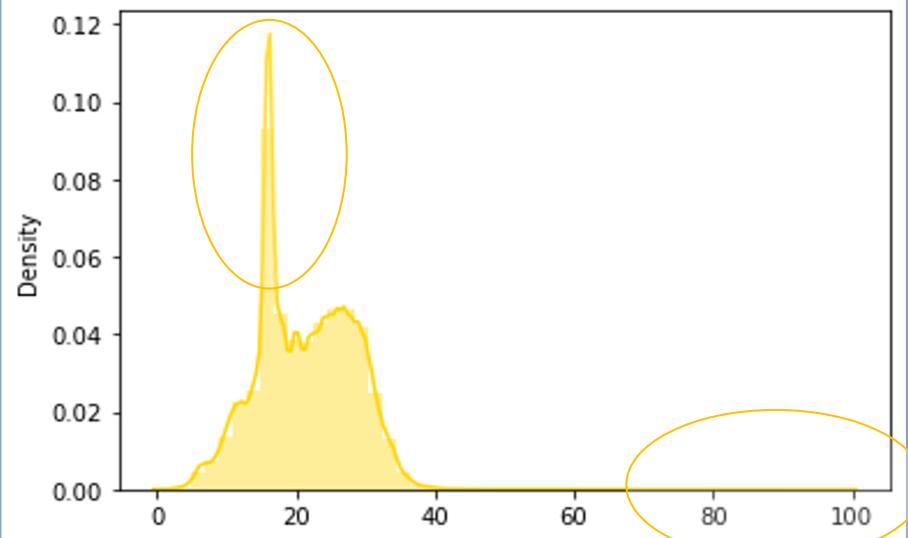
Negative tweets: mostly shorter. Except for some really angry people: make 100 words tweets



Positive

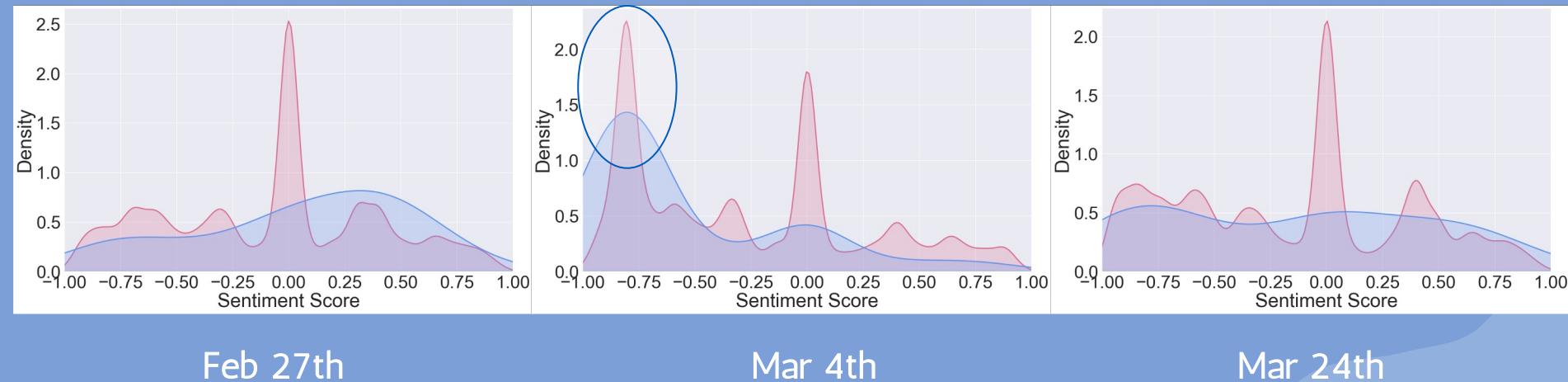


Negative



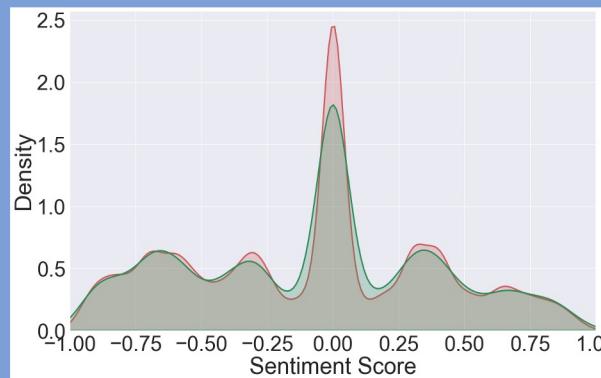
Compare Ukraine vs. Other Countries

- Distribution of Sentiment Score
 - Blue: Ukraine, Red: Others

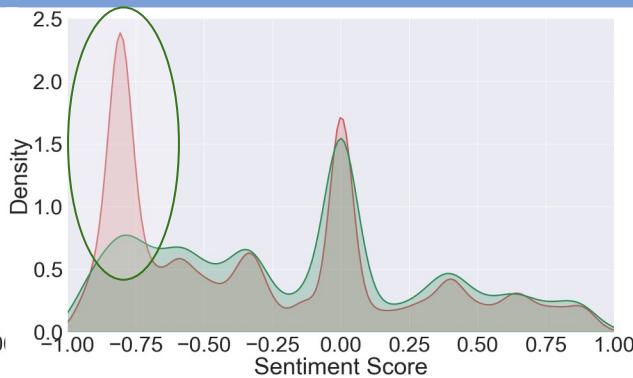


Compare U.S. vs. Other Countries

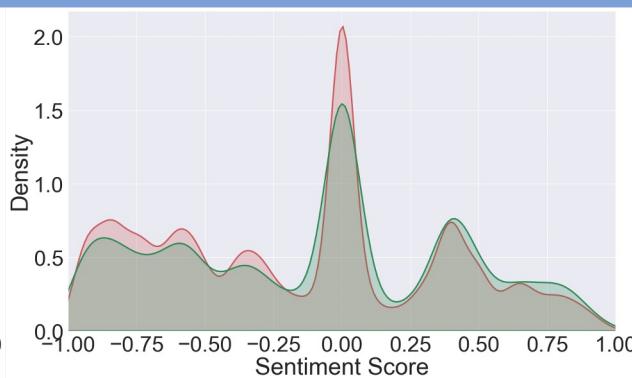
- Distribution of Sentiment Score
 - Green: U.S., Red: Others



Feb 27th



Mar 4th



Mar 24th

Subjective vs. Objective

>0.5 : Subjective



Spartak

@Spartak65058466



Kate's Dad

@KASDad

Congratulations **#Russia**, you have just won the prize of the dumbest country/nation in the world. Your stupidity and the cowardice of your people will probably cost us the entire world. **#Ukraine**

#Putin has succeeded already beyond the aggression in **#Ukraine**. The state of the world is seemingly worse than when the Soviet Union existed because he has caused questioning of whether the MAD doctrine can be relied on.

Textblob Subjectivity

- [0,1]
- 1 = Subjective
- 0 = Objective

<0.5 : Objective



asazonenka 🇪🇺 (in Lisbon)

@asazonenka



The nuclear power plant in Energodar caught fire as a result of shelling by the Russian army. This is the largest nuclear power plant in Europe! The consequences of the explosion will be irreparable for Europe and especially for **#Ukraine** for many years.



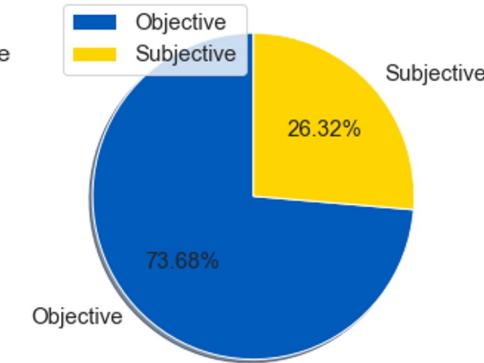
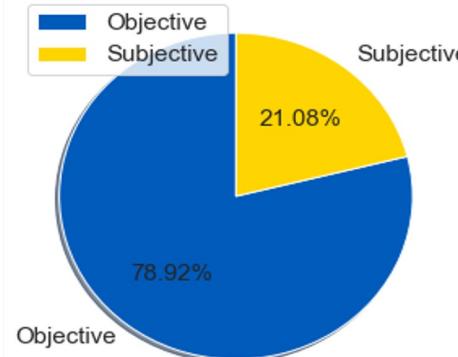
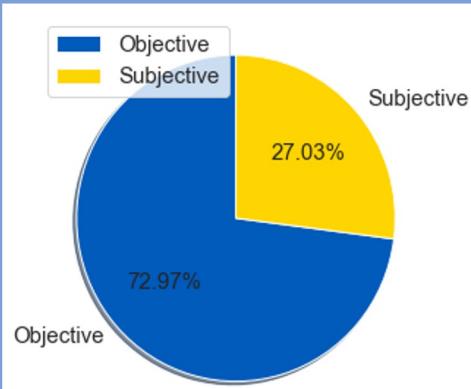
esleman abay ӮԳՈՅ ՃՇ:

@eslemanabayy

Ukrainian ground targets bombed, according to **#pravda**

Su-34 crews of the **#Russian** Aerospace Forces destroyed military facilities and military equipment of the Ukrainian Armed Forces.

Subjective vs. Objective



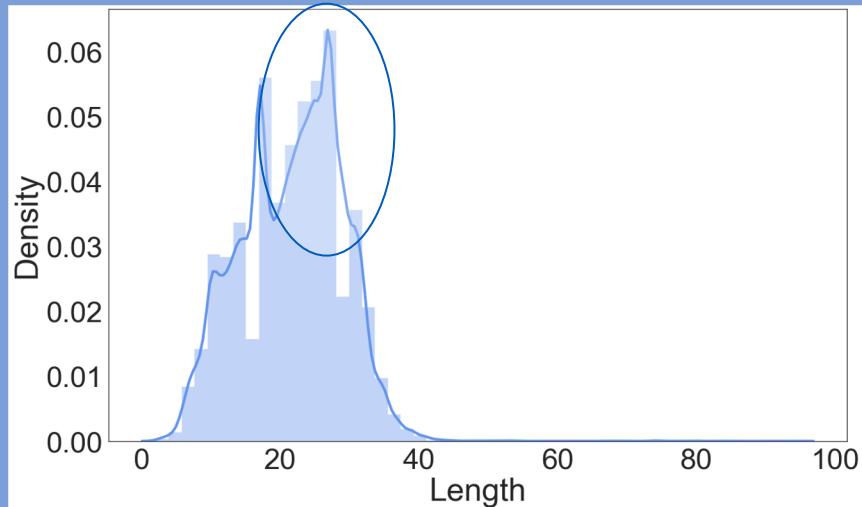
	Feb 27th	Mar 4th	Mar 24th
Mean	0.20349	0.16764	0.20649
Std.Dev	0.26605	0.24992	0.25862
Median	0.1	0.0	0.1

Tweet Length

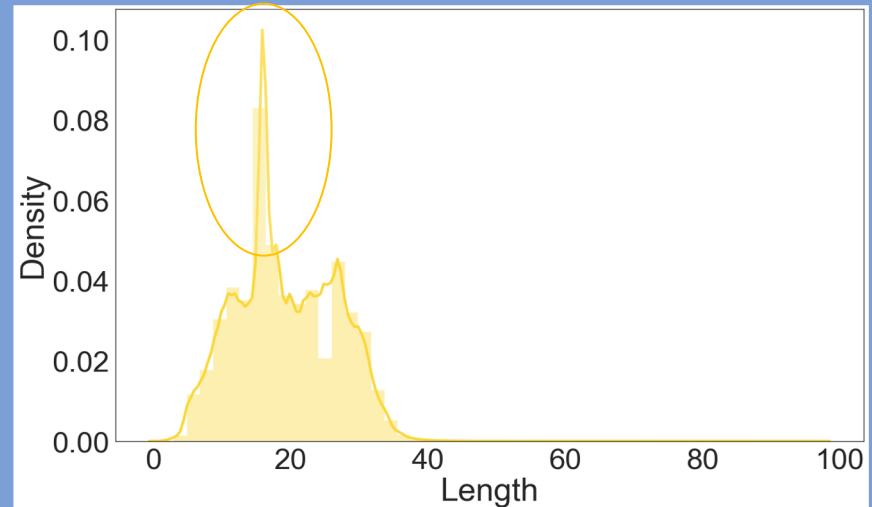
Subjective tweets – mostly 28-30 words

Objective tweets – mostly 18-20 words

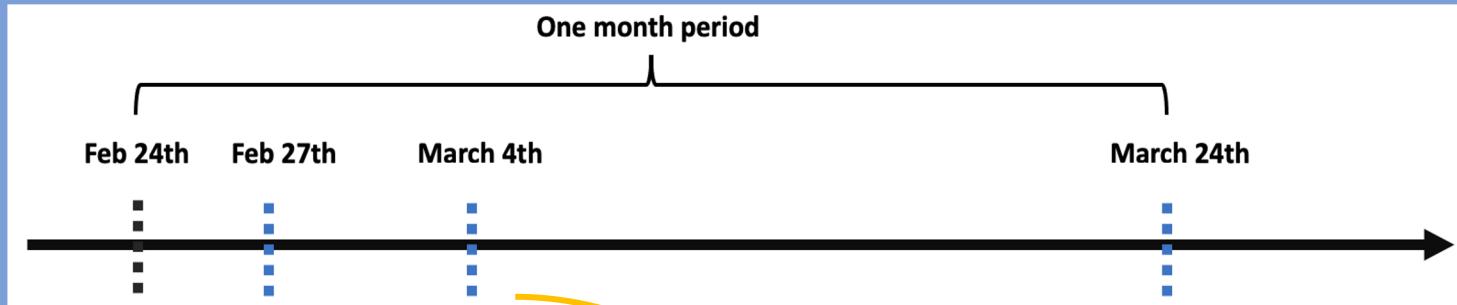
Subjective



Objective



05 CONCLUSION



So much gratitude and
Initial shock

Very subjective

Highest amount of
positivity

More report

Highest objectivity

Highest negativity

Call for humanitarian
action

Middle ground

Less interest in detail

Taking side

#standwithukraine

05 CONCLUSION



Negative tweets tend to be shorter compared to positive ones



Subjective tweets tend to be longer compared to objective ones



We can see how the sentiments of the tweets moved from subjective but hopeful to negative-reports and finally to middle ground

Thank you for your attention!

Any questions?

