



The War in Ukraine

Began: 02/24/2022

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Our Team



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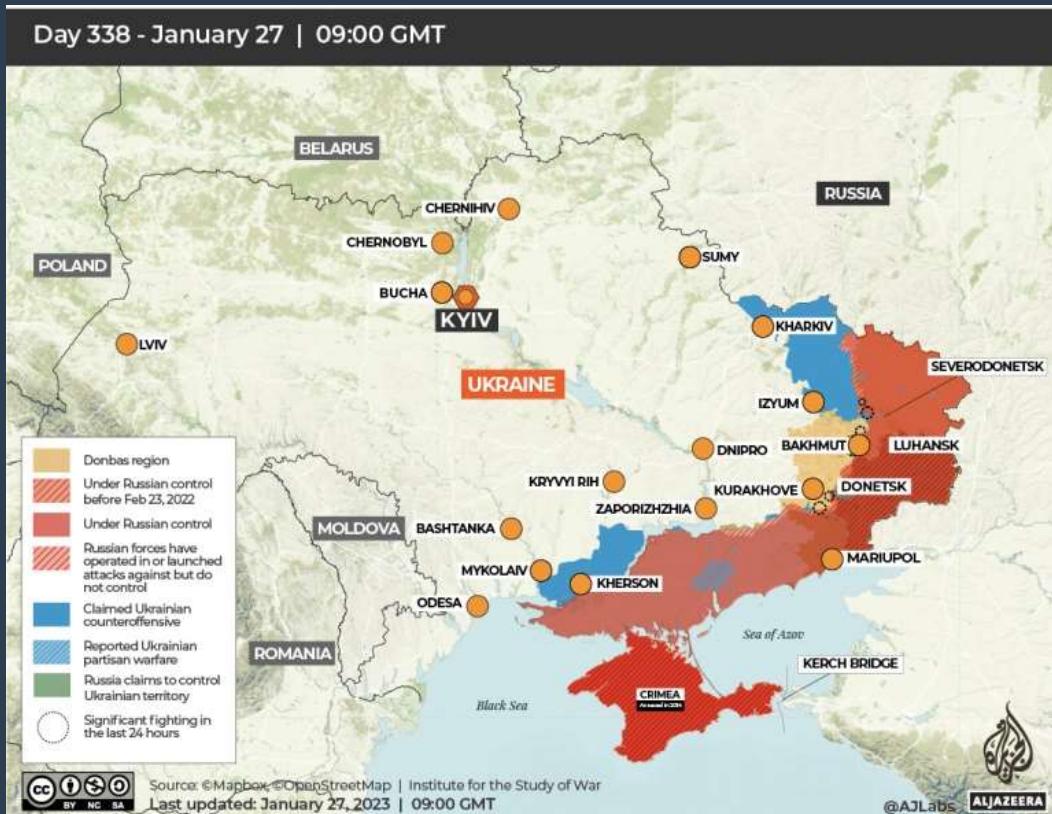
Sajid
Anjum

Agenda

- Introduction
- Data
- Website and Analysis
- Conclusion/Future Goals
- Questions

Introduction

- In 2014 Putin conquered the Crimea. Russian separatists have controlled Luhansk and Donetsk for the past few years.
- Putin started amassing troops on the Ukraine border starting toward the end of 2021.
- The war began on 02/24/22
- Our goal is to analyze a data set that tracks all the different war incidents in Ukraine over the past year to see if we can find some interesting patterns and insights.



Introduction Cont.

- More than half of Europe's oil/gas supply comes directly from Russia, making it difficult for principled opposition to the attempted annexation of Ukraine.
- Putin initially planned for a 72 hour “special military operation”. Zelensky and the courageous people of Ukraine disagreed.
- Our goal is to analyze a data set that tracks all the different war incidents in Ukraine over the past year to see if we can find some interesting patterns and insights.





Data

Cleaning/Wrangling/Filtering/Processing

Data



- Our dataset is taken from the website <https://acleddata.com/.com>. It is a CSV table with 54,000 rows and 17 columns
- The dataset is information about all the different battle events that happened in Ukraine from the dates 01/01/2022 to 01/12/2023
- Our first goal was to trim the dataset to something more manageable and to try and gain some insights from the data.

Data cont.

Main Columns:

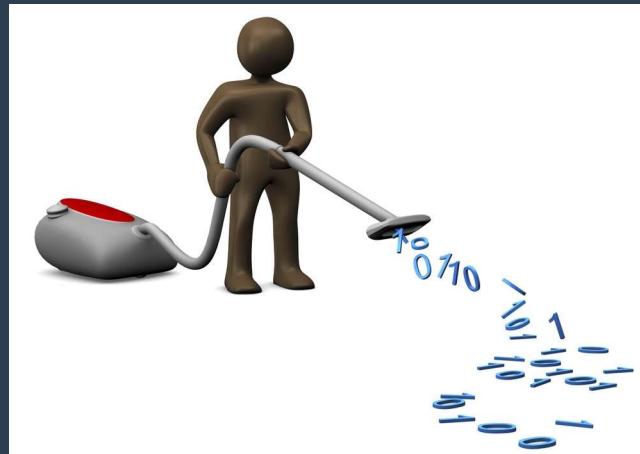
- Incident ID
- Event type (five main categories)
- Sub event type—breaks each main event into sub-categories
- Description notes of event
- Main instigator of event
- Latitude & longitude
- Administrative region
- Sub-administrative region
- location

Data Size

- We also selected 1000 rows at random to make it easier for our website to handle the data and to make the displayed data look cleaner.
- This means that our conclusions are not exact. However, for the scope of this project, we felt that adding too much data would perhaps cause our website and map to break down.
- A random sample of 1,000 is a sizable sample, and we feel we can trust trends, but not information about outliers.

Data Cleaning and Wrangling

- Our Source column had 108 different unique sources, so we combined all sources with 10 or fewer into the “other” category.
- Our graphs allow for us to filter even types, sub event types, sources, instigators, months, and a range of fatalities.
- We used .filter to filter our data and FOR loops to obtain value counts and sum the total number of fatalities.



- Dropping duplicates was difficult as sometimes the same event was reported with different sources or different instigators.
- Ultimately, we dropped any event that had the same **timestamp, latitude, longitude, and fatalities**. They amounted to 36 rows out of 1000
- This means that our data about sources and instigators may be slightly skewed.

Website

- <https://gkidd44.github.io/SMU%20Project3%20Group4/Final%20Submission%20Folder/home.html>

Concluding Remarks

Line Chart - Conclusions

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Unfiltered



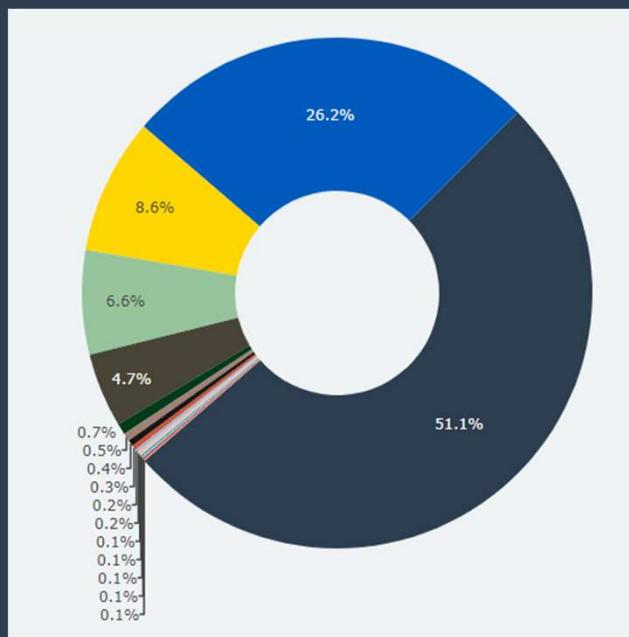
Filtered for Battles



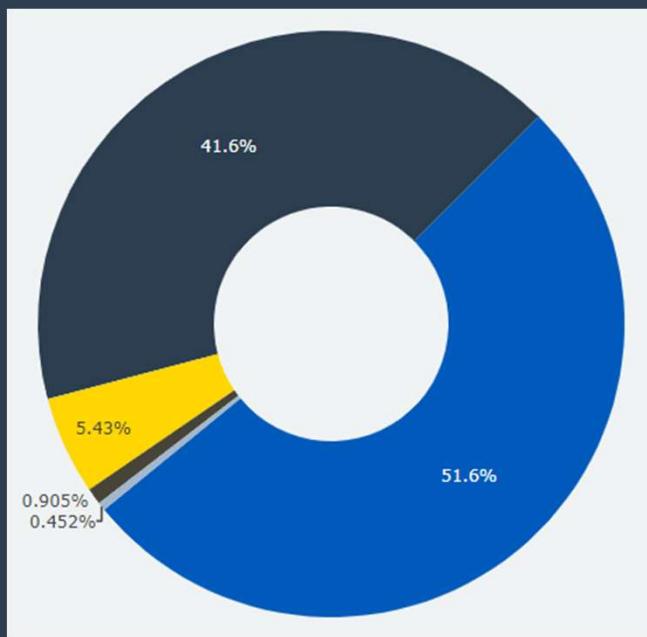
Pie Chart - Conclusions

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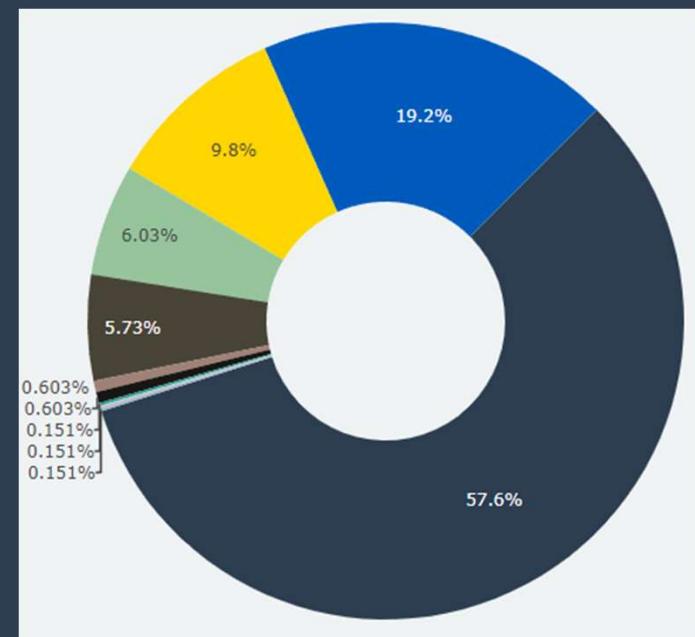
Unfiltered



Filtered for Battles

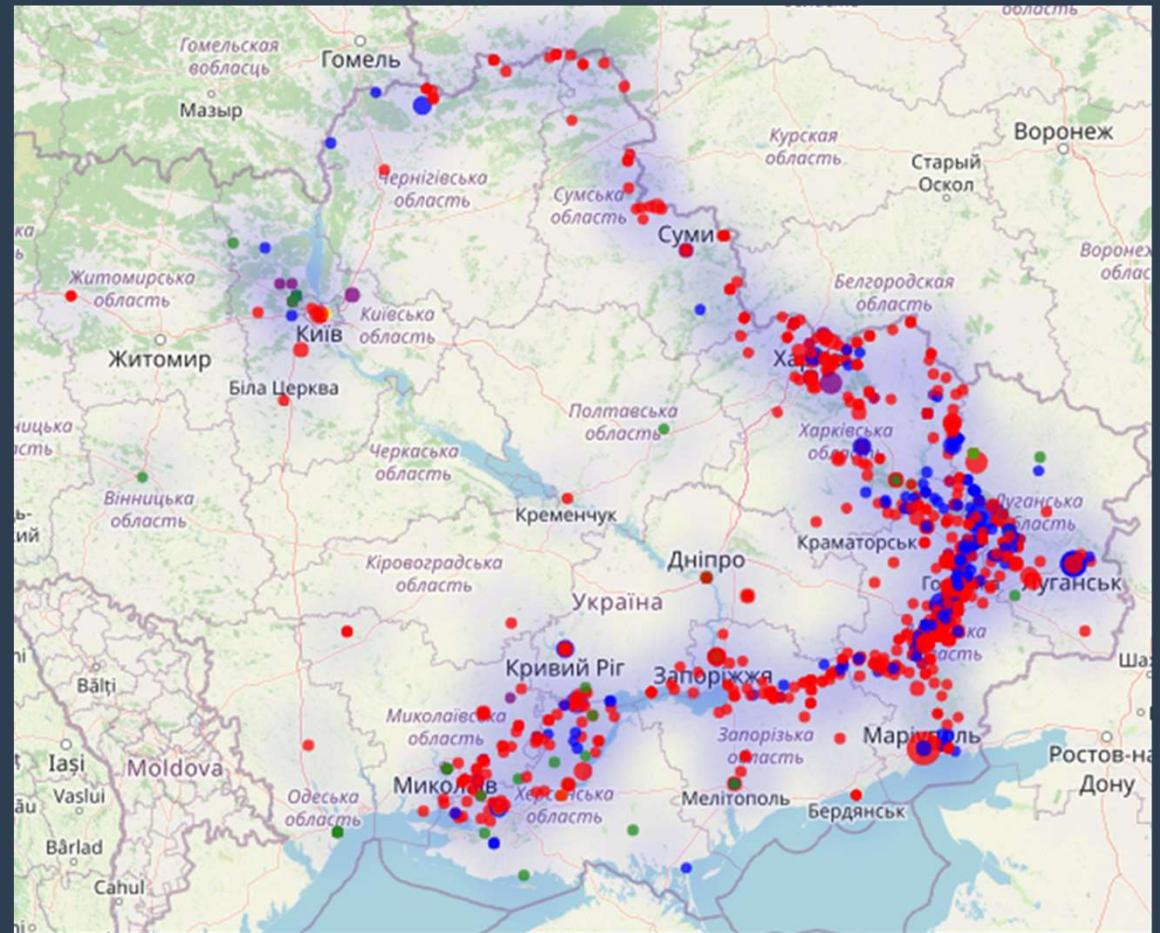


Filtered for Artillery



Map - Conclusions

- The heat map and the number of war incidents are heavily concentrated in the East, the region that Putin is interested in.
- In fact, we notice that the data points are heavily concentrated along a sort of line, which is also the line of territorial control between Russia and Ukraine.



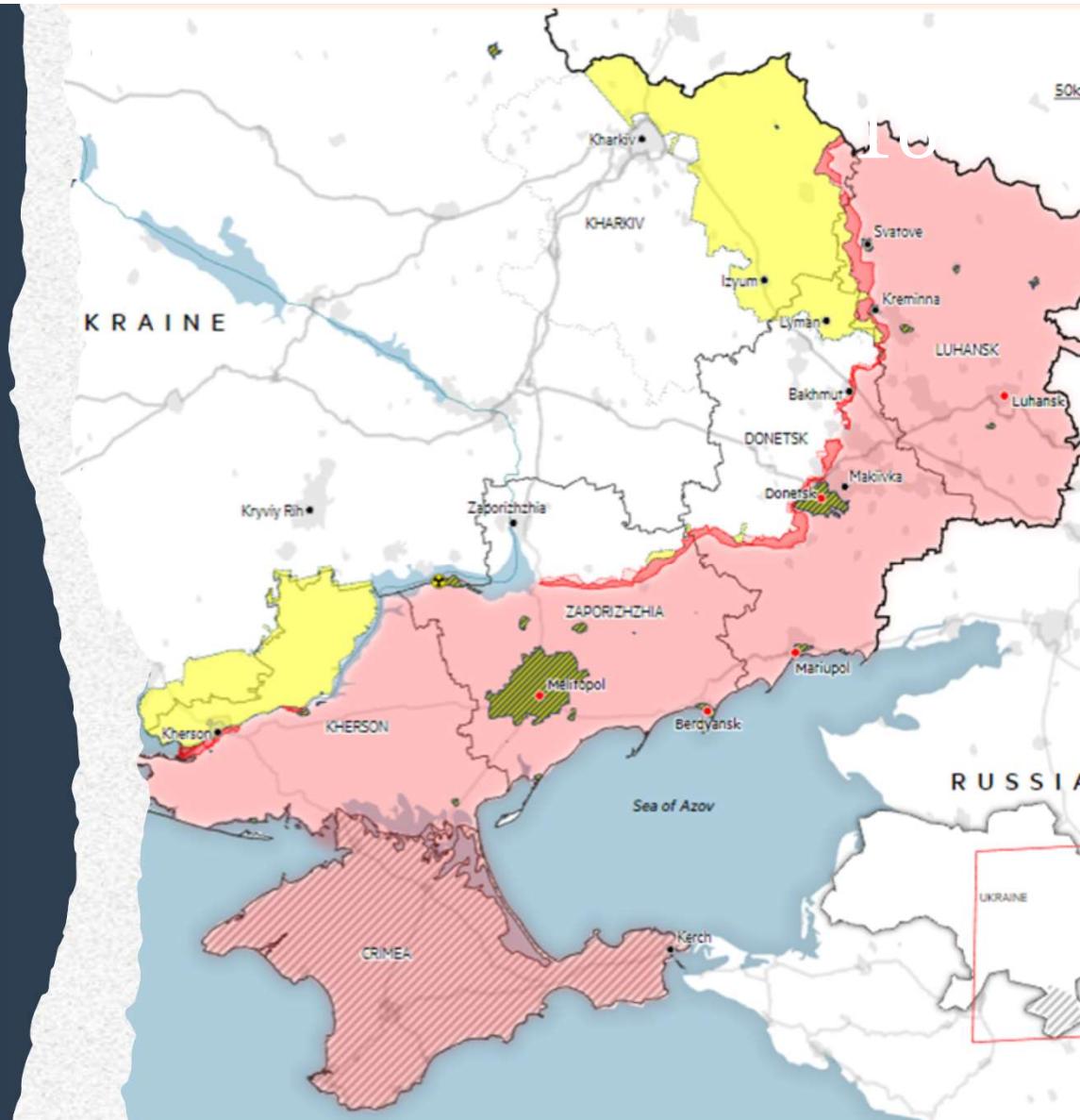


Limitations

- Our principal limitation was the size of the data set. We feel that our code can handle some more data points, but we will need to make changes to our map and perhaps our graphs to make sure that the data can be displayed in a comprehensible manner.
- Our filters do not allow us to select multiple events, sub-events, instigators, or sources. It would be nice if we could select multiple events, or perhaps even display multiple events as different trendlines on the same graph so we may compare them.

Future Work

- We would like to be able to connect our website to a live API that will update information based on live events. We would also like our map to show which nation is controlling which territory, and which territories are under dispute.
- We would also like to integrate a database and a backend server into the website because our website is not built to import and export hundreds of thousands of data points.
- [Russia's invasion of Ukraine in maps — latest updates](#)





Summary

- The war as of now seems to be in a stalemate according to our graphs and the news. We did see a spike in fatalities that matched with certain developments in the war.
- Aside from a handful of incidents, most battle incidents have fewer than ten fatalities, but this is concluded from our limited sample size.



Thank
you

The Ukrainian War
Information Team