Challenging News Media Narratives on Refugees

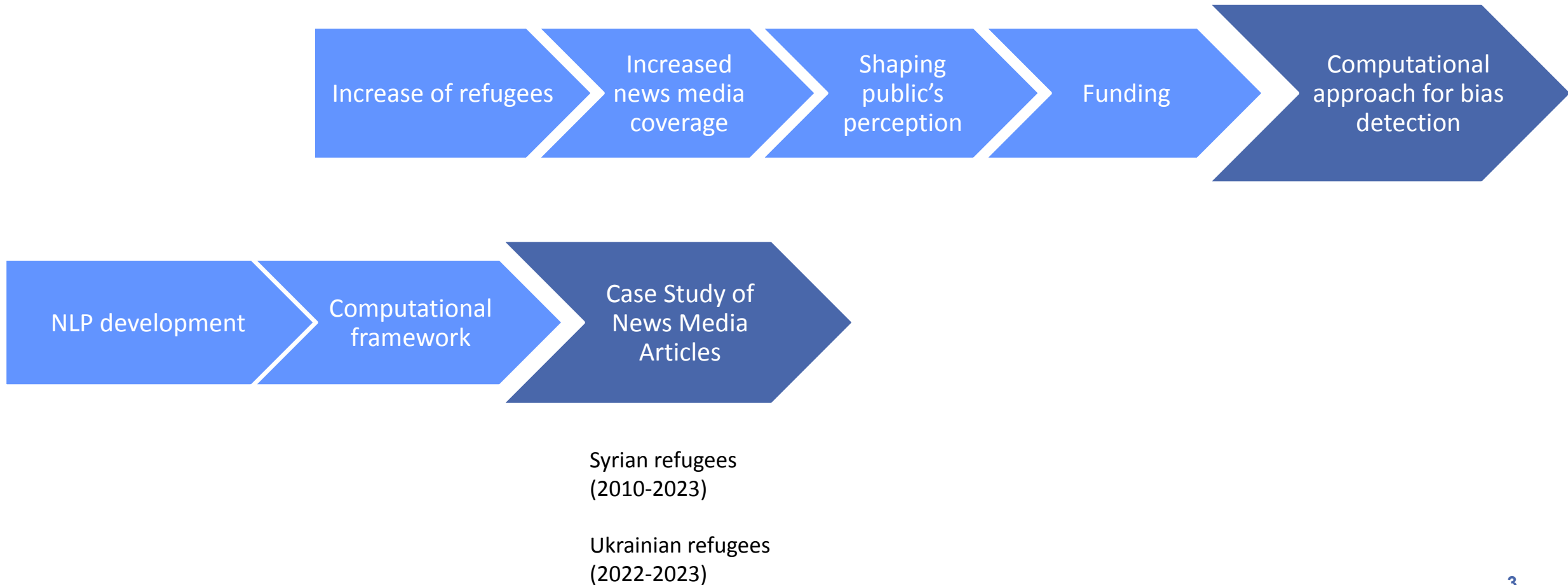## A Computational Bias Detection Framework

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Emilia Trulsson

Agenda

- Research Motivation and Gap

- Research Questions

- Framing Concept

- Framework

- Pipeline

- Findings

- Conclusion

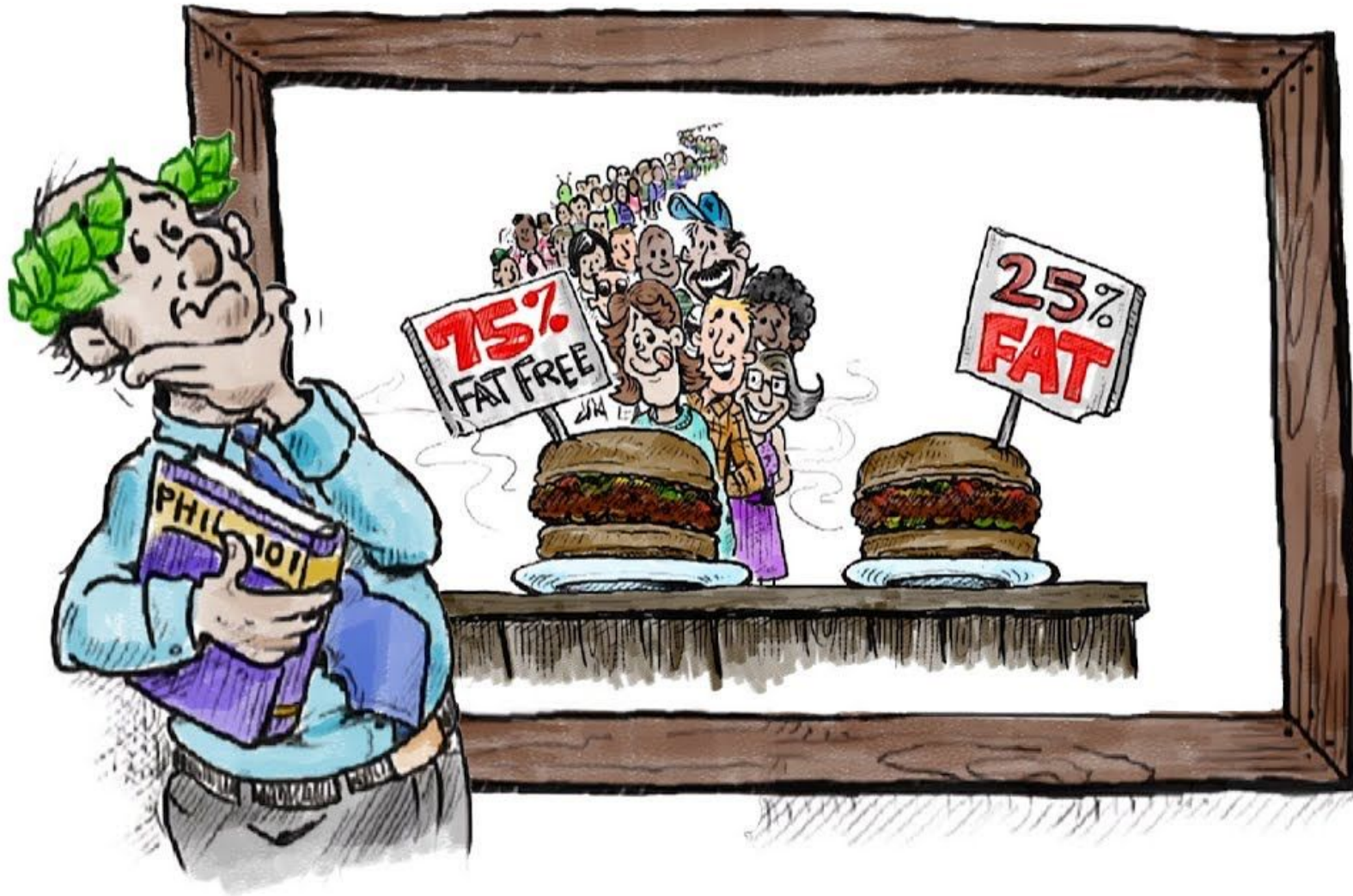- Practical Application

- Reflection

Research Motivation and Gap

Increase of refugees → Increased news media coverage → Shaping public's perception → Funding → Computational approach for bias detection

NLP development → Computational framework → Case Study of News Media Articles

Syrian refugees
(2010-2023)

Ukrainian refugees
(2022-2023)

Research Questions

RQ1: How can bias in news media be detected through computational methods?
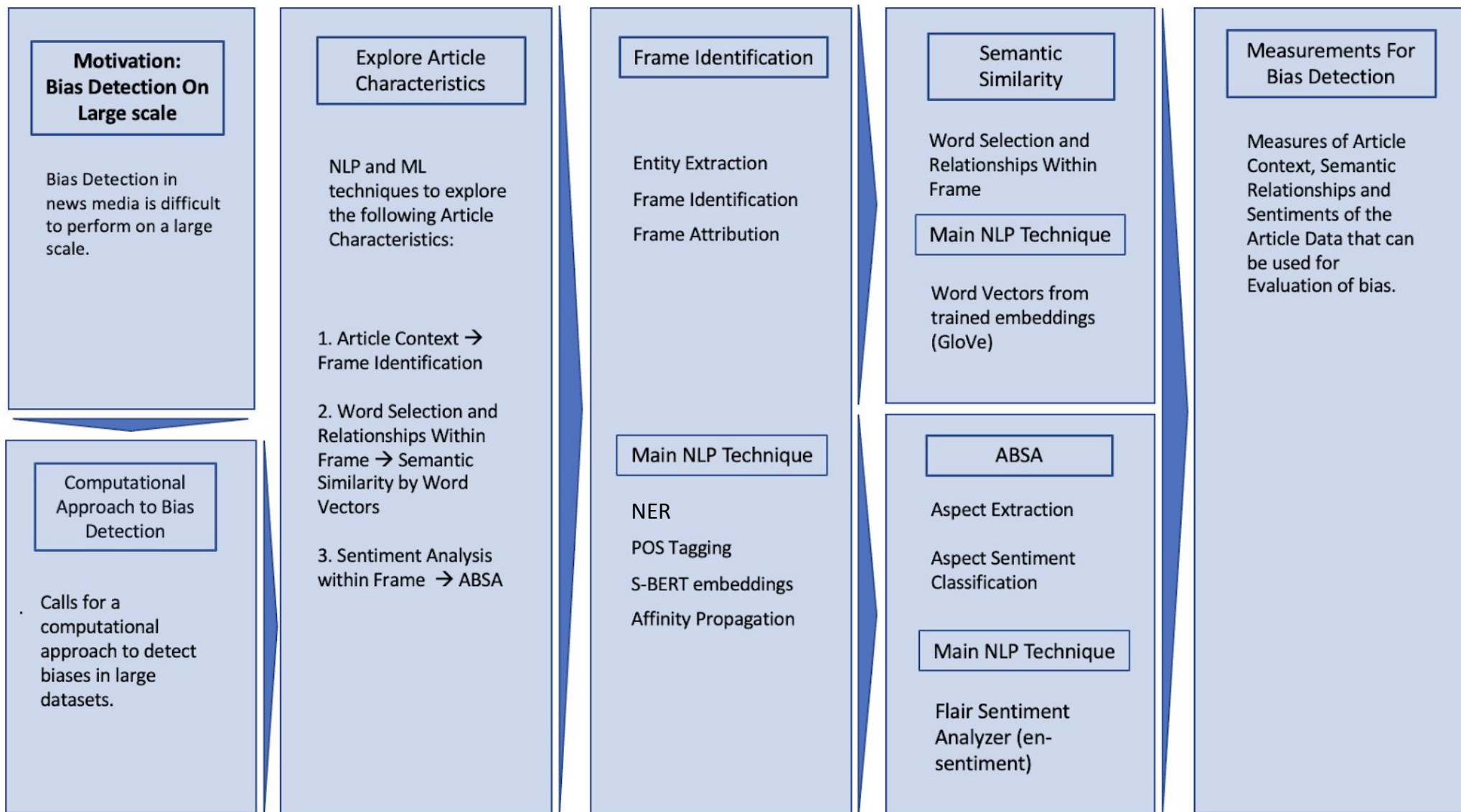
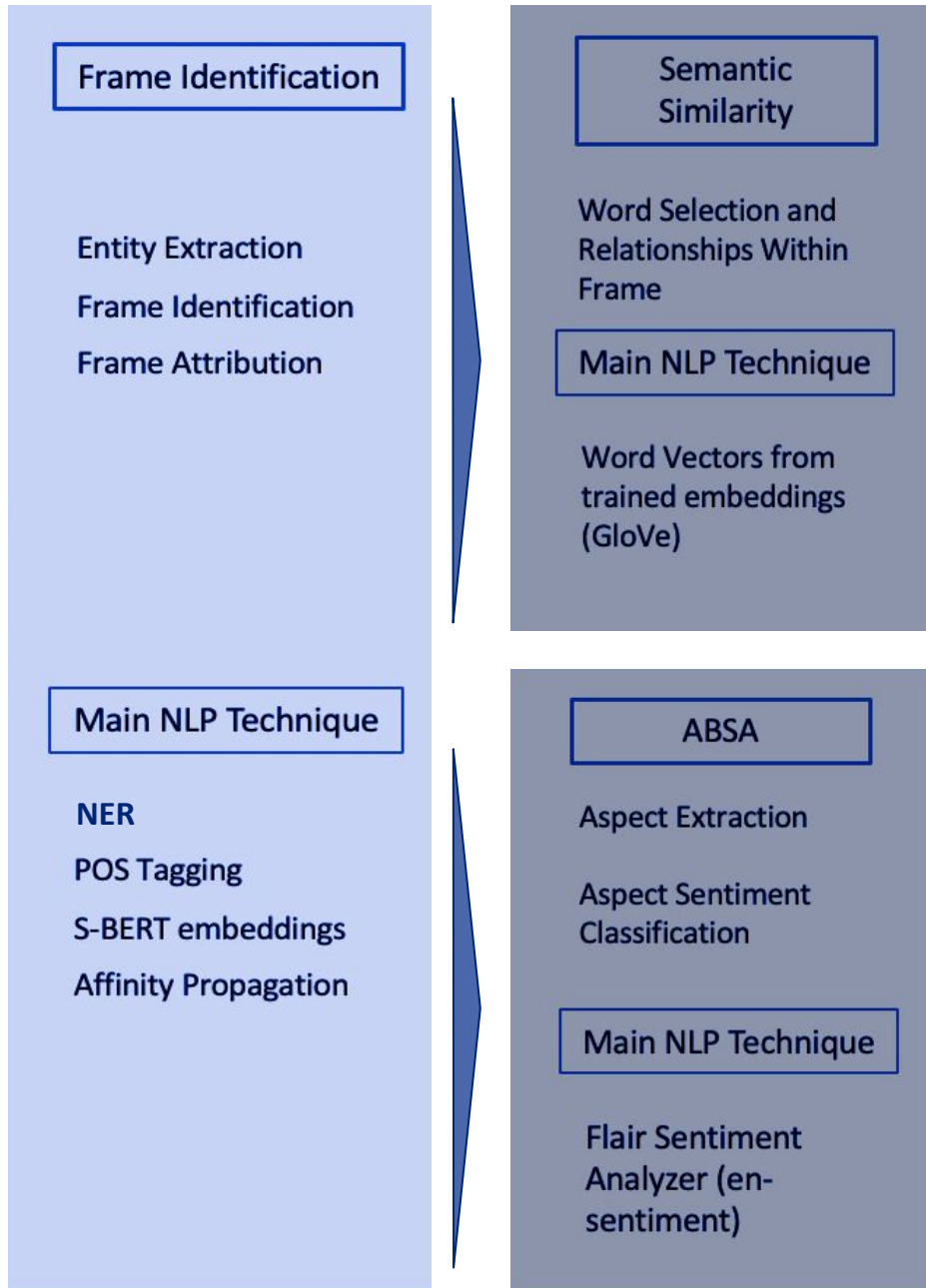**RQ1a**: Which frames arise in news media in response to Syrian refugees and Ukrainian refugees?

RQ1b: Who are the main actors emerging in the frames and which frame is attributed to them?

RQ1c: What are the main aspects in each frame and how are these discussed in the news media?
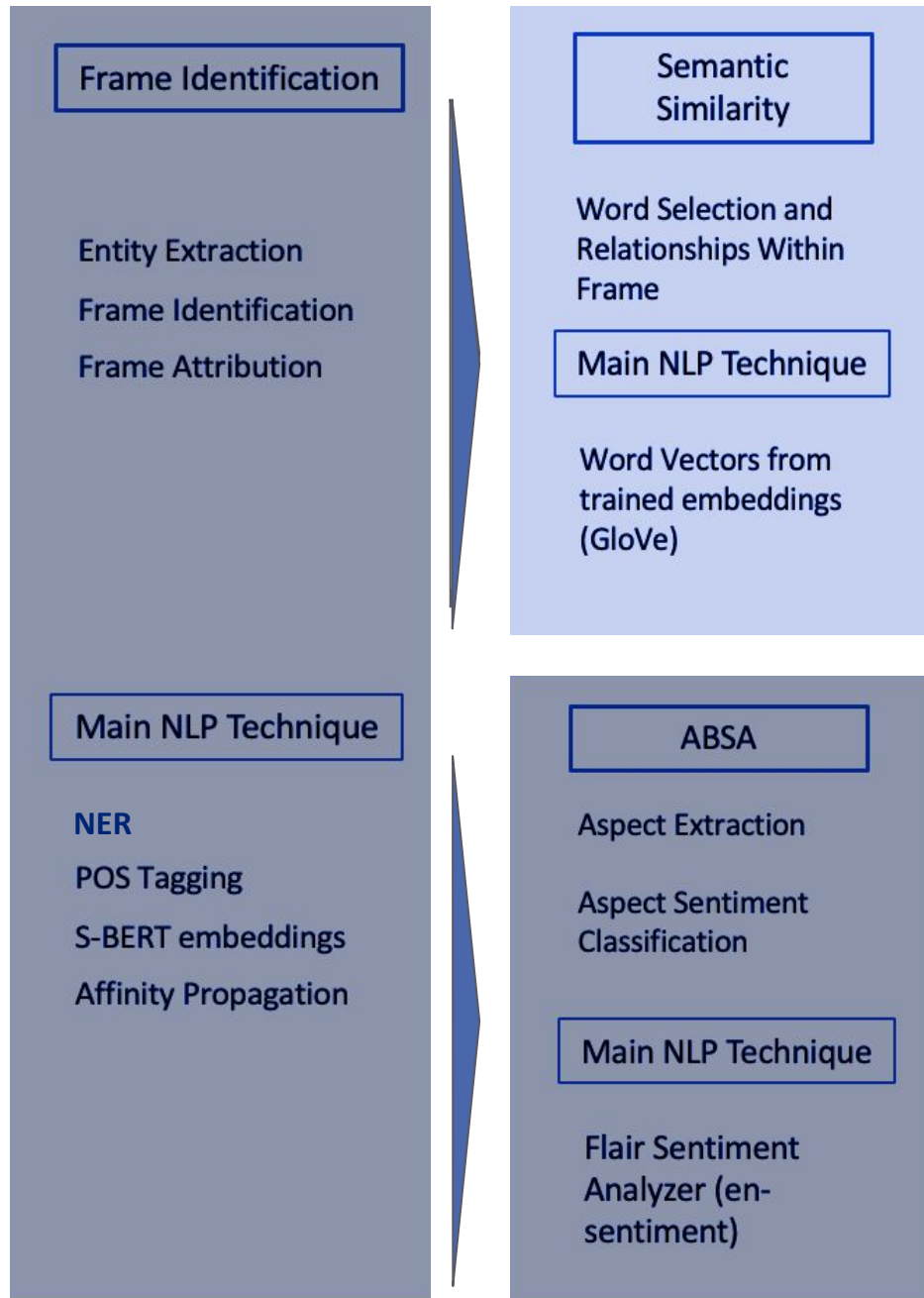
Framing Concept

Framework

Motivation: Bias Detection On Large scale

Bias Detection in news media is difficult to perform on a large scale.

Computational Approach to Bias Detection

. Calls for a computational approach to detect biases in large datasets.

Explore Article Characteristics

NLP and ML techniques to explore the following Article Characteristics:

1. Article Context → Frame Identification

2. Word Selection and Relationships Within Frame → Semantic Similarity by Word Vectors

3. Sentiment Analysis within Frame → ABSA

Frame Identification

Entity Extraction
Frame Identification
Frame Attribution

Main NLP Technique

NER
POS Tagging
S-BERT embeddings
Affinity Propagation

Semantic Similarity

Word Selection and Relationships Within Frame

Main NLP Technique

Word Vectors from trained embeddings (GloVe)

ABSA

Aspect Extraction

Aspect Sentiment Classification

Main NLP Technique

Flair Sentiment Analyzer (en-sentiment)

Measurements For Bias Detection

Measures of Article Context, Semantic Relationships and Sentiments of the Article Data that can be used for Evaluation of bias.

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Frame Identification

Performed on a joint dataset of both groups

Motivation
- Extract most frequent entities for both conflicts
- Extract general frames for Syrian and Ukrainian refugees
- Map out which entities are mentioned in which frames

Value
- Define contextual frames
- Relationship between entities and frames
- Comparability between the groups

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Frame Identification

Entity Extraction

Frame Identification

Frame Attribution

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Semantic Similarity

Performed on each refugee group's distinct frame individually

Motivation
● Discover the word of choice within the frames

Value
● Uncover potential differences in word choice

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Entity Extraction

Frame Identification

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Aspect Based Sentiment Analysis

Performed on each refugee group's distinct frame individually

Motivation
- Explore expressed aspects and their sentiment
- Investigate the attitudes associated with different aspects within each frame

Value
- Identify the most frequently discussed aspects
- Identify the mean polarity score for each aspect
- Highlight differences in sentiment across aspects

Pipeline

Dataset creation
- API fetch of The Guardian
- Web scraping UNHCR provided links

Frame Identification
- NLP techniques

Semantic Similarity
- NLP techniques
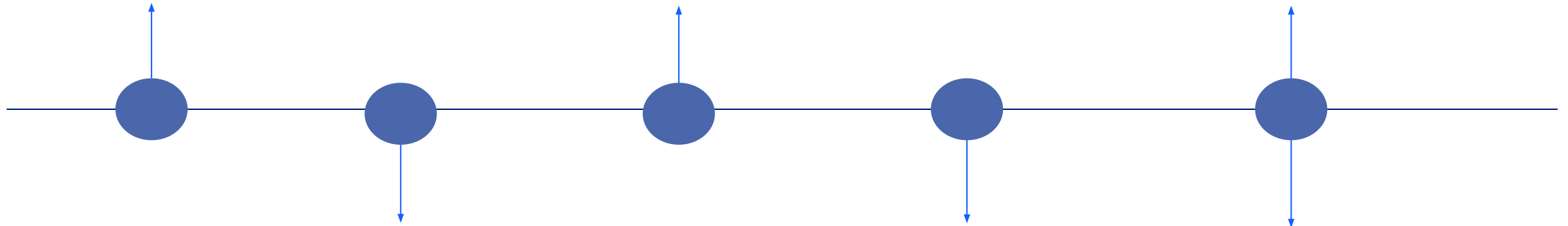
Pre-processing
- NLP techniques
- Creation of parsing corpus and frame identification corpus

Frame Application
- Deterministic rules

Aspect Based Sentiment Analysis
- NLP techniques

Findings
Frame Identification
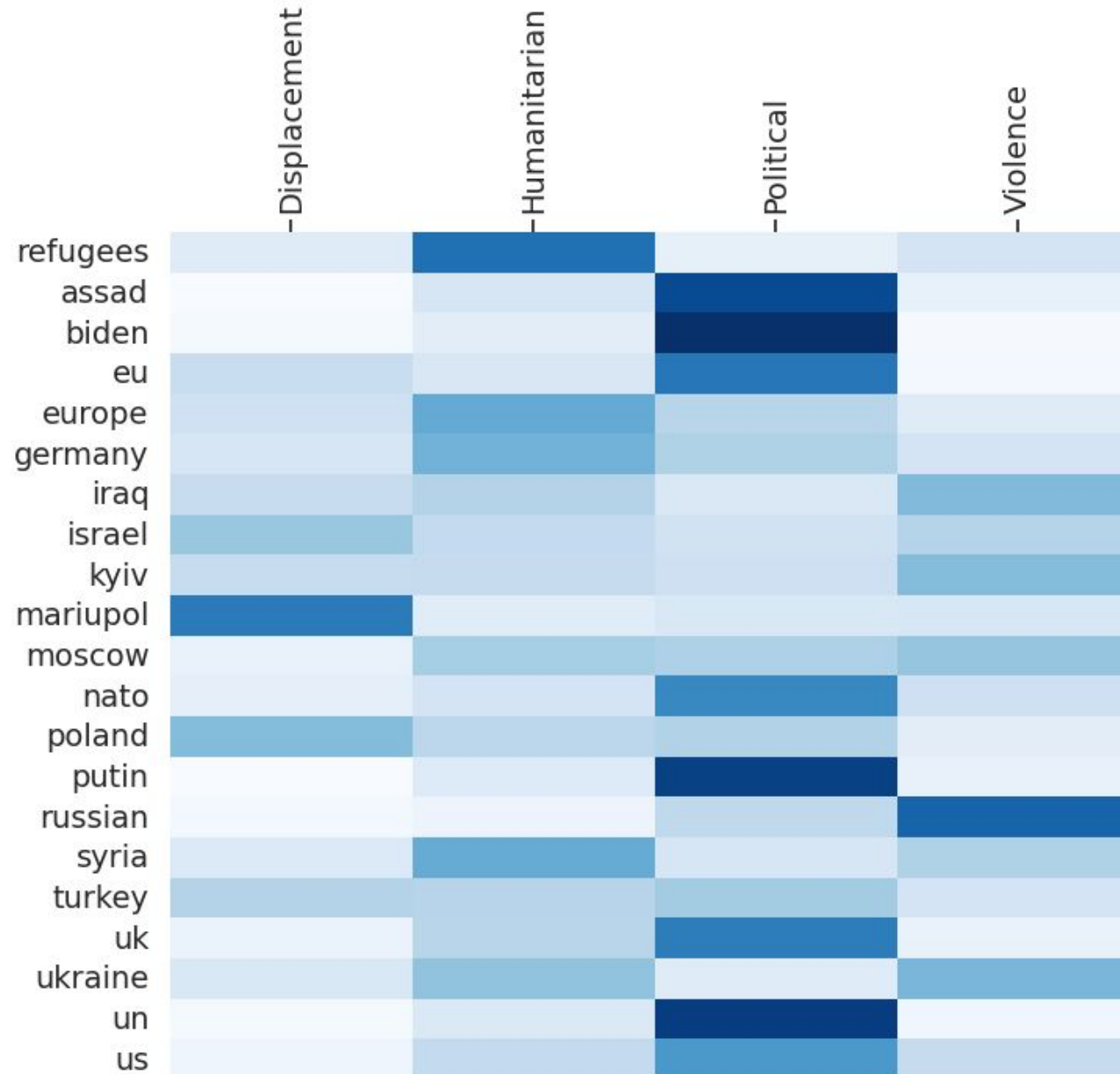
1. Displacement
2. Humanitarian
3. Political
4. Violence

Seed Words

Displacement	border, city, state, home, international, foreign, united, house, region, area, national, community, local, west, town, peace
Political	government, president, minister, official, leader, member, regime, power, political, service, policy, council, plan, sanction, agency, office, secretary, system, public, authority
Violence	force, military, attack, security, invasion, civilian, killed, humanitarian, weapon, troop, fighting, police, camp, strike, missile, army
Humanitarian	people, child, support, family, help, ground, need, work, woman, report, life, crisis, conflict, call, human, party, food, action, issue, opposition, statement, effort, change, company, supply, response

Semantic Similarity
Humanitarian

Word Vectors From GloVe Embeddings

Syria Humanitarian
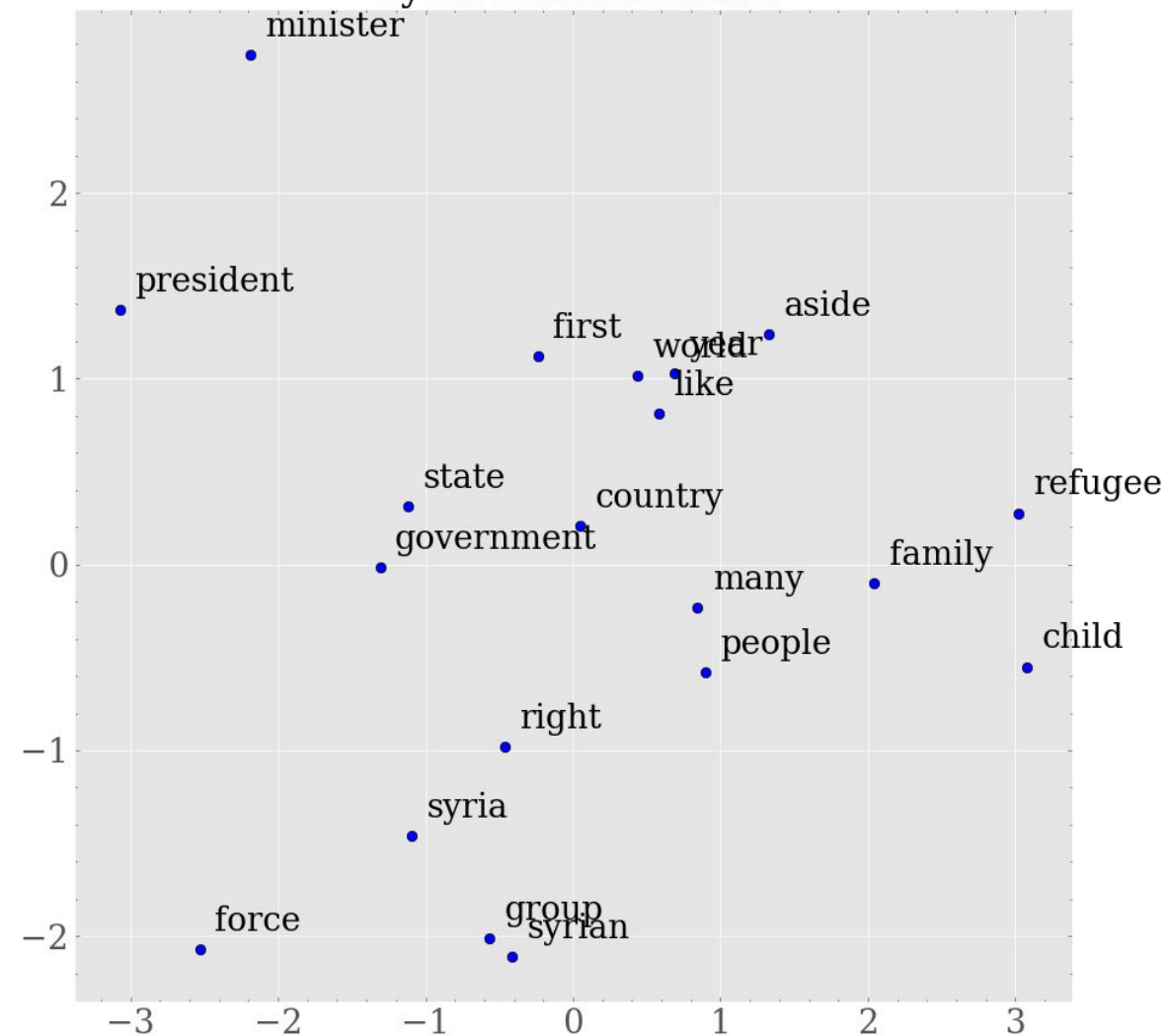
Ukraine Humanitarian

Aspect Based Sentiment Analysis
Displacement
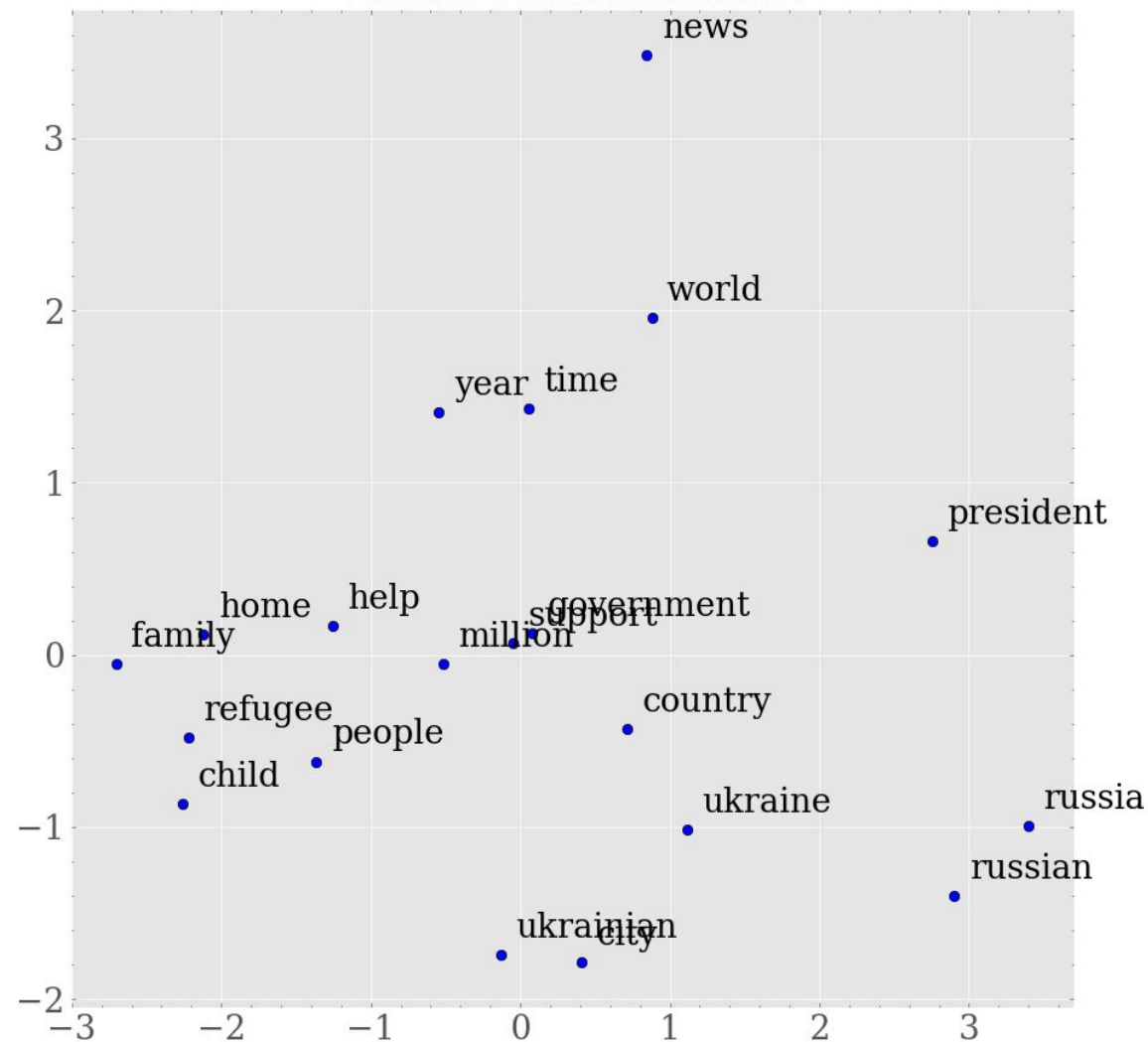
Polarity Scores Frame Displacement
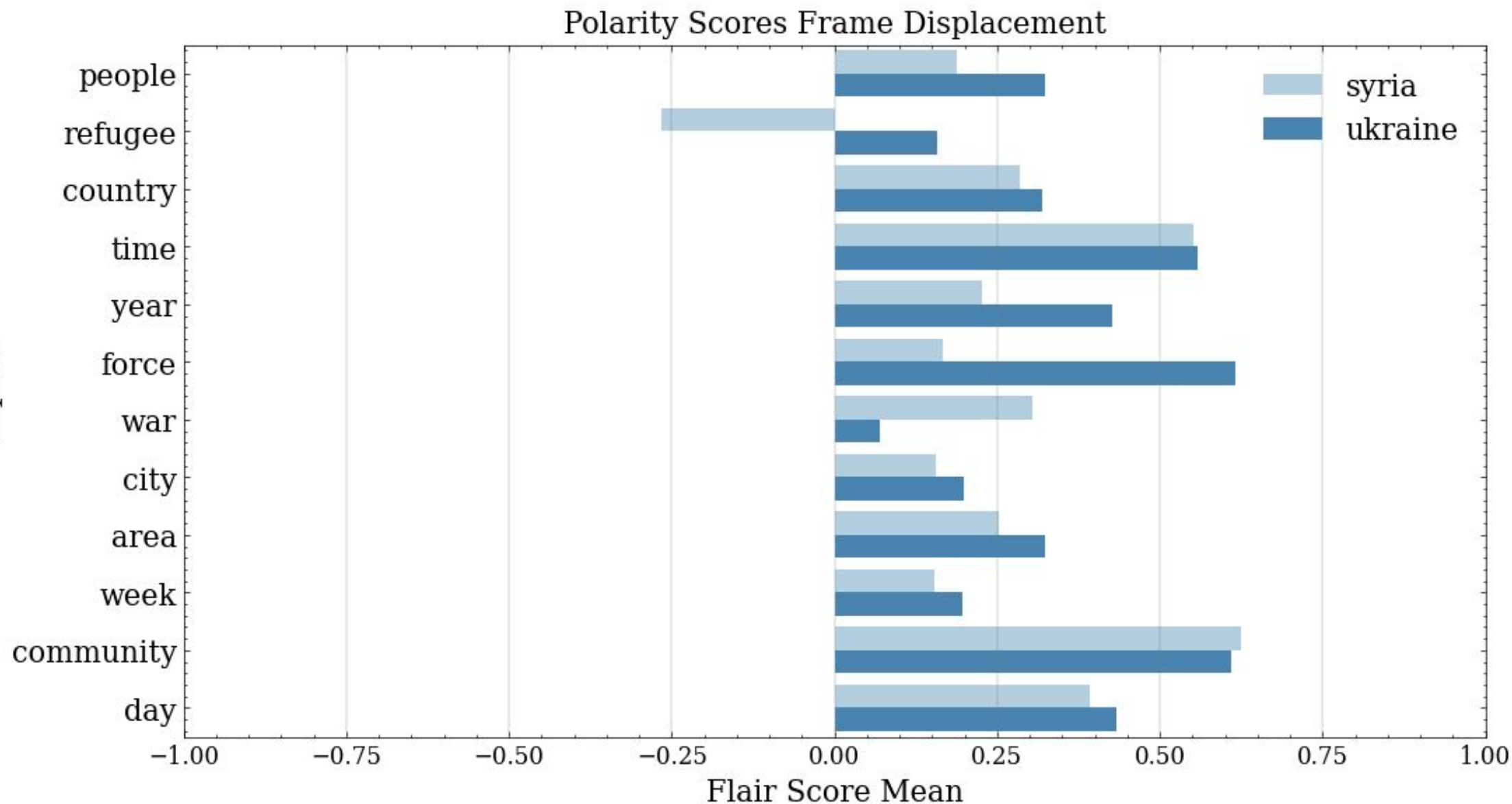
Conclusion - key findings

1 Discovered frames aligns with earlier research, the entity refugees is most prominent in *Humanitarian* frame

2 Some more terminology of support in semantic similarity for Ukrainian refugees

3 Consistent negative polarity scores for Syrian *refugee* aspect, consistent positive polarity scores for Ukrainian *refugee* aspect

4 Displacement frame shows the biggest discrepancy in ABSA

An indication of news media bias, favoring the Ukrainian refugees

Practical Application

Application - UNHCR

- Tool for monitoring news media bias
- Possible customization
  - Various groups
  - Over time
  - Languages
  - Segmented data
    - Specific source

Recommendations

- Data collection through API
- Segment the articles and use paragraphs
- Identify more granular frames
- Train language model data

Reflection

Main Limitations

Future Work

- Pre-trained language model Flair has underlying bias (model en-sentiment)
  - Trained on data from a mix of corpuses
  - Test with "*German*" change from -0.27 to 0.07

- Train/fine-tune the language model

- Investigate the flair model embeddings

Thank you for the attention!

Extra

Definitions

Refugee:

A person unable or unwilling to return to their home country due to a well-founded fear of persecution based on race, religion, nationality, membership in a particular social group, or political opinion.

Asylum Seeker:

An individual who has left their home country and is seeking refugee status in another country but have not been officially granted it yet

Internally displaced people (IDP):

People who have fled their homes but remain within the country's border and have therefore not crossed and international borders

Conflict facts

Syria

- Arab Spring in 2011
- Protests → Civil War
- Assad government
  - Iran
  - Russia
- Protesters
  - USA
  - Saudi Arabia
  - Turkey

Ukraine

- Russia invaded the 24th of Feb in 2022
- Publicly expressed dissatisfaction towards Ukraine's involvement in NATO and EU
- Russia failed to overtake Kyiv
- Imposed sanctions against Russia

Refugee facts - Numbers from May 2022

Syria

- 15.3 million people in need
  - 6.8 million IDP
  - 5.5 refugees in neighboring countries
  - Turkey, Lebanon, Jordan

- Mainly low-middle income host countries

Ukraine

- 8.1 million refugees
- 5 million in Temporary Protection
  - A legal mechanism to support in emergencies for the large influx of refugees to assure them a safe place in a country and basic needs
- Hosted by Russia, Poland, the Czech Republic, Germany

- High-income host countries increased

Preprocessing Overview
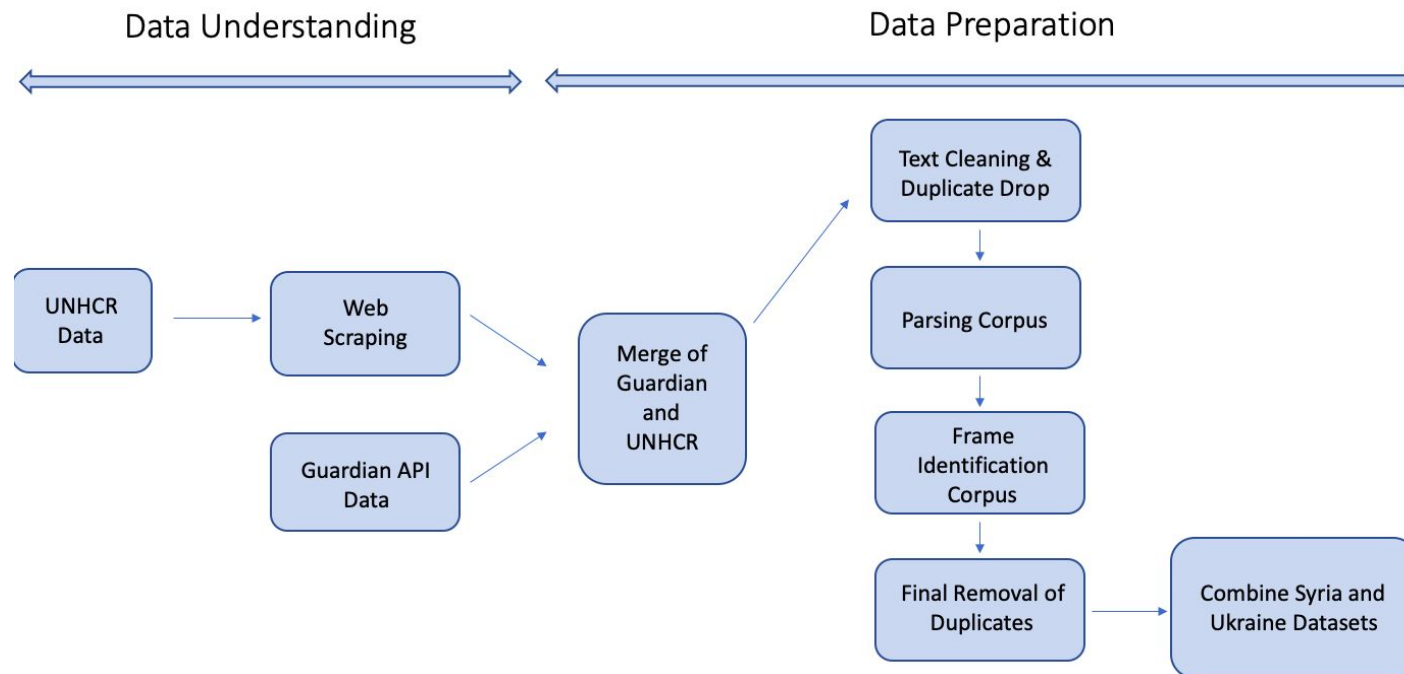
Numbers

UNHCR data
Ukraine: 66.787
Syria: 229.654*

API fetch
Ukraine: 899
Syria: 22.607

After final removal of duplicates
Ukraine: 13.554
Syria: 20.894

Combined:
27.108 (13.554 x 2)

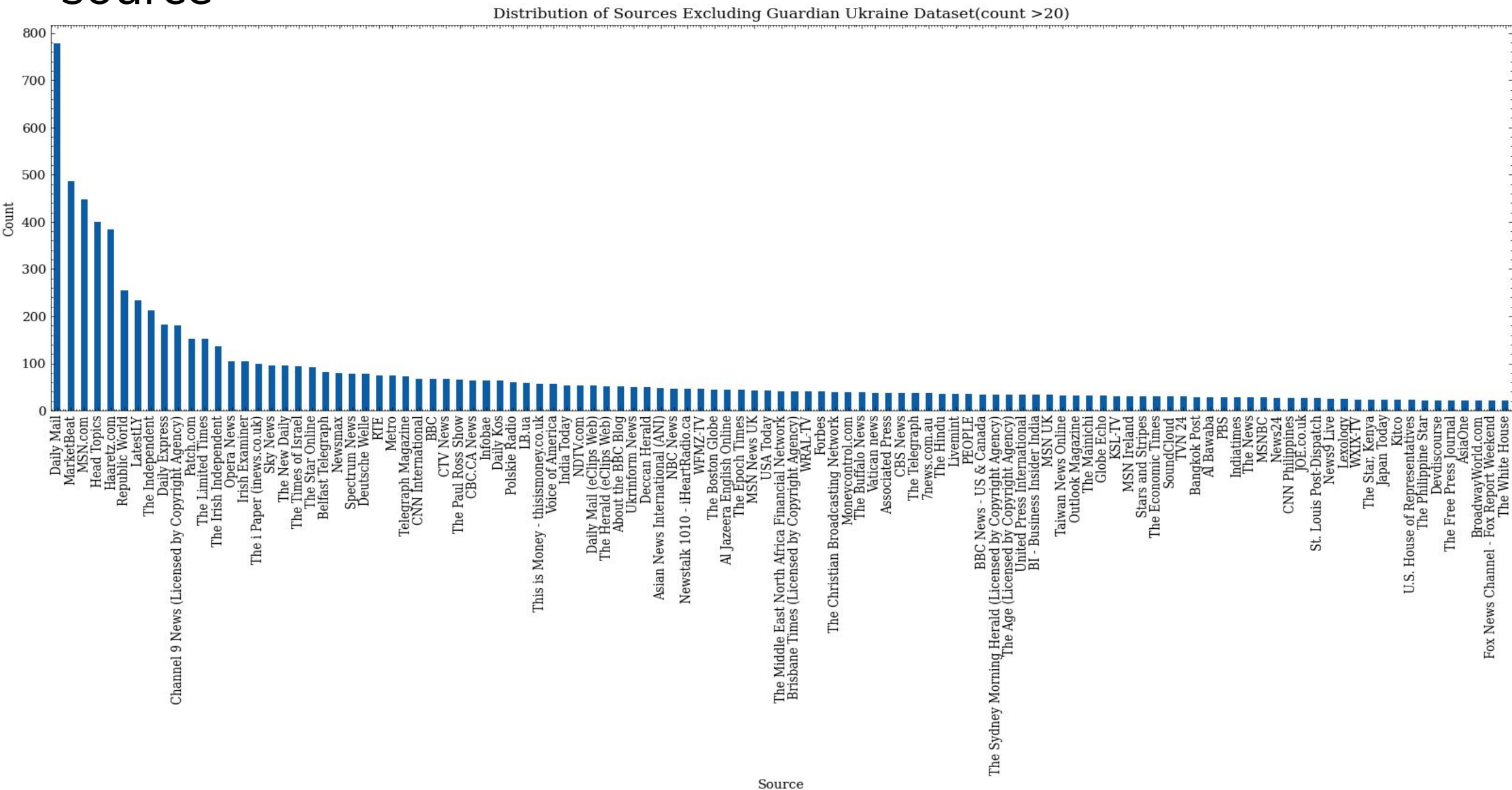* english and syrian refugee keyword

Article distribution
- source

Counts of Sources Syria Dataset

Counts of Sources Ukraine Dataset
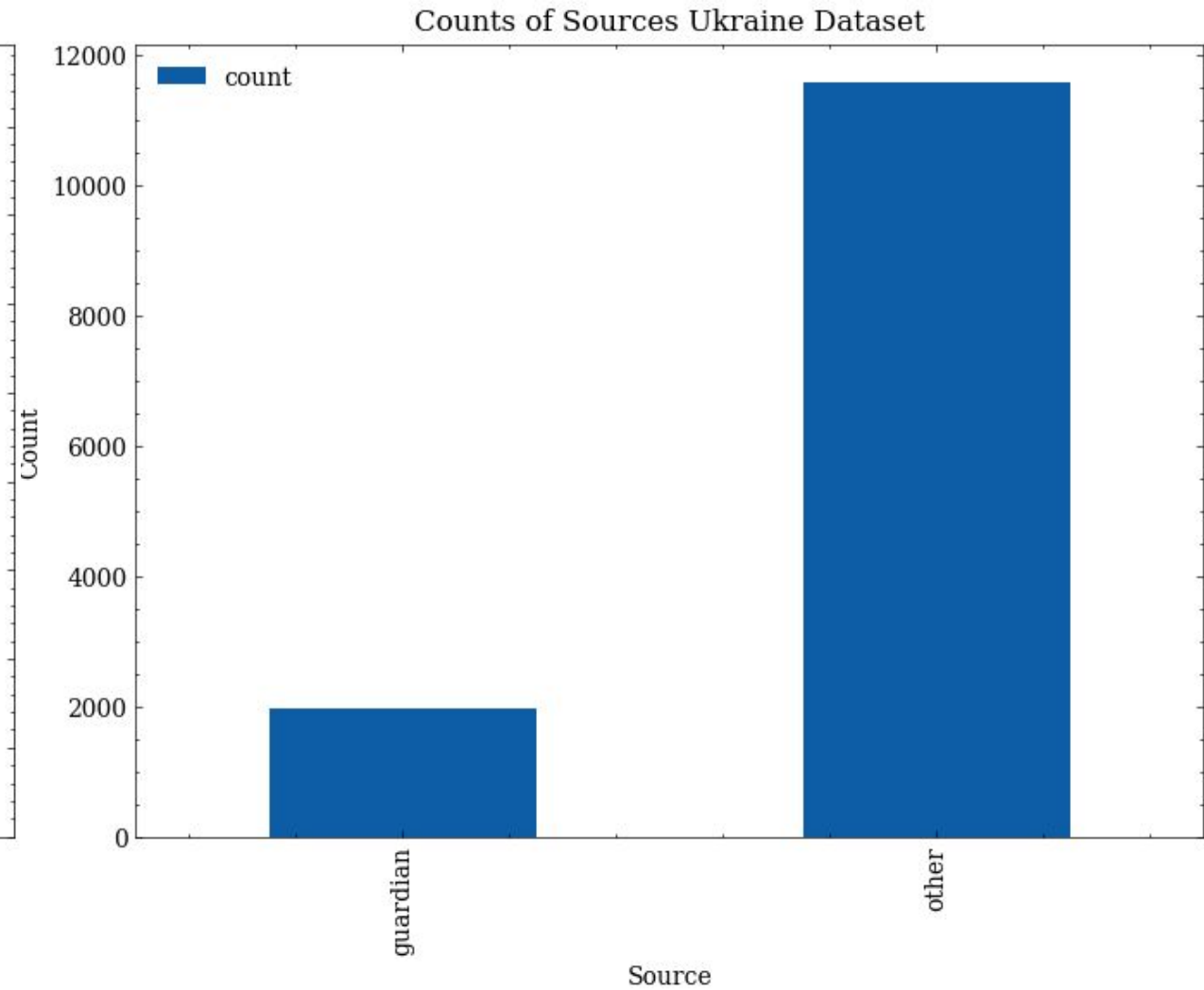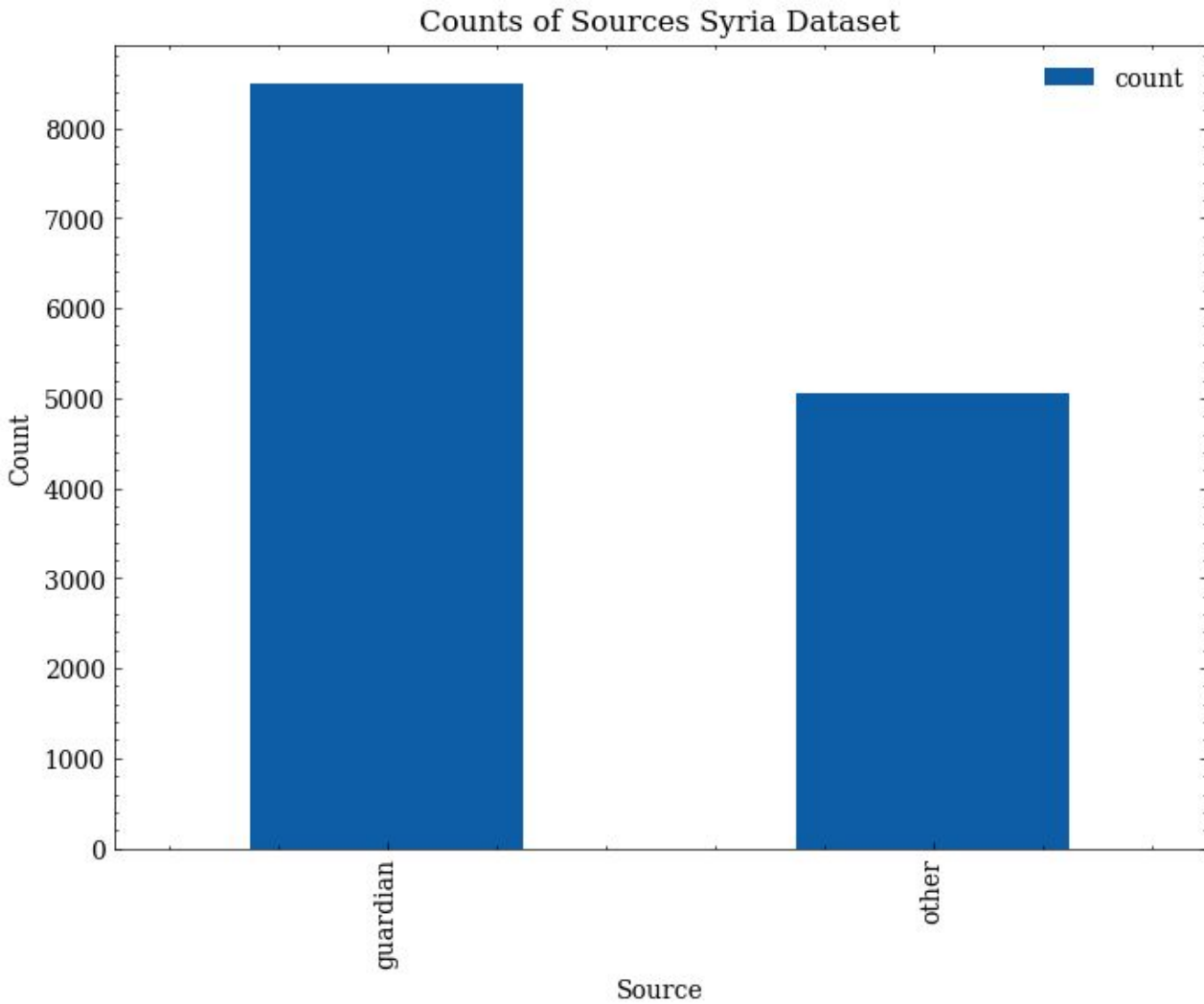
Article distribution
- source

Distribution of Sources Excluding Guardian Syria Dataset (Count > 5)

Article distribution - source

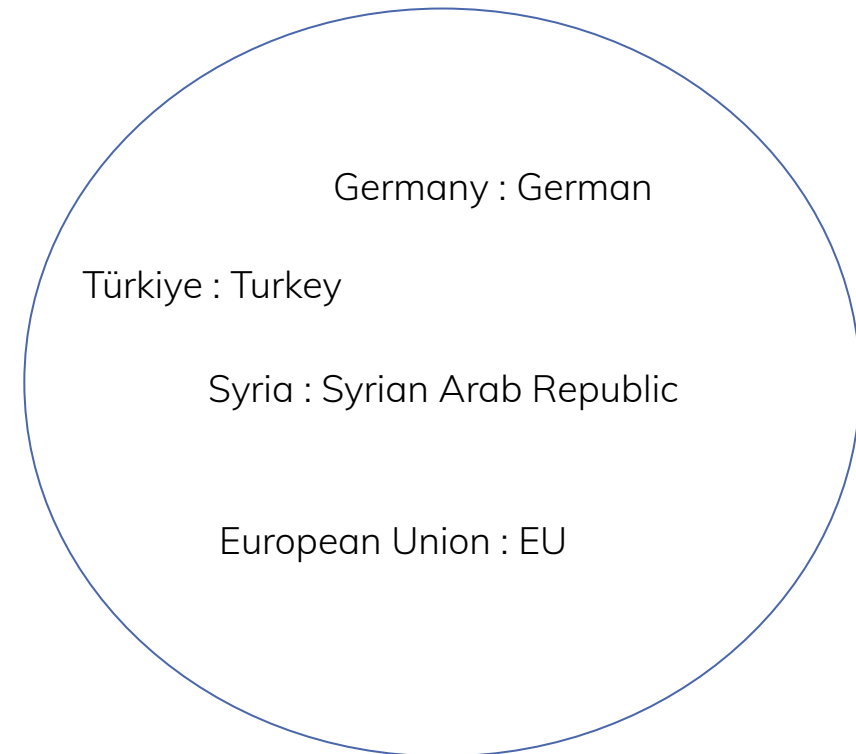Distribution of Sources Excluding Guardian Ukraine Dataset(count >20)
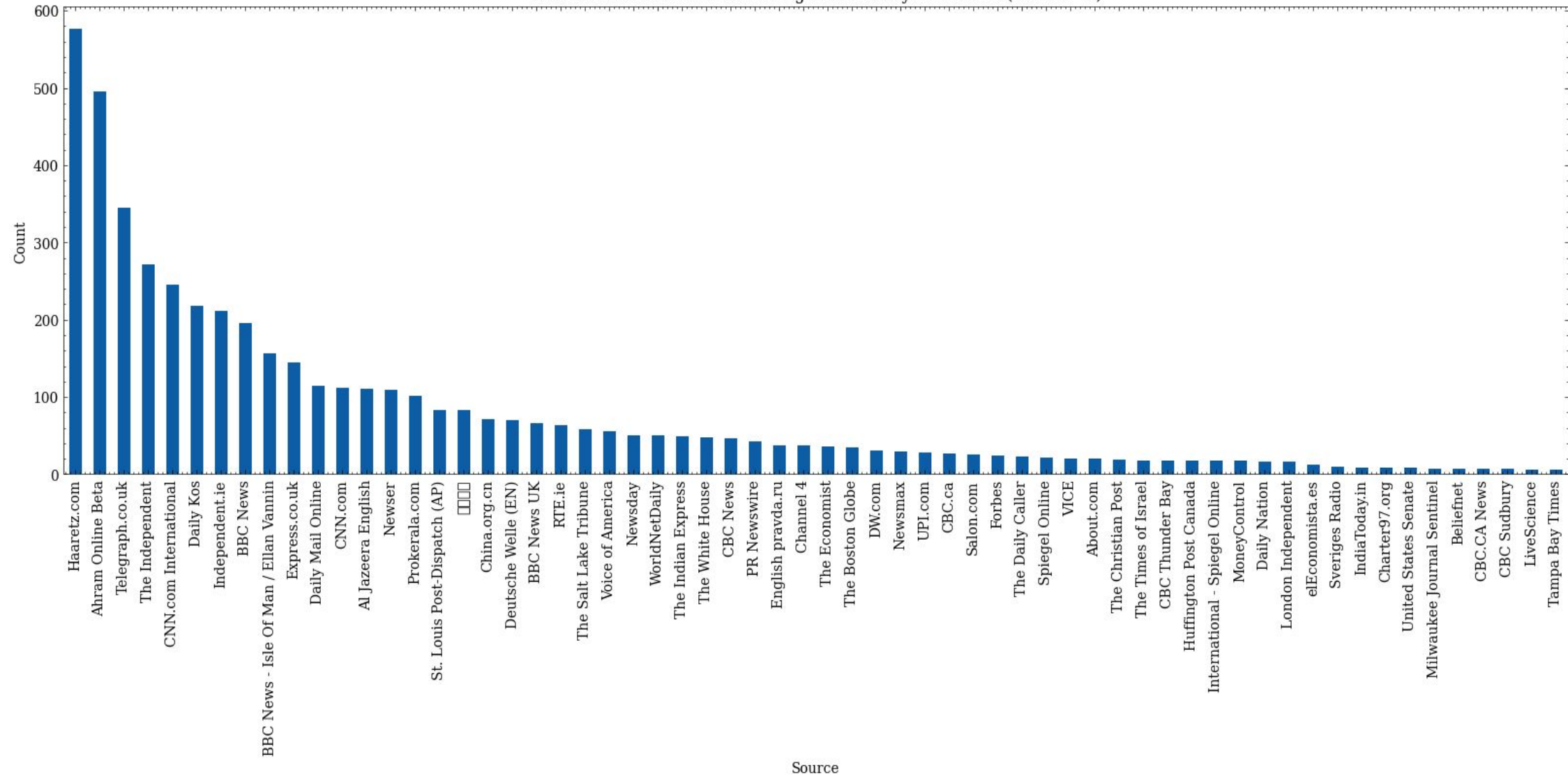
Entity Identification - what actors are written about

Extraction

Turkey

Ukraine   Syria

Syrian arab republic

European Union

Russia

EU

Germany

German

Alignment

Germany : German

Türkiye : Turkey

Syria : Syrian Arab Republic

European Union : EU
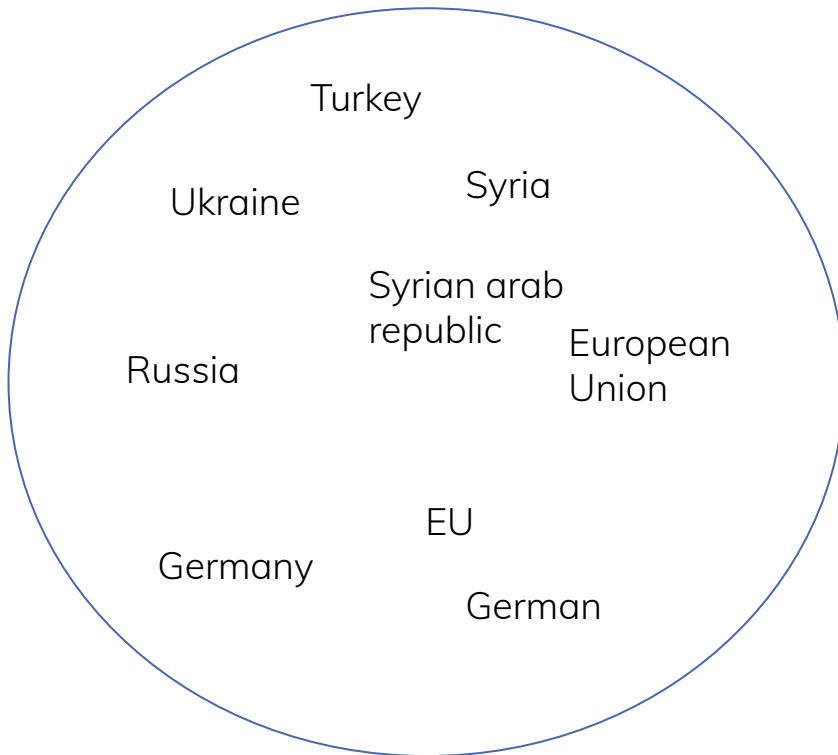
Frame Identification - which frames aries?

Framing words detection

home

support

welcome

border   help

military   missile

attack

Framing seed words clustering

| Frame	Seed Words
Violence	missile, attack, military....
Humanitarian	support, help, welcome...

Frame attribution – How are entities framed?
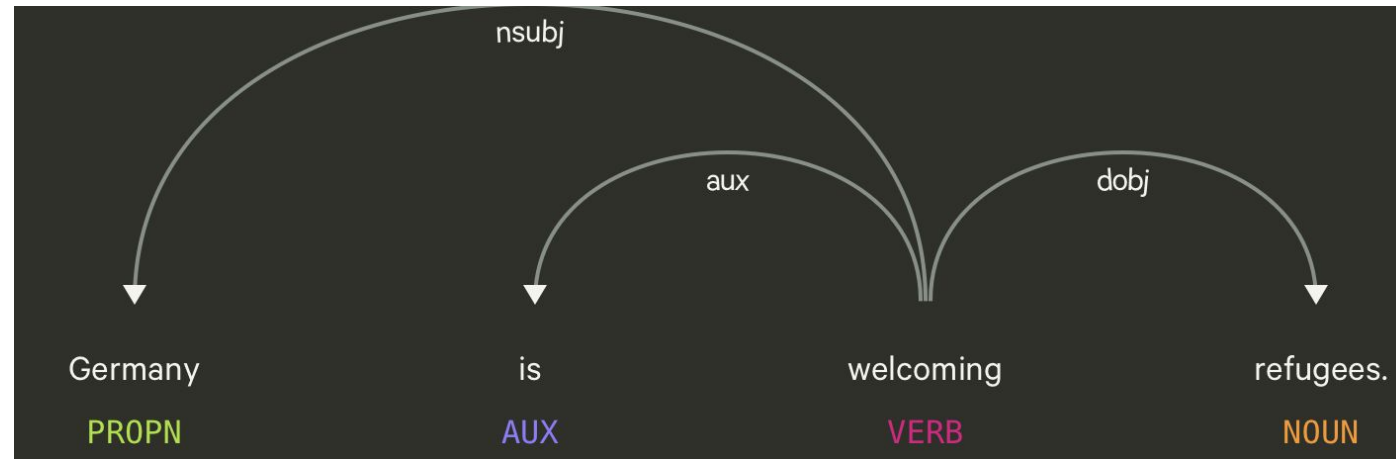
Word	Entity	Violence	Humanitarian	Political	Displacement
welcome	refugees	0	1	0	0
welcome	germany	0	1	0	0

Splitting articles per frame and group

Syria Datasets	N rows	Sample N rows	Ukraine Datasets	N rows	Sample N rows
Syria_political.csv	8044	2500 ($\approx 31\%$)	Ukraine_political.csv	6367	2300 ($\approx 36\%$)
Syria_displacement.csv	5193	2500 ($\approx 48\%$)	Ukraine_displacement.csv	6409	2500 ($\approx 39\%$)
Syria_violence.csv	3866	2500 ($\approx 65\%$)	Ukraine_violence.csv	3658	1700 ($\approx 46\%$)
Syria_humanitarian.csv	8706	2700 ($\approx 31\%$)	Ukraine_humanitarian.csv	10674	2300 ($\approx 22\%$)

Aspect based sentiment analysis
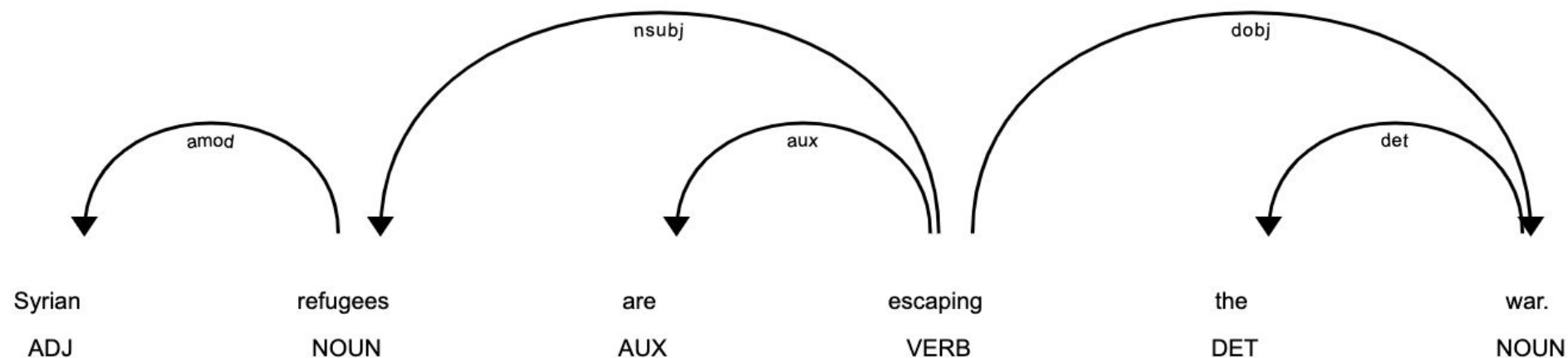
Aspect: Refugee (noun)
Opinion word: Syrian (adj)

Aspect based sentiment analysis

Rule	Sentence	Aspect	Sentiment	Negation
1	The refugee camp could been much better	refugee camp	much better	True
2	The quality of housing was not bad.	housing quality	bad	True
3	Access to healthcare is limited.	healthcare	limited	False

Evaluation

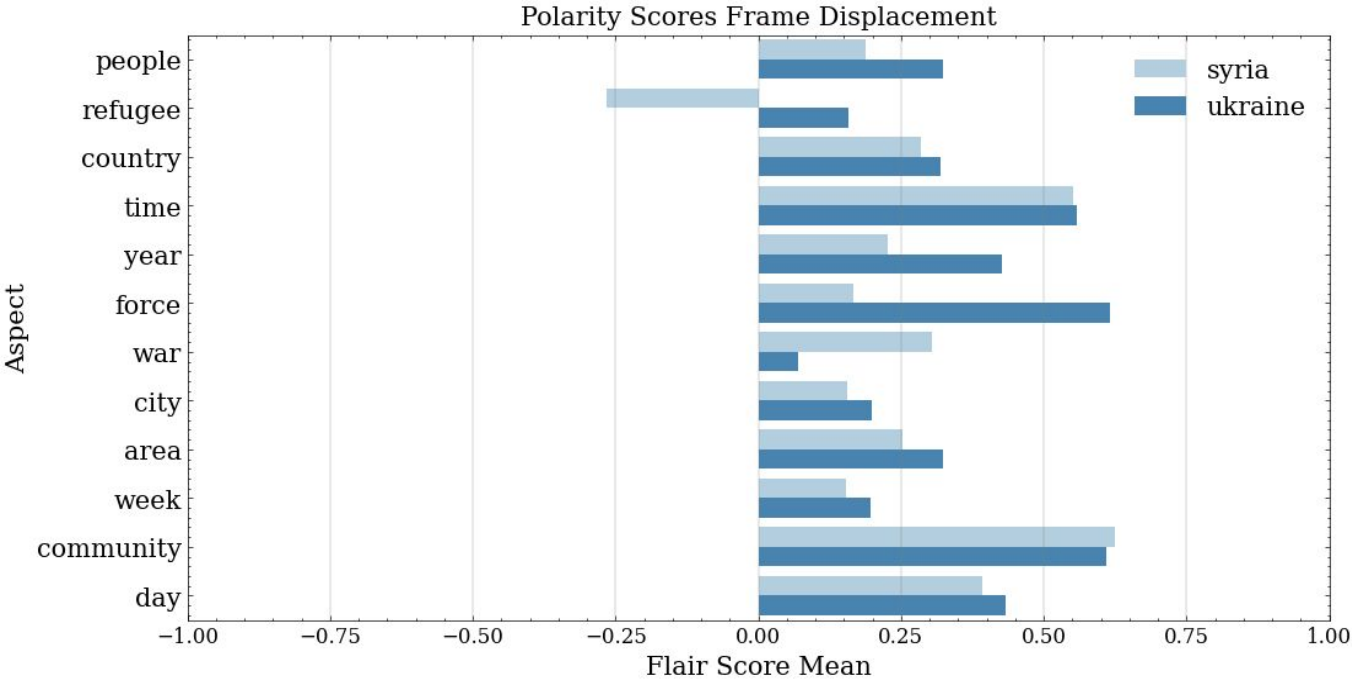Frames - Ukraine (1000 articles)

Label	F1	Recall	Precision	Accuracy
Humanitarian	0.86	0.83	0.89	0.83
Violence	0.78	0.81	0.76	0.81
Displacement	0.80	0.83	0.77	0.81
Political	0.81	0.81	0.80	0.82

ABSA - Ukraine displacement (2000 aspects)

Accuracy:	0.733
F1 Score:	0.700
Precision:	0.739
Recall:	0.685

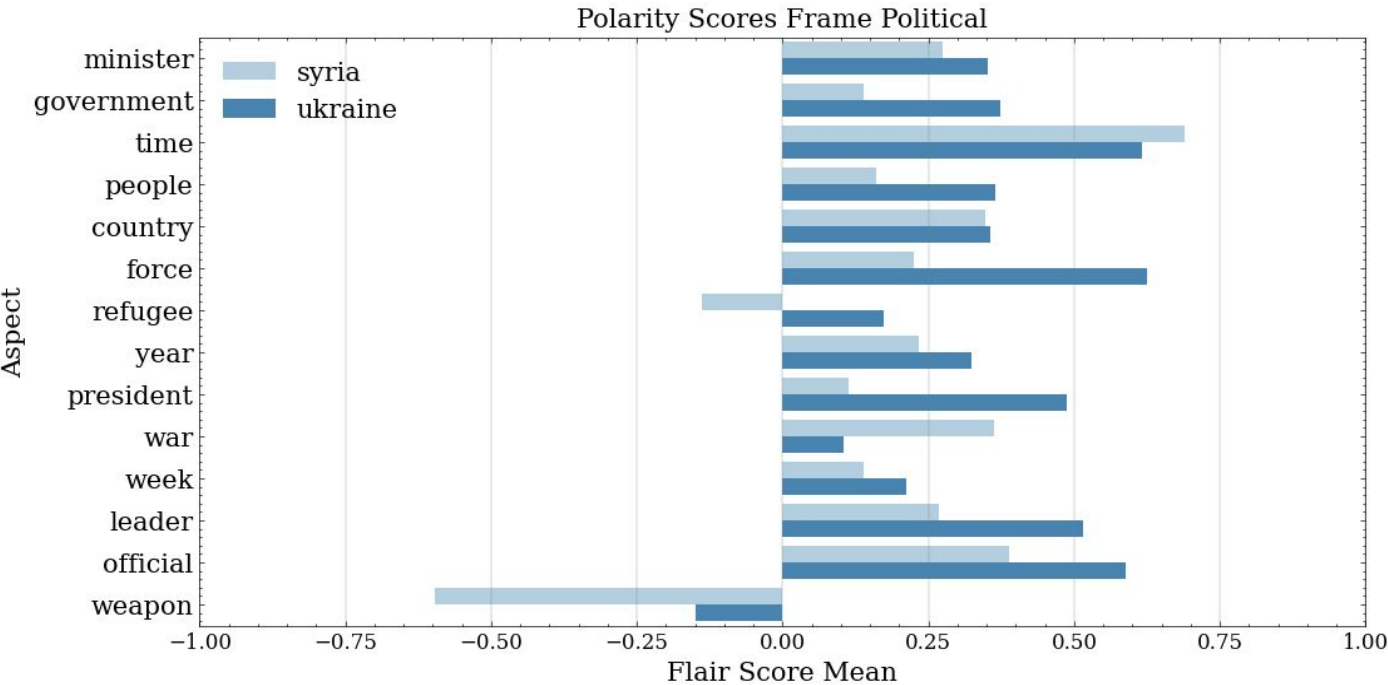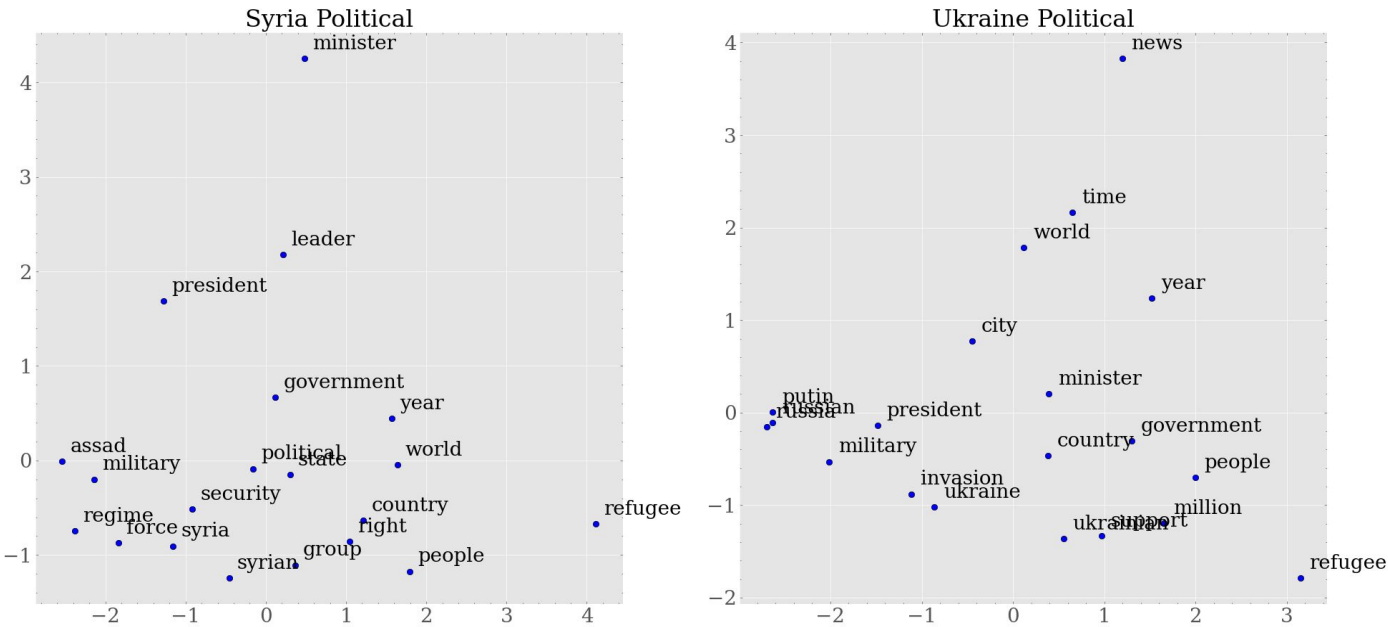# Result - Displacement

Ukraine Polarity Score = 1	*Among other recommendations, the Members urge the Administration to raise the cap on refugees allowed into the United States for Fiscal Year 2022 if it is necessary to accommodate Ukrainian* **refugees**, *ensure that Ukrainians are* <u>eligible</u> *for priority status, and reduce wait times on student visas.* *In fact, it was here in Warsaw when a* <u>young</u> **refugee**, *who fled her home country from Czechoslovakia was under Soviet domination, came back to speak and stand in solidarity with dissidents.*
Ukraine Polarity Score = -1	*She insists that she doesn't want the media to portray her as a* <u>helpless</u> **refugee** *who fled two wars.* *Building walls, strengthening coast guards and border patrolling police, legislating punitive laws to curb migrants and refugees and floating* <u>anti</u>-*migrant and* **refugee** *political ideologies, narratives and rhetoric tantamount to the ideology of protectionism and populism.*
Syria Polarity Score = 1	*Instead, he called on Catholic parishes to offer* <u>sanctuary</u> *to* **refugee** *families.* *Charlie Fraser of the* <u>Entrepreneurial</u> **Refugee** *Network, and Alexandra Simmons of Timepeace, two social enterprises helping refugees get jobs in the UK.*
Syria Polarity Score = -1	*As I stood in the middle of the squalid Kara Tepe transit camp on Lesbos, I was struck by the utter* <u>perverseness</u> *of the* **refugee** *drama unfolding on this Greek island.* *Their processing began earlier this year under a new,* <u>narrower</u>, *Australia-specific definition of* **refugee** *but even if they are found to be refugees they will be offered only temporary visas, a kind of sanity-sapping limbo existence where they have no right to bring their families here or travel abroad to see them.*

Result - Political

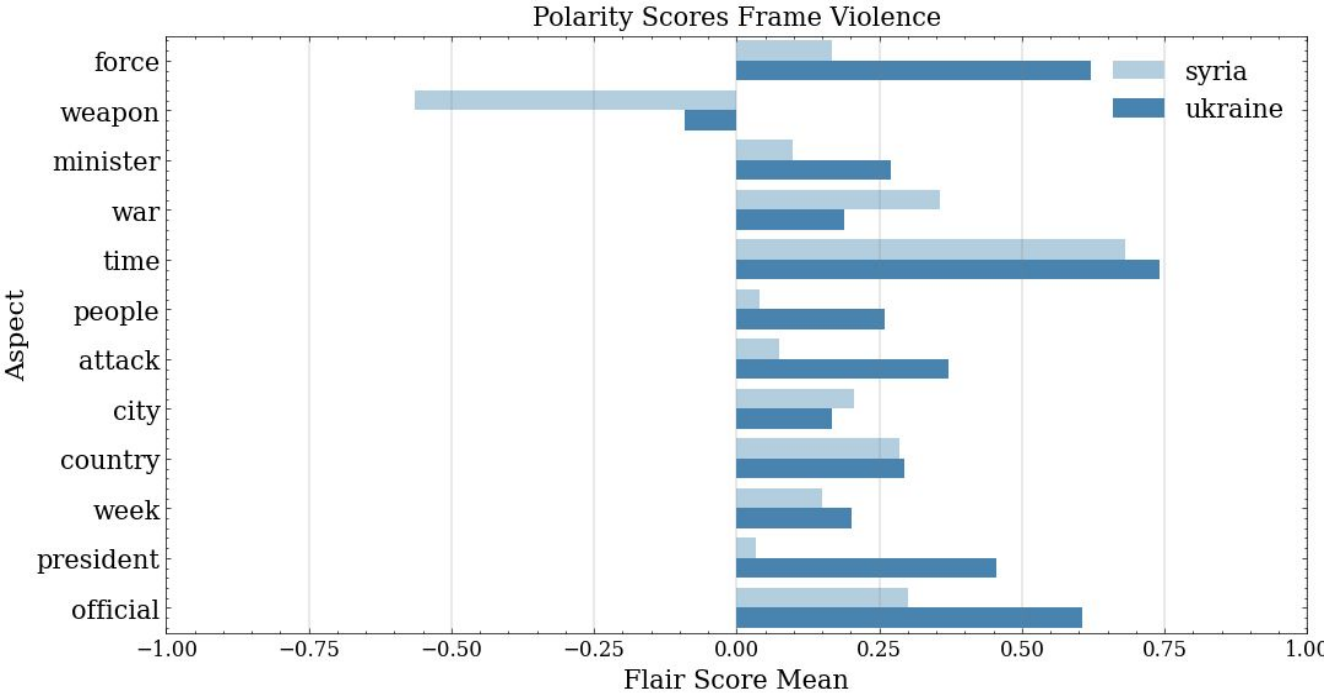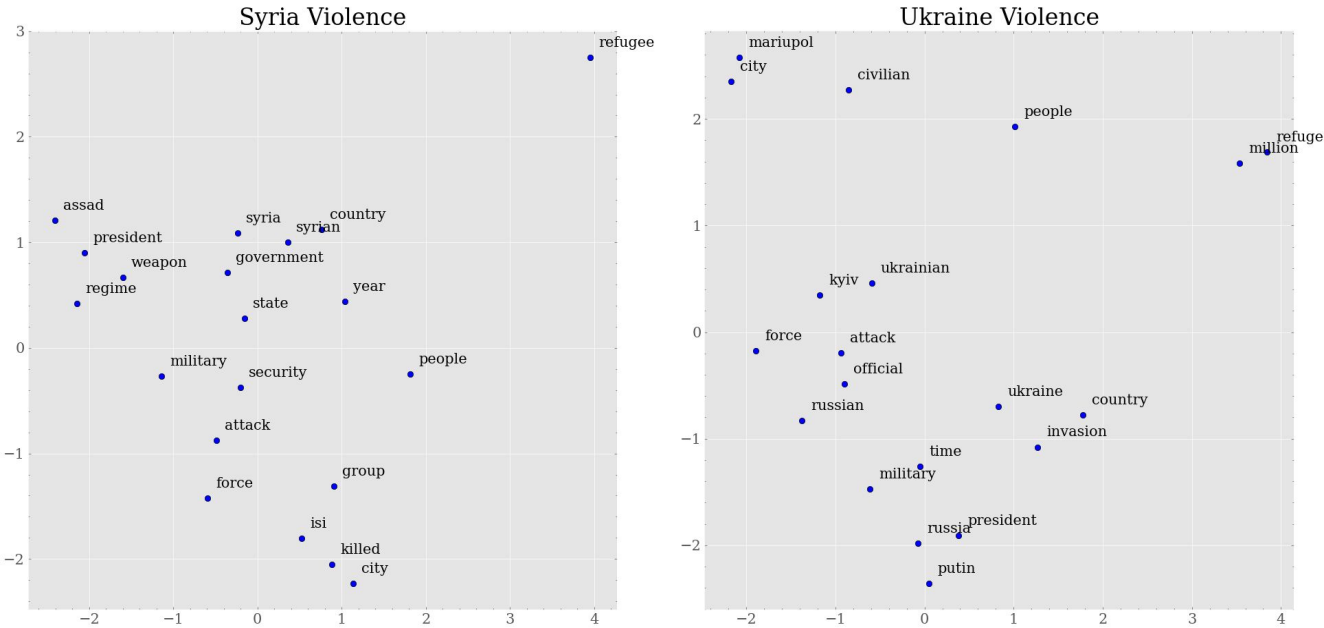|	
Ukraine Polarity Score = 1	*A young Ukrainian* **refugee.** *The research will focus on the two groups of war-affected women in the perinatal period: war* **refugees** *in European countries (external refugees) and women who decided to stay in Ukraine (in the same place of residence or as internal refugees).*
Ukraine Polarity Score = -1	*A landmark deal reached between the EU and Ankara in 2016 aimed to send migrants who failed to win* **refugee** *status back to Turkey.* *Ali Velshi visits a massive* **refugee** *safe haven in Poland, capable of serving 20,000 people, and talks with refugees about their plans for reestablishing their lives that have been uprooted by Vladimir Putin's war on Ukraine.*
Syria Polarity Score = 1	*On Monday, Deng released a statement calling himself a proud* **refugee.** *The first vulnerable child* **refugee** *stranded in Greece who qualifies for sanctuary under the Dubs amendment has arrived in the UK, more than a year after the government pledged to bring over hundreds of children.*
Syria Polarity Score = -1	*Turkey has grown frustrated with* **refugee** *flows, and is facing domestic pressure to act on the massacre of co-religionists.* *Anger rises in Lesbos over crowded* **refugee** *camps*

Syria Political

Ukraine Political

Polarity Scores Frame Political

Result - Violence

Syria Violence

Ukraine Violence

|		
Ukraine Polarity Score = 1	*Look at how they are stepping up ... Women, <u>young</u> **people**, standing in front of a damn tank saying I'm not leaving.* *German Chancellor Olaf Scholz expects energy dependence on Russia to come to an end sooner than <u>many</u> **people** are anticipating.*
Ukraine Polarity Score = -1	*Children, <u>elderly</u> **people** are dying.* *Shabia Mantoo, a UNHCR spokesperson, said smugglers are using false promises and false hope to lure <u>desperate</u> **people**.*
Syria Polarity Score = 1	*But I still see our situation is <u>much better</u> than **people** who are just living under trees with nothing to protect them from freezing.* *The ultimate goal that everyone wants to get to is to come up with a framework for a successful political transition in which leads to a government not led by Bashar al-Assad and that is representative of and <u>responsive</u> to the Syrian **people***
Syria Polarity Score = -1	*These **people** are <u>despicable</u> and must be found.* *However these countries are <u>failing</u> the **people** of Syria with contributions considerably lower than other countries with comparable wealth.*

Polarity Scores Frame Violence

Result - Humanitarian

Ukraine Polarity Score = 1	*The problem with the <u>ideal</u> **refugee** is it exceptionalises refugeehood.* *US participating in this war by supporting Ukraine with weapons,money,food and <u>welcoming</u> **refugee** should be sending alarming message to Putin.*
Ukraine Polarity Score = -1	*This is a <u>completely different</u> kind of **refugee**.* *It was <u>inevitable</u> there would be **refugee** consequences for that.*
Syria Polarity Score = 1	*But in a strange way he's done us all a favour in highlighting a very heartwarming story of a <u>hard-working</u> **refugee**, who's built a new life in the UK with his British wife and their small child.* *Here is a photo of a <u>young</u> **Syrian** refugee that arrived via Guardian Witness.*
Syria Polarity Score = -1	*<u>Pregnant</u> **refugee** being taken onto Crown Princess 15th September, after rescue by Italian Coastguard.* *She shuttles between the crumbling neoclassical architecture of the port city of Mytilene and the <u>crowded</u> **refugee** reception centre at Moria in a battered Toyota loaded with translators and the dirt from a thousand strangers' shoes.*

Syria Humanitarian

Ukraine Humanitarian
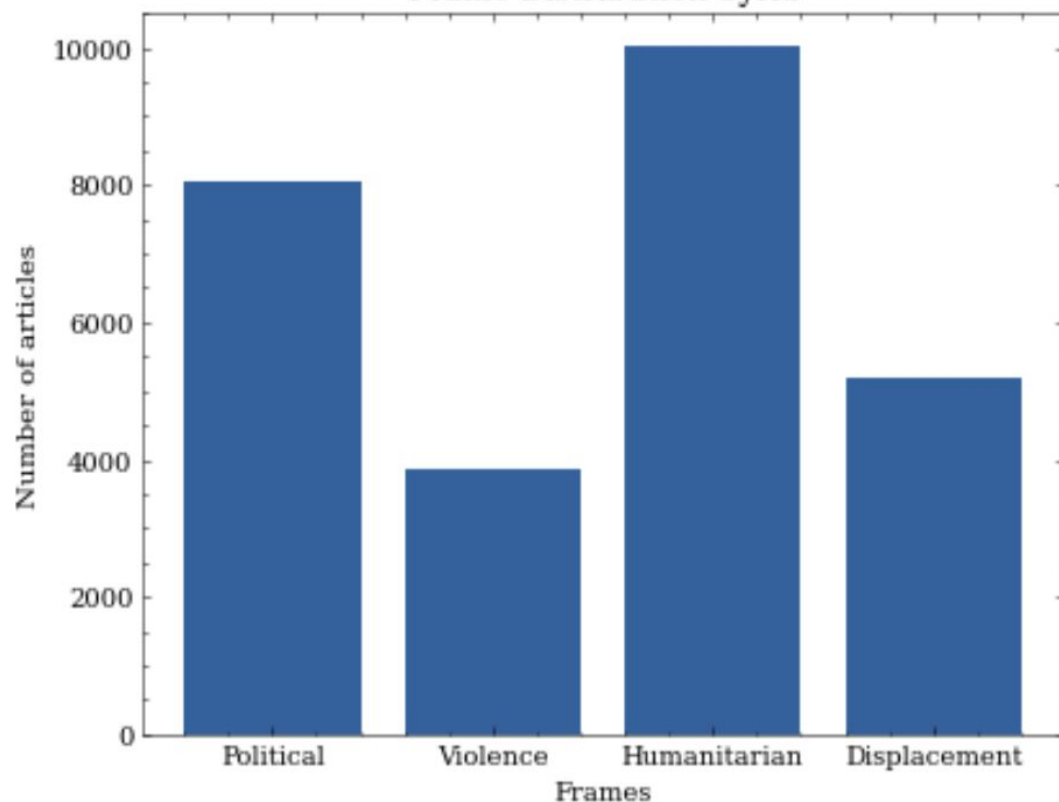

Polarity Scores Frame Humanitarian
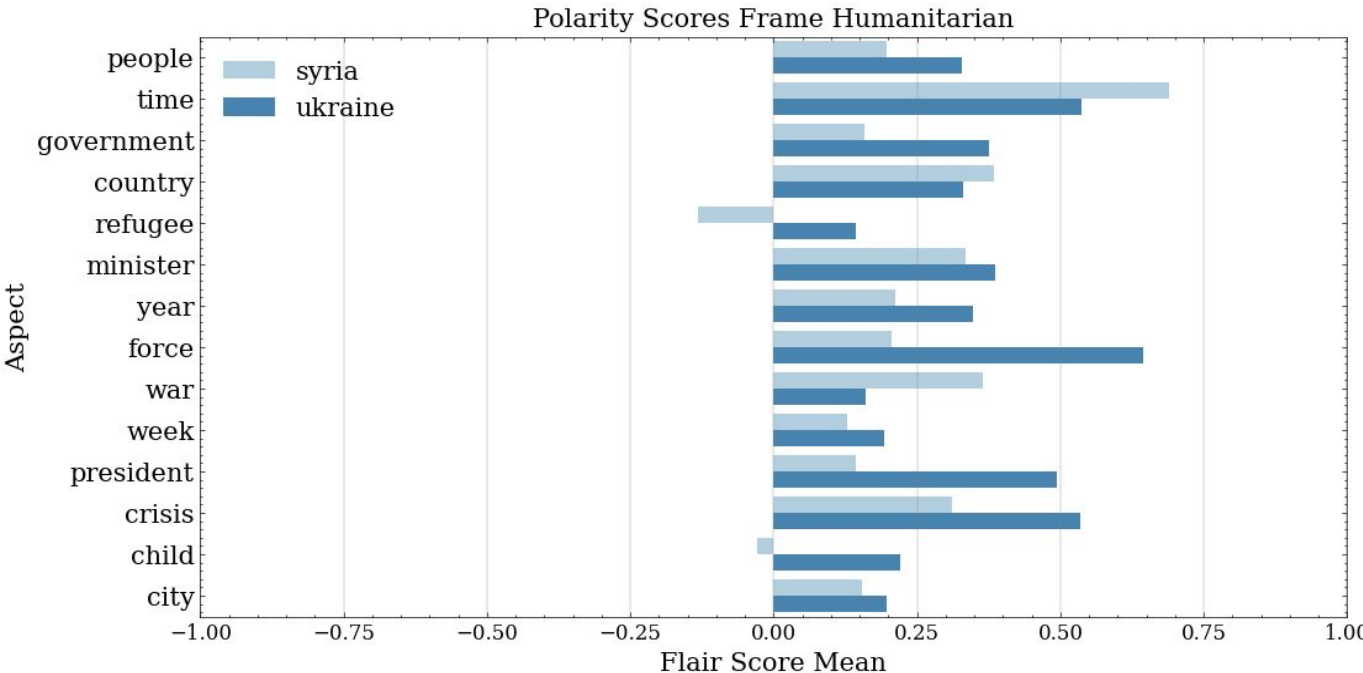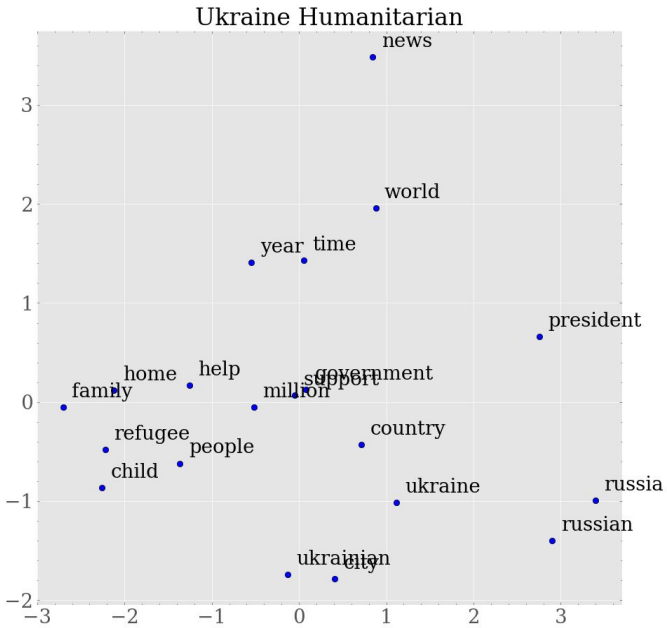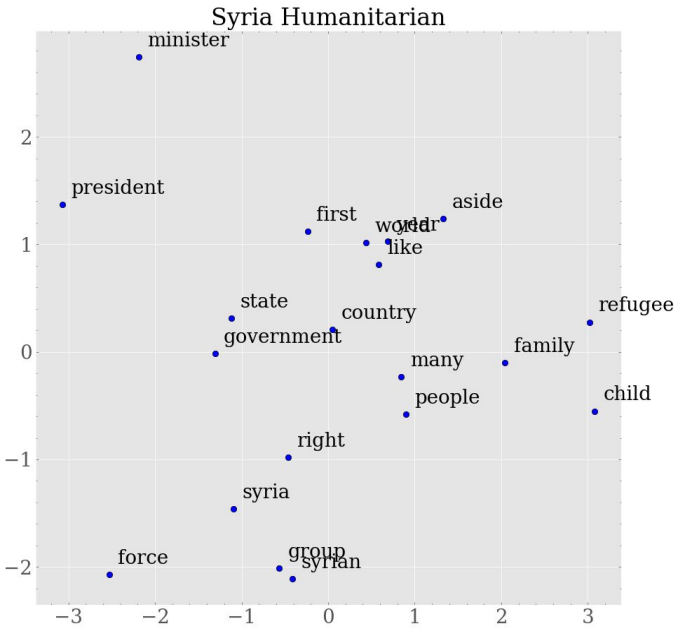
ABSA non matching aspects

Table. 15 Non-matching Aspects from the Aspect Based Sentiment Analysis

	Displacement	Violence	Political	Humanitarian
Syria	government, state, group, minister, right, border, world, leader	group, government, right, army, action, regime, year, protest	right, group, regime, state, policy, event	group, right, event, leader, party, state,
Ukraine	ukraine, president, invasion, region, official, news, troop, child	ukraine, troop, missile, mariupol, region, invasion, soldier, aid	ukraine, invasion, city, sanction, month, system	ukraine, invasion, day, weapon, official, support

Result -
Frame Distribution

Frame Distribution Syria

Frame Distribution Ukraine