

# **Social Media Sentiment Analysis of Russia's War in Ukraine**

**Group 10**

**Andrew Du, Haowen Li, Siyuan Wang, Steven Xie, Yunhao Zheng, Yunjie Xu, Zhijian Zhu**

**Fall 2022**



# Agenda

- Sentiment classification
  - Sentiment Modeling
  - Model Application on datasets related to Russia's war in Ukraine
- Factors and topics identification
- Recommendations to Ukraine government and international NGOs

# Sentiment Modeling



# Sentiment Modeling

- **Dataset used for training**
  - 250,420 Prepared Tweets with Binary Labels
- **Model selection**
  - Logistic Regression - best accuracy & least computational cost



- **Model accuracy**
  - 92% accuracy on both training and testing set

# **Model Application on Datasets related to Russia's war in Ukraine**



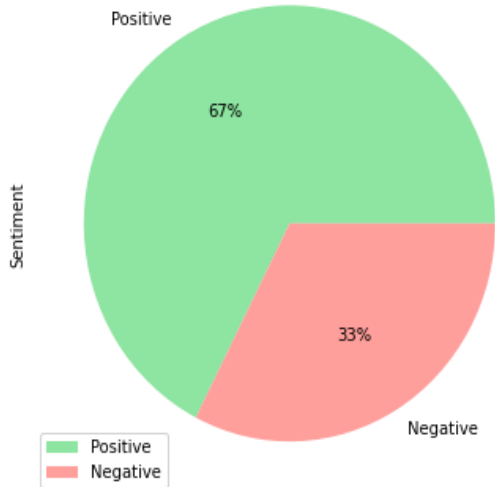
## Model Application

- **Datasets related to Russia's war in Ukraine**
  - 18,521 Tweets
  - 2,410 Reddit Posts
- **Apply the Logistic Regression Model**

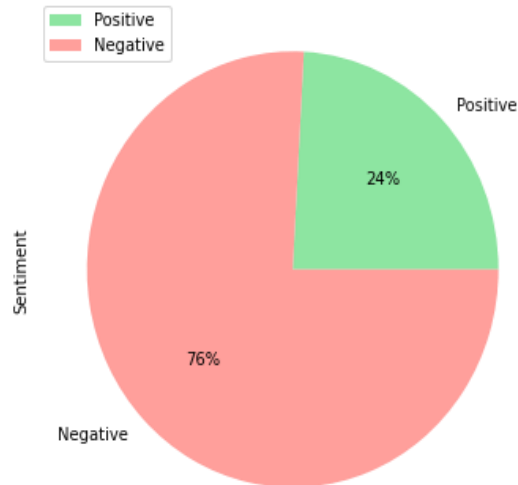


# Social Media Sentiment Classification

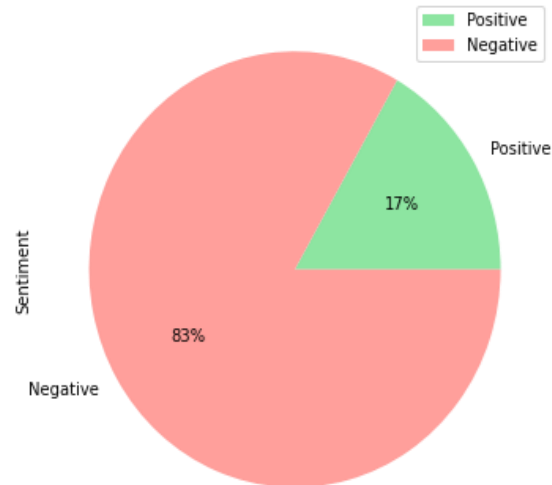
Part 1 - Class Distribution  
Among 550391 Random Tweets



Part 2 - Part 1 Model Prediction  
Among 18521 Tweets related to Russia's war in Ukraine



Part 2 - Part 1 Model Prediction  
Among 2410 Reddit comments related to Russia's war in Ukraine



# **Factors & Topics Identification Using LDA Model**



## Latent Dirichlet Allocation (LDA) Model

- Twitter & Reddit
- 30 Topics per Sentiment
- 20 Words per Topic

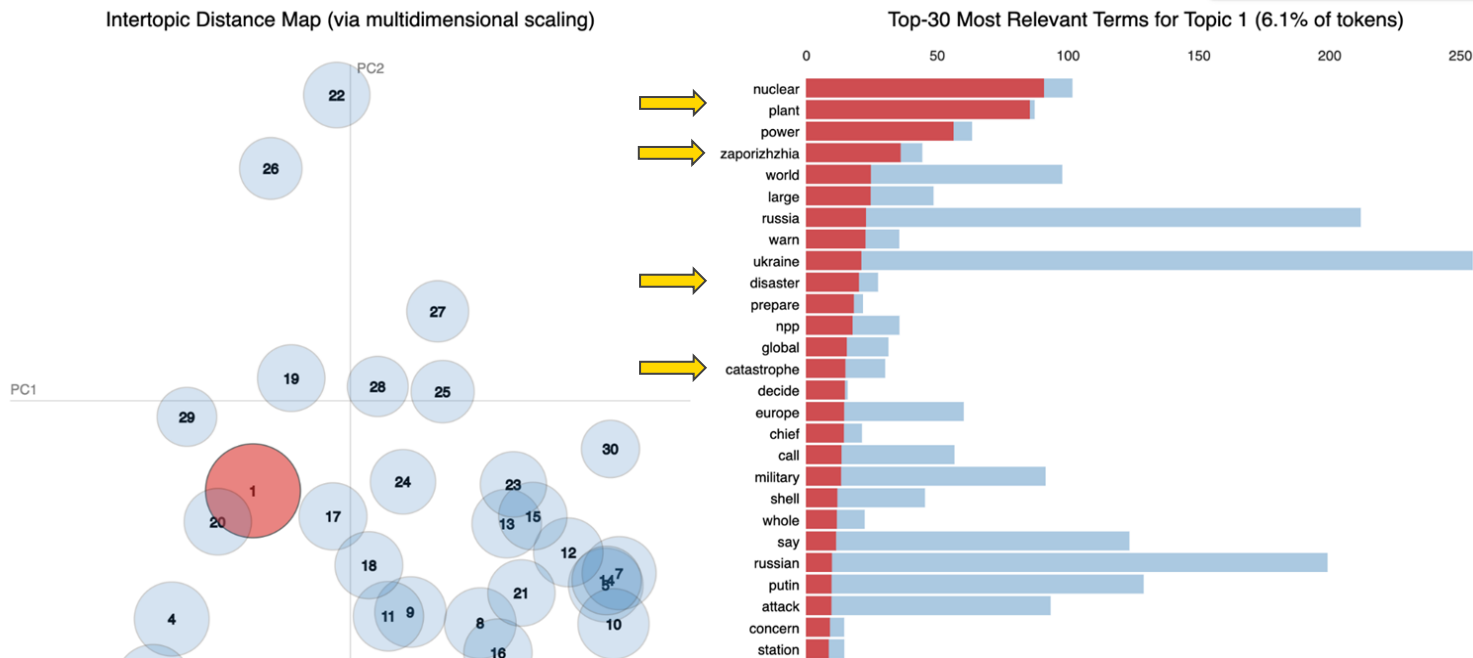
### Extracted Topics from the Negative Tweets

	0	1	2	3	4	...	15	16	17	18	19	
Topics	0	attack	come	hold	plan	front	...	ukrainian	ukraine	still	day	claim
	1	start	free	gross	truth	forget	...	bridge	stop	invasion	help	never
	...	...	...	...	...	...	...	...	...	...	...	...
	28	kill	save	child	kharkiv	civilian	...	hundred	two	morning	attack	least
	29	million	armed	aid	anti	force	...	enemy	missile	total	package	himar



# Russia Controls the Zaporizhzhia Nuclear Plant

## Topics on Twitter and Reddit



# Russia Controls the Zaporizhzhia Nuclear Plant

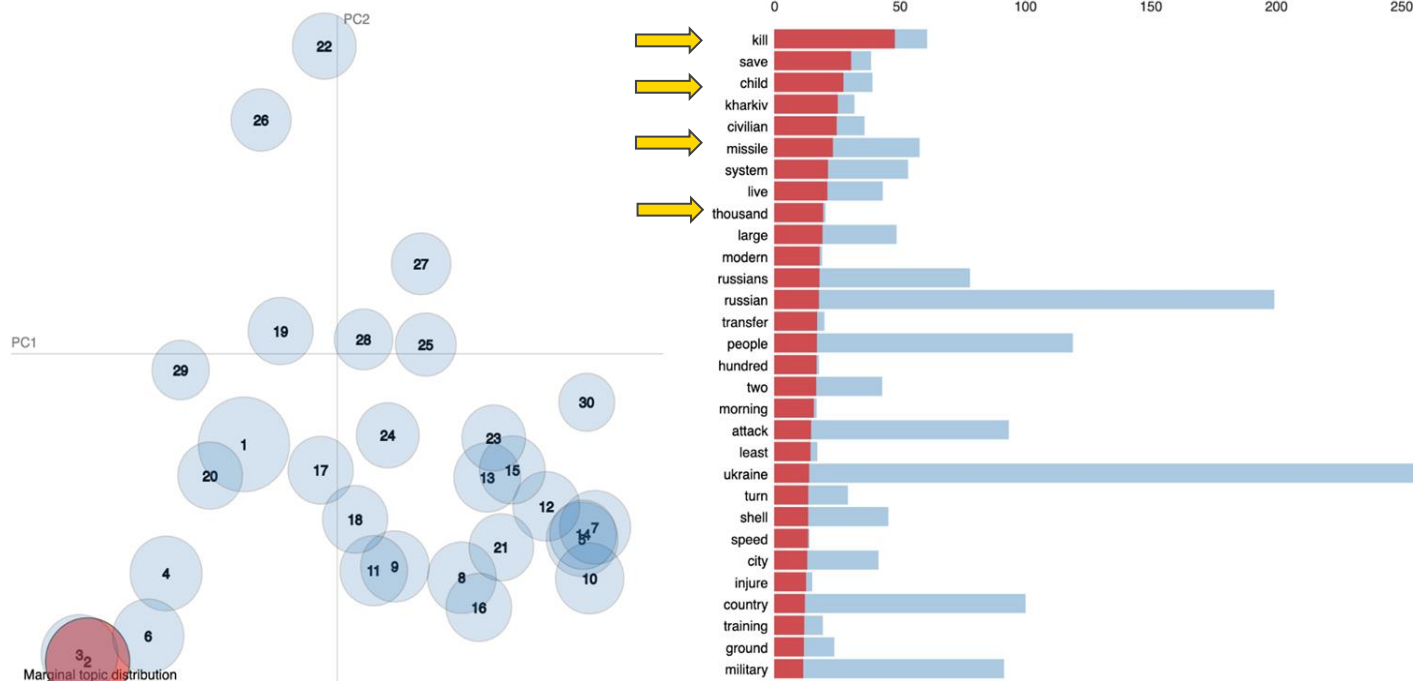
## Influence

- Nuclear Plant in the wrong hands
- Tremendous threat to Europe
- Russia ready to abandon Zaporizhzhya plant in exchange for transit of oil and gas through Ukraine



# Russia Launches Missiles at Residential Areas

Topics on Twitter and Reddit



# Russia Launches Missiles at Residential Areas

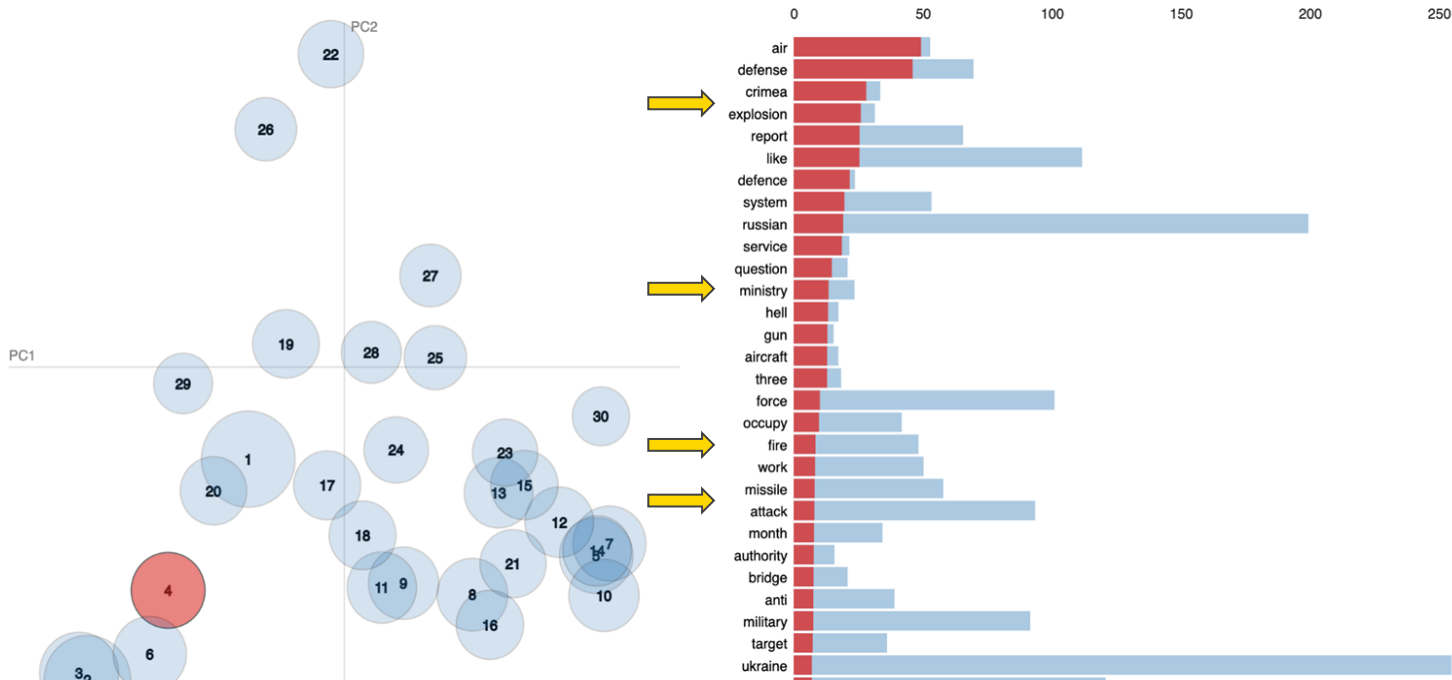
## Influence

- Deadly Russian missile strikes hit Kharkiv
- Death toll rises to 31 In destroyed apartment block
- Civilians were killed



# Crimean Bridge Explosion

Topic on Twitter



# Crimean Bridge Explosion

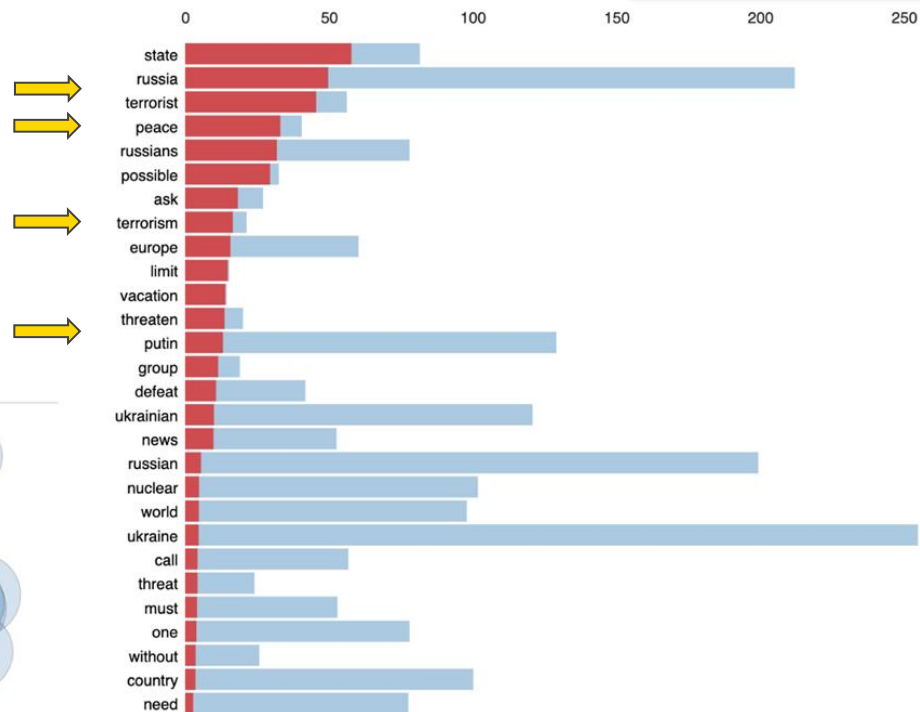
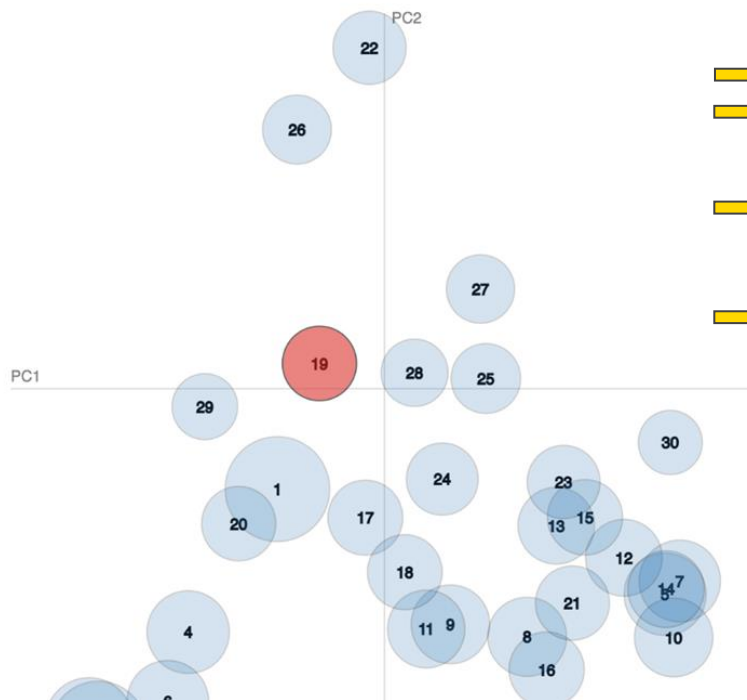
## Influence

- Zelensky said that the Ukrainian government "did not order" it
- Russia has been accusing Ukraine of the explosion
- Harms Ukraine's international presence and image



# Putin's Regime

Topic on Twitter





# Putin's Regime

## Influence

- Nazis & Satanists & Terrorism
- Humanity is being trampled
- Putin was running out of excuses for his imperial war on NATO
- War crime



# **Recommendations to Ukrainian government & International NGOs**

## Recommendations

# Let Russians know the truth about the war

- Documentary videos
- Infiltrate the Russian social media
- Unveil the truth of the war





**Thank You!**