Unveiling Discursive Dynamics in Political Communication Networks: Exploring Syrian and Ukrainian Refugee Influx Discourse through Mixed-Methods on Social Media

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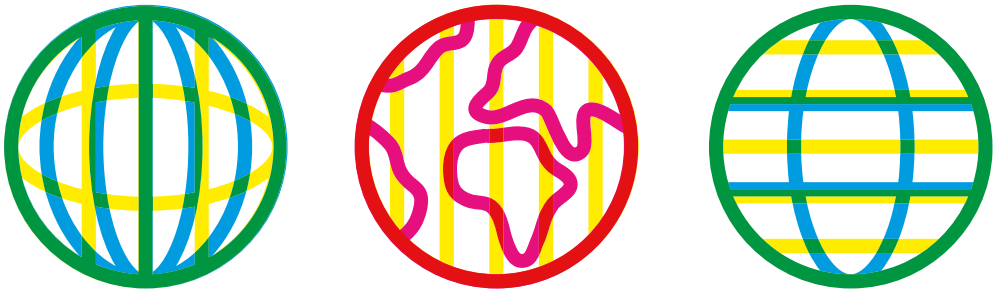

Unveiling Discursive Dynamics in Political Communication Networks: Exploring Syrian and Ukrainian Refugee Influx Discourse through Mixed-Methods on Social Media

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Abstract

Through the integration of a mixed-methods approach, this study embarks on an exploratory journey, delving into the intricate dynamics that drive the political discourse surrounding refugee influxes. It operates at both the informational flow and textual levels, dissecting the pivotal occurrences of two crucial events. Focusing on the Syrian and Ukrainian refugee waves, which peaked in September 2015 and March 2022 respectively, our research capitalises on the capabilities of the Twitter API, facilitating the collection of approximately 800,000 tweets. In its initial stage, retweets were transformed into a network structure, enabling a comprehensive analysis of the framework and identifying influential nodes within it. Subsequently, using a community detection algorithm, the data is segregated into clusters. Concurrently, a corpus-assisted linguistic analysis was conducted on the complete collection of retweets emanating from the principal pro and anti-groups and country-based corpora. The specific subject of focus within the analysis was the concept of “help”, facilitated through the use by the SketchEngine tool. The outcomes of our network analysis reveal that the online anti-refugee community is comparatively smaller, yet more dynamic and transnational, setting it apart from its counterparts. Meanwhile, the results of the corpus linguistic analysis indicate that certain terms like “Hilfe”, “Understützung,” and “Mensch” align with pro-refugee sentiments, while others like “Platz”, “Wohnung,” and “Arbeit” highlight concerns among opponents. Financial considerations and negative connotations are also evident in the language used, suggesting varied perspectives on refugee reception and integration. These insights underscore the importance of amplifying pro-refugee voices on social media and advocating for the enhancement of moderation practices for a more inclusive virtual public sphere.

Keywords: Refugee, Social Network Analysis, Corpus Linguistics, Germany, Austria, Twitter, X


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1. Setting the Scene

In an era marked by widespread displacement driven by conflict, instability, and socio-political turbulence, the communication routes dictating societal responses to these crises have become immensely important (Atwell Seate & Mastro, 2016; Graf et al., 2020). The increasing integration of media into daily life, combined with the rapid adoption of digital communication, accentuates the need for media scholars to examine social media closely (Finnemann, 2014). These developments call for a comprehensive investigation into how people interact with and are impacted by digital platforms. Moreover, this inquiry extends to understanding the wider consequences for media consumption, information sharing, and the dynamics of society at large (McCann et al., 2023). Against this backdrop, this study undertakes an in-depth exploration of the German-speaking Twittersphere, delving into the realm of political communication networks during two pivotal refugee movements—the Syrian refugee crisis of 2015 and the Ukrainian refugee influx of 2022. These two distinct refugee waves serve as critical junctures to dissect the role of social media platforms in shaping public discourse, perceptions, and responses towards refugees.

In this context, digital platforms like Twitter (recently renamed as X) have emerged as important arenas for public discourse, news propagation, and interactions among various actors from different backgrounds (Bruns & Burgess, 2015; Casero-Ripollés et al., 2022; Dehghan, 2018; Deng & Yang, 2021; Seabold et al., 2015; van Klingeren et al., 2021). The footprint of these conversations enables data-driven studies of these communication networks at scales that were not possible before. This caused a “computational turn” in communication sciences, propelling the field into uncharted territories (Burgess & Bruns, 2015). By employing network analysis, social media data analysis and computational corpus linguistics methods, the study aims to unravel the intricate interplay between communication networks and the reception of refugees, offering a nuanced understanding of how political communication unfolds in the digital age (Crosthwaite, 2023; Froehlich et al., 2020; Rogers, 2019).

This study’s focus is on the German-speaking Twittersphere. Germany’s selection as a focal point arises from its large population, its dynamic public discourse, influential role within the European Union, and pivotal decisions in refugee policy at critical junctures. During the height of the 2015 refugee wave, Germany embraced an inclusive approach, opting to shelter a substantial number of displaced individuals (Hamann & Karakayali, 2016). Chancellor Angela Merkel’s decision to keep Germany’s borders open and accept a significant influx of refugees was considered controversial by some other EU-members. This policy trajectory eventually culminated in the EU-Turkey agreement, aimed at containing refugee movement beyond Europe’s borders. In contrast, the Austrian government adopted a more cautious and restrictive approach, implementing stricter border controls and focusing on limiting the number of refugees entering the country. This approach reflected a more restrained response to the crisis compared to its more open stance in previous years, while also aligning with the broader EU strategies (Rosenberger & Müller, 2020).

2. Political Responses to Refugee Influxes: A Comparative Analysis

In recent years, Europe has encountered two significant waves of refugee influxes. The first was ramped up after the Syrian Civil War broke. This conflict led to a widespread displacement of Syrians fleeing violence, persecution, and the destruction of their homes. Many sought refuge in neighbouring countries, while others embarked on perilous journeys to Europe. In 2015, Europe experienced an unprecedented influx of refugees. To manage the situation, the EU initially closed its borders to refugees and later reached an agreement to host them in Turkey to curb border crossings (Karasapan, 2022).

The refugee crisis had significant political implications for Germany, sparking debates among the country's major political parties. As a substantial destination for migrants from various regions, Germany faced substantial challenges in handling the crisis and addressing escalating humanitarian needs. Germany's response to the refugee crisis was characterised by the "Willkommenskultur," symbolising its open-door policy toward refugees (Hamann & Karakayali, 2016). Led by Chancellor Angela Merkel, the German government adopted a relatively compassionate approach, welcoming a considerable number of refugees. However, this welcoming stance also ignited discussions both within and outside the country's political arena. Merkel's Christian Democratic Union (CDU) and its Bavarian counterpart, the Christian Social Union (CSU), supported the government's open-door policy but encountered criticism from within their own ranks, particularly from the CSU. The SPD, as part of the coalition government, backed the humanitarian approach led by Chancellor Merkel and the CDU/CSU coalition. However, there were internal debates within the SPD about balancing humanitarian concerns with effective integration measures. Die Linke (The Left) also generally endorsed the concept of an open-door policy for refugees, though internal discussions took place within the party about addressing the socio-economic challenges tied to refugee integration. The FDP (Free Democratic Party) advocated for a controlled and organised approach to managing the refugee crisis, expressing concerns about potential strains on public resources and services due to the high number of arrivals. Meanwhile, Alternative for Germany (AfD) vehemently opposed the acceptance of refugees and called for stricter border controls. The party advocated for measures to limit immigration and prioritise national security (Medina Serrano et al., 2019; Strauß, 2017).

During the 2016 refugee crisis, Austrian political parties exhibited a variety of stances (Mertens et al., 2021). The Austrian People's Party (ÖVP), a centre-right party, endorsed a cautious strategy, emphasising stricter border controls, security, and national interests (Josipovic et al., 2023; Thiele et al., 2022). The Social Democratic Party of Austria (SPÖ), a centre-left party, aimed to harmonise humanitarian concerns with effective crisis management. They highlighted European cooperation for comprehensive solutions. The Freedom Party of Austria (FPÖ), a right-wing populist party, staunchly opposed the refugee influx. They critiqued the government's crisis-handling, expressing worries about security and resource strains. The refugee crisis played a significant role in boosting FPÖ's popularity, ultimately contributing to its ascent to power with Sebastian Kurz as its leader. Conversely, The Greens (Die Grünen) generally supported a humanitarian approach, stressing solidarity, human rights, and international obligations. NEOS, the New Austria and Liberal Forum, a liberal party, emphasised a

balanced and rational response. They advocated for efficient registration, fair asylum procedures, and integration efforts.

On February 24, 2022, the invasion of Ukraine by Russia triggered a significant surge in refugee movements. Approximately 20 million refugees fled Ukraine and 8 million of whom is seeking refuge across Europe (World Health Organisation, 2023). By March 20, 2022, around a quarter of Ukraine's population had been uprooted, marking Europe's largest refugee crisis since World War II (Bathke, 2023). In response, the EU invoked the Temporary Protection Directive, granting Ukrainians the right to reside, work, and study in member states for an initial year (Esposito, 2022; Karasapan, 2022). Notably, this time, the majority of European political powers supported the refugees, even including political parties historically known for their anti-migrant stances, such as the ÖVP, which remains in power in Austria. Certain cultural and religious similarities, combined with opposition to Putin's actions, may also have contributed to the greater acceptance of Ukrainian refugees among the European population (De Coninck, 2023). While refugee integration has been explored across various social contexts, the variations in reception prompt the following inquiries:

RQ1a: How did political communication networks differ between the 2015 Syrian and the 2022 Ukrainian Refugee Influxes?

With the rise of anti-immigration parties propagating disinformation and conspiracy theories, there is an expectation of heightened polarisation within social media networks. This polarisation in contentious topics on social networks has already taken root, and existing literature suggests that this fragmentation is likely to intensify over time. Additionally, particularly far-right political figures leverage these polarizing themes to expand their influence through vigorous social media campaigns, often surpassing traditional parties. However, shared characteristics between refugee and host-country populations might mitigate polarisation within social networks. Although certain anti-immigration parties have altered their stances due to the Ukrainian refugee crisis, leading to a nascent political consensus on Twitter, noteworthy exceptions include far-right parties that maintain pro-Russian positions, thus influencing perceptions of refugees. Notably, while figures like Salvini, a prominent Italian far-right politician, have shifted their stances, the German AfD party remains unaltered (Burchard, 2023; Karasapan, 2022; Roberts, 2022). These divergent tendencies complicate the assessment of whether polarisation on the network has heightened in 2022 with regards to this specific topic.

R2a: What is the community structure within communication networks?

The application of social network analysis in communication science involves repurposing social network theory concepts to analyse network partitions referred to as communities (Bruns, 2023; Freelon, 2020). These communities comprise nodes and edges, where nodes represent users or linguistic features such as links, hashtags, or named entities in text. Edge relationships signify connections, such as user A retweeting user B, indicating support. Community detection algorithms, prevalent in communication sciences, identify closely communicating nodes to compare group behaviour and symbolic content. Therefore, analysing community structures becomes imperative for assessing group sizes, identifying pivotal nodes, and estimating group stances to gauge public opinion within Twitter communication networks (Bainotti & Rogers, 2022). Additionally, analysing the transnational aspect of networked communication through user location data is essential. While optimistic political theories foresee transgressions of identity boundaries through online communication, some studies critique techno-deterministic approaches and posit that online networks mirror offline relations (Dunbar et al., 2015). Another interesting question we would like to address is to determine whether community

divisions identified in the network analysis correspond to national distinctions. This investigation prompts the following question:

R2b: To what extent is the networked communication on Twitter transnational?

Addressing this inquiry will shed light on the extent of transnational collaboration and support among various groups across borders (Dahlberg-Grundberg et al., 2016). This insight can hold significant value for NGO's and politicians aiming to design effective social media campaigns that resonate across national borders.

As we delve into the analysis of communication networks, our focus will subsequently shift towards scrutinising the content of the messages:

R3: How is the discourse around "helping" in relation to Syrian and Ukrainian refugees within the main pro and anti-groups?

In our corpus-assisted linguistic analysis, we focus on the term "help," which surfaced prominently. This term serves as a compelling starting point for computational analysis to unravel the concerns and ideas of these groups through its associations with other words (i.e., collocations). Discussions related to support might exhibit greater prevalence in the context of Ukrainian refugees compared to their Syrian counterparts. Additionally, we anticipate observing heightened usage of supportive language in relation to Ukrainian refugees compared to Syrian refugees, as well as an increased occurrence of "help" terms within pro-community discussions as opposed to anti-community exchanges. Finally:

R4: How does "helping" in relation to Syrian and Ukrainian refugees differ in Germany and Austrian publics?

We expect the support-related words to be higher in the Ukrainian context as opposed to Syrian one in both target countries.

3. Methodology and Data

Social network analysis (SNA) serves as a widely applied method for investigating polarisation within online social media platforms in communication studies (Adamic & Glance, 2005; Dehghan & Bruns, 2022; Falkenberg et al., 2022; Feller et al., 2011; Vilella et al., 2020). The discourse on migration has attracted considerable attention in SNA. In line with recent communication sciences research, this study adopts a mixed-methods approach to analyse social media data. First of all, we focus on network community structure and nodal metrics to determine network polarisation and then influential users. Then we will employ community detection to find network partitions and their interactions. We employ descriptive network statistics, visual analysis methods, and data-driven textual analysis of user and tweet metadata to comprehend complex communication network that happened on Twitter in August 2015 and March 2022, two one-month periods where the discussions on refugees on social media peaked.

In the second part of our analysis, we will zoom into the two biggest and opposing communities and analyse their text messages using computer-assisted corpus linguistics methods. This approach involves using computational methods to analyse large collections of text, known as corpora, to uncover linguistic patterns, trends, and insights. In communication sciences, particularly in the realm of politics, this approach is employed to examine and understand how language is used in political discourse, public communication, and media. This method helps reveal nuances in political messaging, ideologies, and public opinion, providing valuable insights into how language shapes political narratives and influences public perception (Bosco et al., 2016; Crosthwaite, 2023). In our research, we will focus on a word that emerges frequently, “Hilfe”, and its associations within the years 2015 and 2022, and in both pro and anti-communities. Our aim is to analyse the discourse surrounding assistance to refugees and the sentiment of sympathy or caution expressed towards Syrian and Ukrainian refugees in social media messages.

This study takes an exploratory approach to examine changes and patterns in communication networks concerning the Ukrainian and Syrian refugee crises. Our primary focus is on the retweet network structure, which serves as a clear indicator of positive user relations and content approval (Ahn & Park, 2015; Freelon, 2020). Our research workflow involves several key steps: data collection via the Twitter API, data cleaning, and extraction of location attribute using custom Python scripts. Subsequently, we construct the network, apply community detection algorithms, and identify influential users. Further qualitative community labelling is conducted, followed by meso-level network analysis encompassing aspects such as community size, internal ties, and average degree by community. Additionally, user geolocation data is leveraged to perform an analysis of the national composition. More information on our data collection can be found below.

Table 1. Information on the collected data

	Syrian-related Communication Dataset	Ukrainian-related Communication Dataset
Total number of Tweets	551,873	236034
Retweets	88023	101621
Quoted	1908	3453
Replies	7753	28756
Original Tweets	454189	102204

Table 2. User geolocation distribution

User Geolocation	Syrian-related Communication Dataset	Ukrainian-related Communication Dataset
Germany	38,056	31,274
Austria	2,953	2,342
Switzerland	2,357	2,396
Total User Data (with or without geolocation)	96,230	88,354

Networks are constructed with users as nodes and retweets as directed, weighted ties. The Louvain algorithm, known for its efficiency in detecting dense interconnection sets, aids in community detection. Visualisations are executed using Gephi, while weighted indegree centrality identifies influential nodes. Our dataset encompasses the period from 27 July 2015 to 1 September 2015 for the Syrian Refugee Crisis, the peak of the news about media due to tragic death of many refugees int his period. For the Ukrainian case, data spans from 24 February 2022, the start of invasion to 1 April 2022, where the discussion about Ukrainian refugees slowly started to fade away. Refined queries were used to collect pertinent data, excluding indirectly related events. The dataset construction methodology and queries are accessible through the first author's GitHub repository.

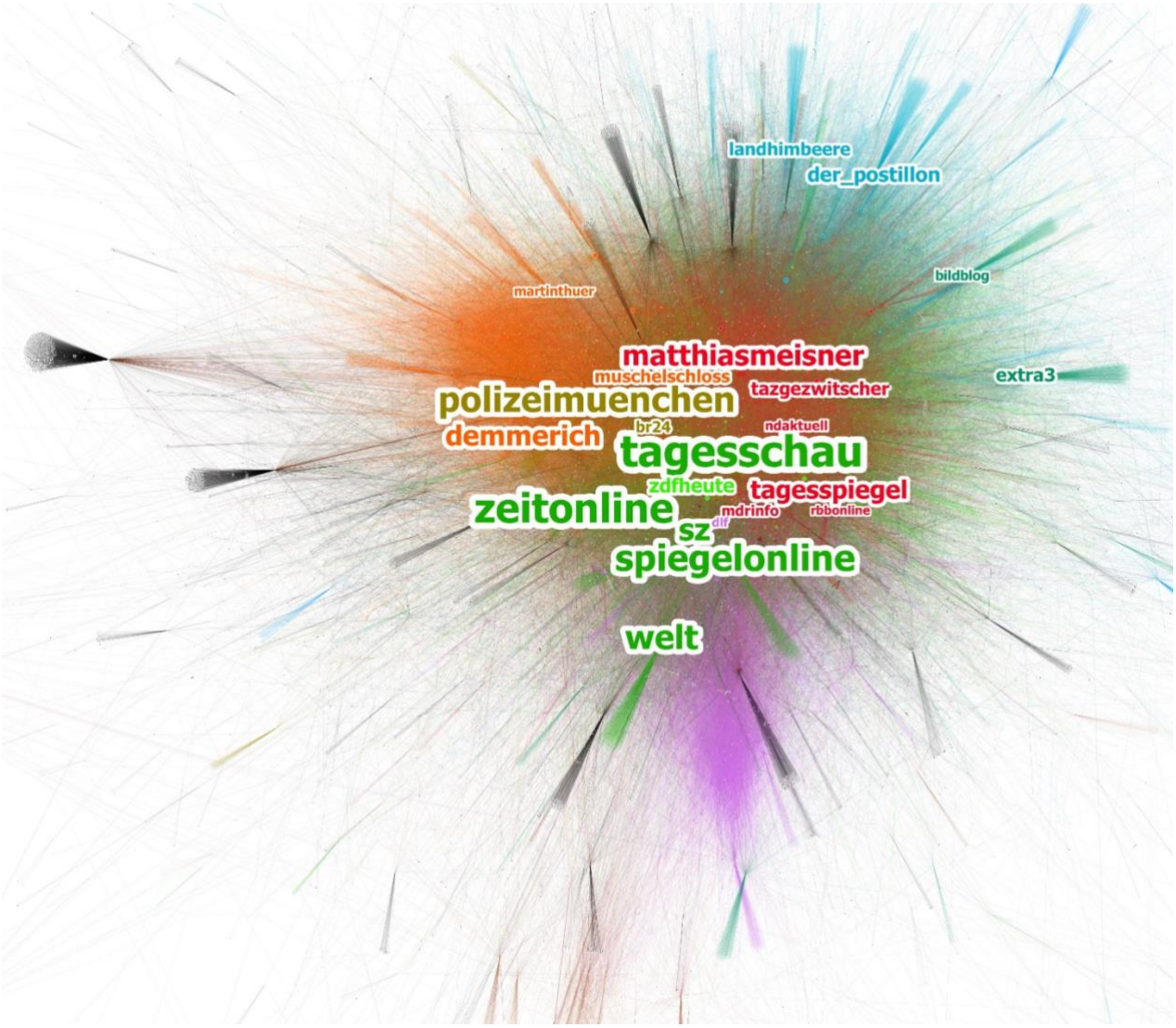
4. Results I: Social Network Analysis

Table 3 provides important descriptive network statistics and then Graph 1A and 1B are the visualisations of both networks (the networks themselves will be referred to as N1 and N2 from now on):

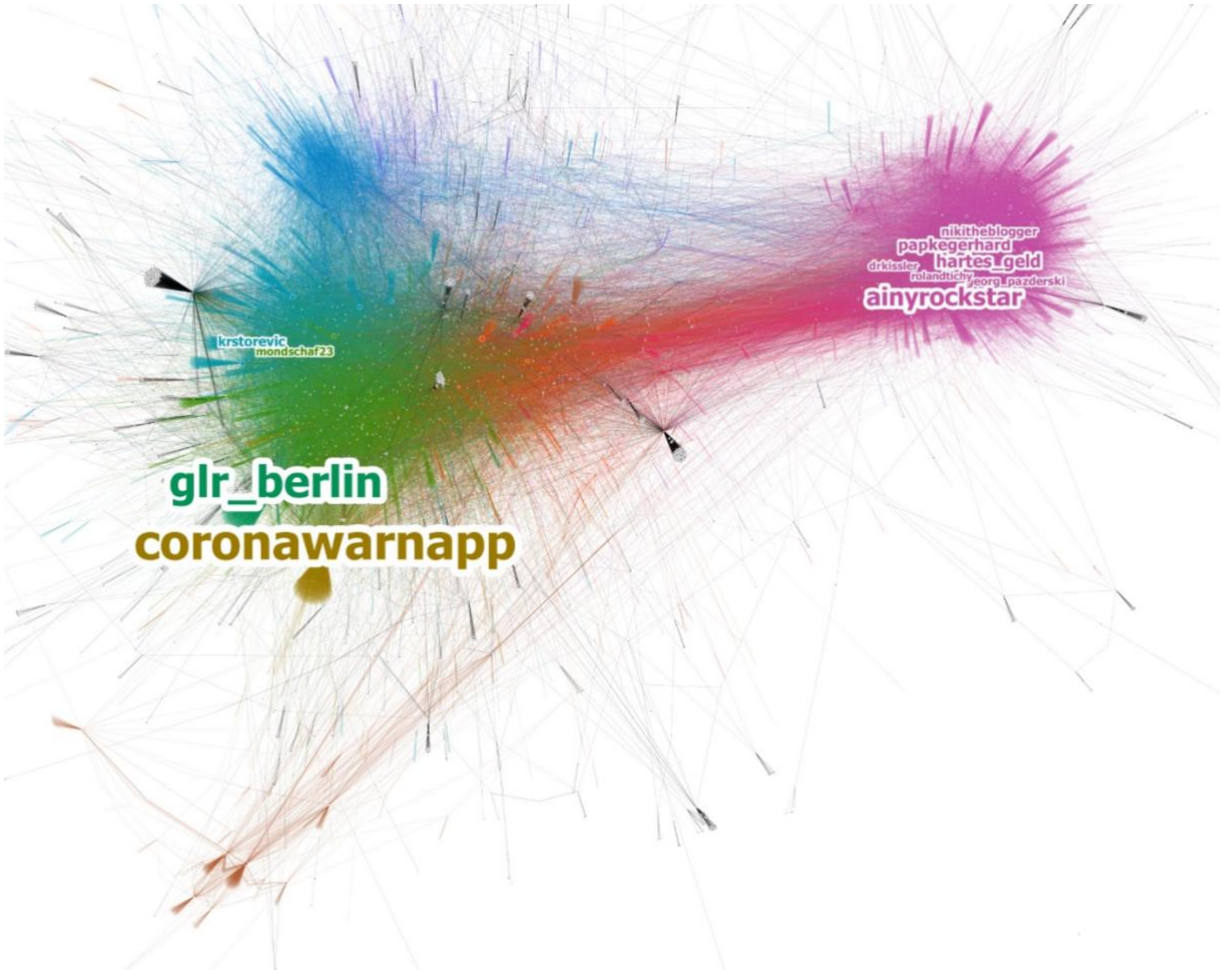
Table 3. Descriptive network statistics

	SYRIAN-NETWORK (N1)	UKRAINIAN-NETWORK (N2)
NODES	64.438	57,919
EDGES	200.070	129,426
Average degree	3,1	2,24
Average Weighted Degree	4,4	2,5
Modularity	0,477	0,63

Graph 1A. The Syrian Refugee Network



Graph 1B. The Ukrainian Refugee Network



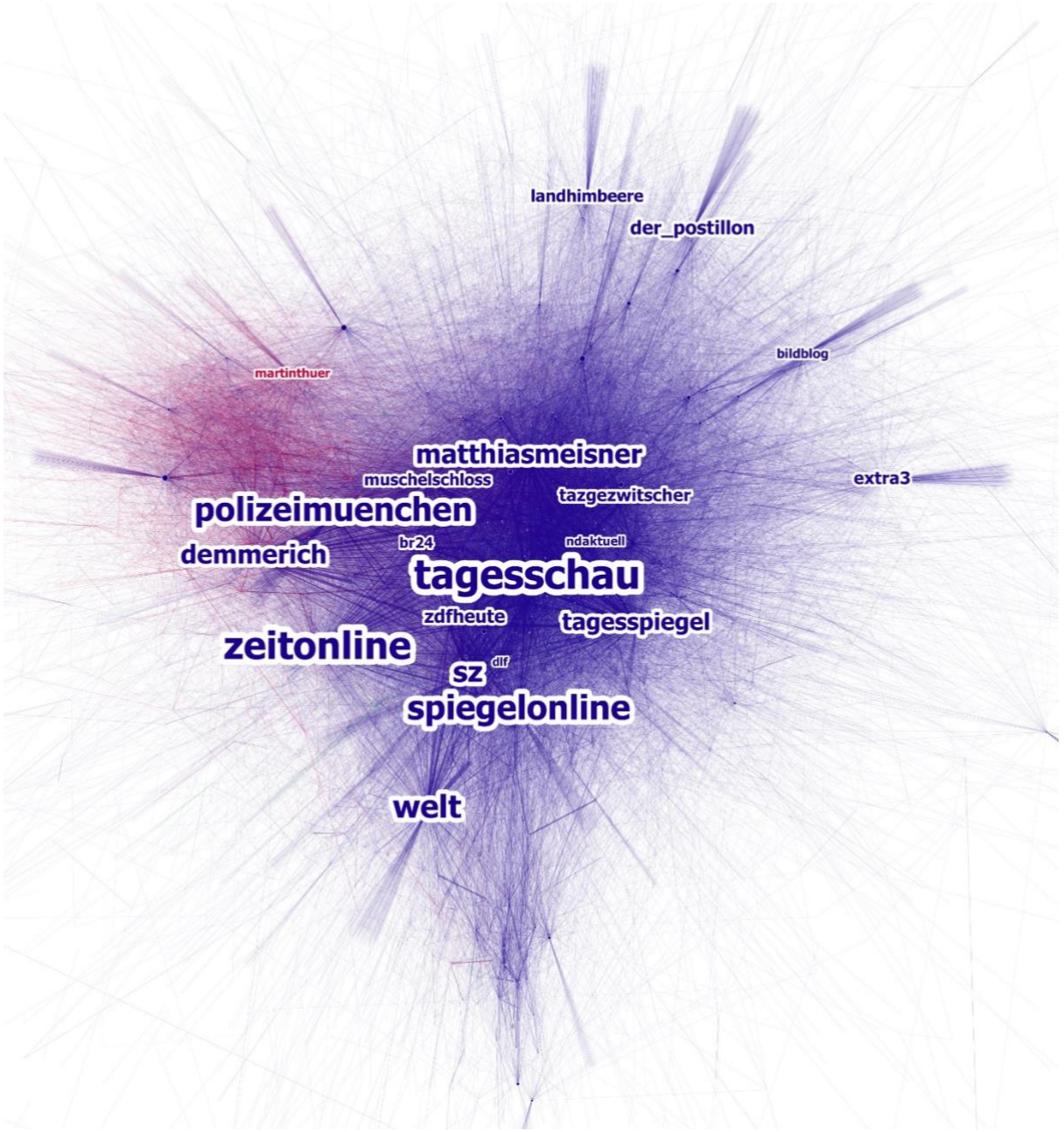
The generated networks are partitioned into communities and coloured based on that information. The partitioning is done by the Louvain algorithm, which optimises a score called modularity by ensuring that the density of ties between nodes in one modular category is higher than the density of ties to its outside. It is a randomised algorithm with iterative operation to ensure the best possible modularity. It is highly popular among SNA studies and the default algorithm of Gephi, a state-of-the-art visual network analysis tool. The visualisations are produced by the Force Atlas 2 a layout algorithm that aims to organise and position nodes (individual entities in a network) in a two-dimensional space based on their relationships and connections with other nodes, with the goal of creating a visually interpretable representation of the network's underlying structure. The ForceAtlas2 algorithm is particularly useful for visualizing complex networks because it tends to create clear clusters of nodes that are related to each other, as well as emphasizing central and well-connected nodes.

As the visuals show N1 is less polarised compared to N2. This is a rather surprising result given the fact that Germany was one of the countries in which refugees and immigration was and still is an important topic in politics. However, there might be some reasons why 2015 appears to be less polarised: People might not have talk about this issue online. People might have dissed this issue on other platforms. Finally, main parties and politicians who capitalise on anti-migrant and refugee sentiments were not active yet on Twitter. There is certain evidence to the latter as the Twitter account of AfD was opened in 2017. Therefore, back then there was less diversification among the consumers of online news and media among Germans in terms of sources and domains. In N2 the network looks like as we expect. A rather stretched out polarised and dual-centred graph with some connecting nodes and ties between the opposing communities. In Graph 1A: the nodes that are on the upper side of the graph (in light blue) contain the main anti-refugee group. Similarly in Graph 1B, the anti-refugee group is on the right side (purple). The pro-refugee (biggest) groups are at the centre bottom of the graph in 1A and at the left bottom in 1B side. In Graph 2B we also detected on the upper left side (light blue) community which consist of nearly exclusively Austrian accounts and the (yellow) community that is in the bottom left side of the graph that consist of covid related information sharing messages. Except the latter we are interested in all of these communities and, we will employ corpus linguistic analysis to understand their meanings.

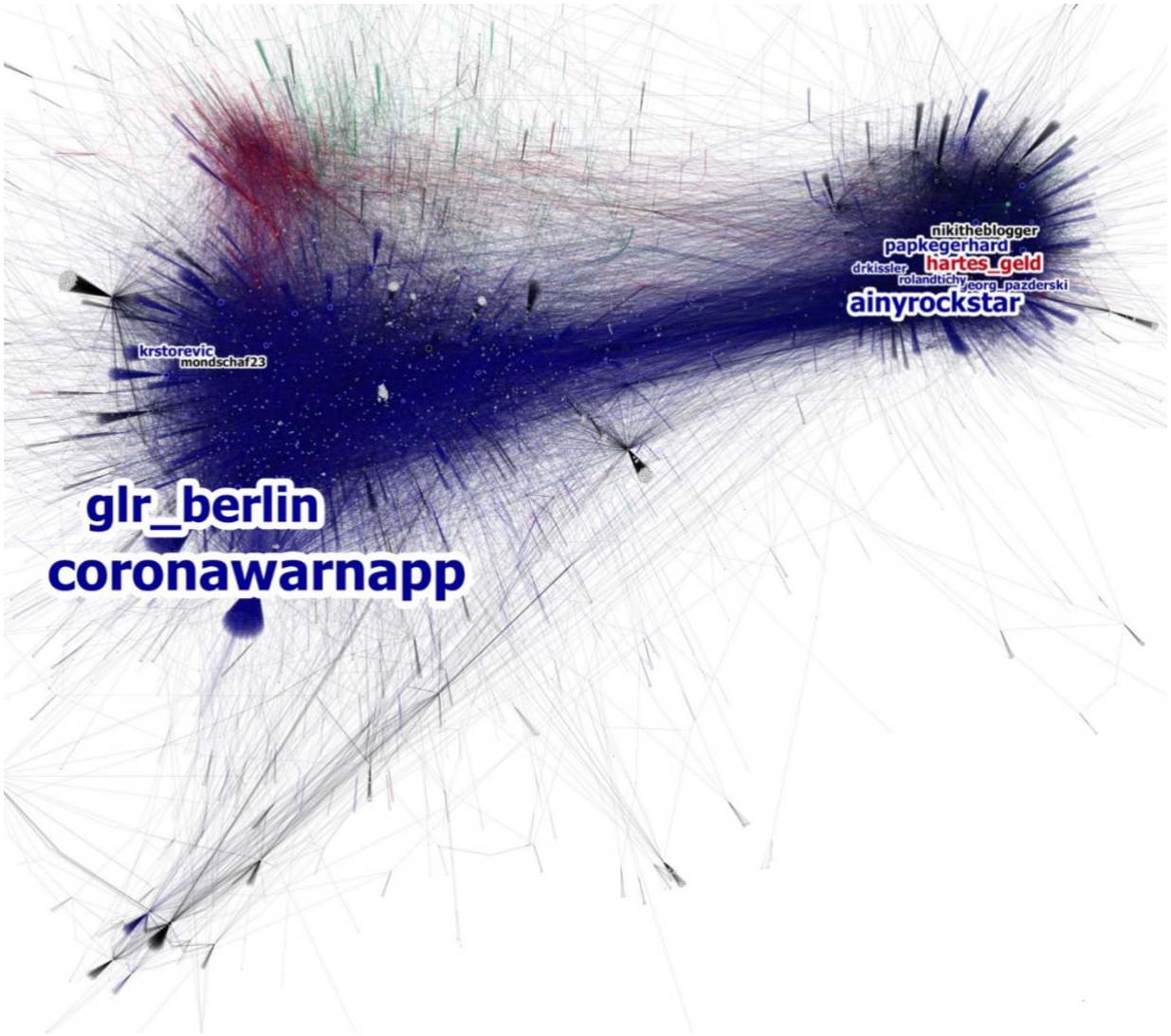
The fact that Austrian community appears to be next to the pro-refugee communities (and neutral users and communities) is rather suspicious. Where are the Austrian anti-refugee voices of Austria? To answer these questions, we generated Graphs 2A and 2B. They keep the same layout; however, they are now coloured based on the geolocation of the user (node). This resulted about 50 percent reduction in the number of users we include in our visualisation (see Table 2 for details). While we have much smaller number of users from non-German countries. They clearly form their own communities, at least those who are pro-refugee or neutral. Especially in 2022 we see that there are Austrian users among the anti-refugee community (right part). This group retweets their opinion leaders constantly and one of them is an Austrian conservative account.

Our analysis shows us that the users who have or approve anti-refugee ideas (the right side of the graphs) are, somewhat unintuitively, are rather more transnational in their connections. Graph 2A and 2B show N1 and N2 colored according to the country of origin of users (who have geodata). In graphs 2A and 2B, German users are colored blue, Austrians are red and Swiss users are green. The issue networks about refugee influxes in German language show more of national character among the users who are pro-refugee or neutral about the issue. They might prefer to share news related to their own national context, while the users on the opposite side retweet each other more (Bruns, 2023; Münch, 2019). The transnational connections of the populists seems to happen after 2015, see for example the influential Austrian user among the anti-refugee community in Graph 2B. Such transnational cooperation among members of a shared political stance can help push their agenda onto new users, grant them visibility via Twitter's recommendation algorithm and finally perhaps even consolidate the offline friendship and ties among the people of similar opinion.

Graph 2A. Location-based visualisation of N1



Graph 2B. Location-based visualisation of N2



Overall, our network analysis shows that while N1 was rather more connected in terms of information and sources sharing, resembling a community whose members were in discussion and not in their own words. The N2 looks much closer to other studies, where polarised virtual public spheres are disturbed by populist users, who use their retweet and virality tactics to propagate their ideas. In this sense RQ1 is answered in positive. As the change is significant in 7 years. The community structure is interesting (RQ3A and RQ3B) as the German anti-refugee organisations and influencers are rather mixed with their Austrian (and for that matter Swiss) friends.

5. Results II: Corpus-assisted text analysis

Concurrently we conducted a corpus-assisted text analysis to compare tweet messages from four different groups. Additionally, we examined the content of these tweets using corpus linguistics. As mentioned in the methodology part, we chose the messages of the biggest groups at the opposite ends of the polarisation for the automated text analysis. We established a corpus of 352,918 words, encompassing tweets from individuals who express positive views about Syrian refugees (27,211 words), those who express negative views about Syrian refugees (154,548 words), individuals who speak positively about Ukrainian refugees (59,225 words), and those who speak negatively about Ukrainian refugees (111,934 words).

Our focus was on the word “Hilfe” (help), as it encapsulates the core of the refugee issue: how do individuals in Western Europe provide assistance to those in need from Syria or Ukraine? Using the Sketch Engine tool, we examined collocative patterns. A ‘collocation’ refers to the habitual co-occurrence of a word with other words, beyond what can be attributed to chance. To present these patterns, Sketch Engine generated ‘word sketches’—summaries of words frequently found together in sentences (Kilgarriff & Tugwell, 2002).

Furthermore, we employed the ‘thesaurus score,’ a rating ranging from 0 to 1 that evaluates the extent to which words share the same collocates. We compiled lists of words with high thesaurus scores compared to other words. This approach helps us gauge word similarities based on their shared contexts, as words with similar contexts tend to have similar word sketches (Herman et al., 2019, p. 87).

Kilgarriff et al. (2014, p. 14) provide an illustrative explanation of a thesaurus score: "The Sketch Engine compiles a 'distributional thesaurus' based on common collocations. If two words share many collocates, they will appear in each other's thesaurus entry. For example, if instances of both 'drink tea' and 'drink coffee' are found, it suggests that 'tea' and 'coffee' are similar because they share the collocate 'drink' (verb) in the OBJECT-OF relation. Through extensive calculations for all word pairs, we determine the number of collocates they share, and the most shared ones (after normalisation) form a word's thesaurus entry."

The visualisation generated by Sketch Engine takes the form of a "bubble chart." Words nearer to the central word "Hilfe" possess higher thesaurus scores. Words printed in larger fonts are those frequently mentioned in the corpus. The colours used are for illustrative purposes only.

Figure 1. Collocations of "Hilfe" in the German tweets about the Syrain and Ukrainian refugee situation

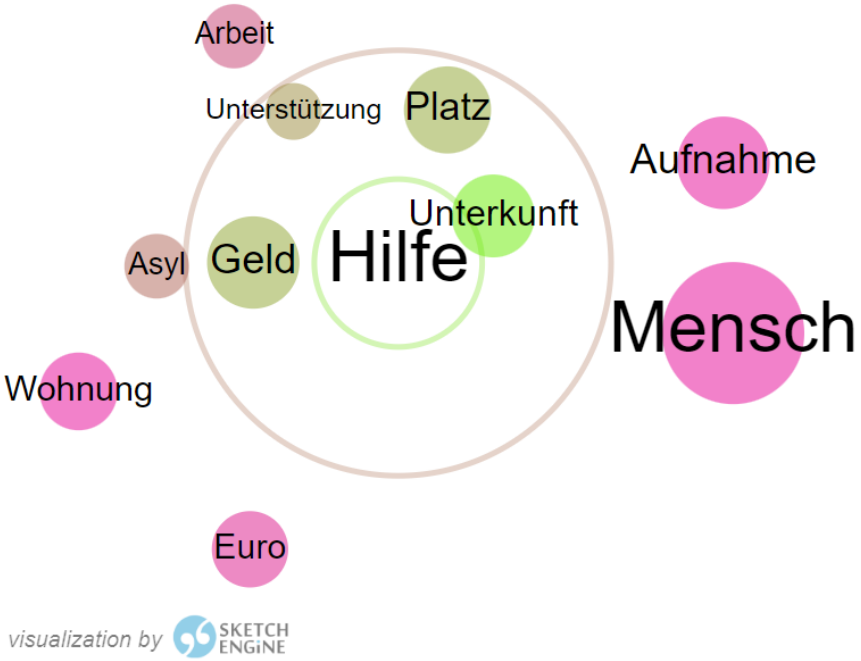


Table 4. Similarity scores for the word "Hilfe"[1]

	Lempos	Frequency ?	Similarity ? ↓	
1	Unterkunft	228	0.255	...
2	Geld	295	0.224	...
3	Platz	257	0.224	...
4	Unterstützung	88	0.213	...
5	Asyl	123	0.196	...
6	Arbeit	121	0.179	...
7	Euro	187	0.161	...
8	Aufnahme	296	0.154	...
9	Wohnung	195	0.153	...
10	Mensch	789	0.153	...

Subsequently, we conduct a detailed analysis of these eleven words—the ten words bearing the closest resemblance to the term "Hilfe" and the word "Hilfe" itself. Our goal is to determine which groups of tweeters employ these words more frequently in relative terms. To delve into this, we tallied the occurrences of these 11 words within each group and assessed the proportion of mentions for each word within each group. This approach allows us to pinpoint which group of tweeters predominantly employs specific words and thus make an estimation regarding the overall tone of the discourse.

[1] Lempos is a technical term in Sketch Engine to account for the fact that other grammatical versions of a word, such as plural versions or case versions (such as the genitive form in German) are also counted as instances of the original word. (*Lempos | Sketch Engine*, 2016).

Table 5. Percentage of total words investigated for each word in every community

Word	Pro-Syria	Anti-Syria	Pro-Ukraine	Anti-Ukraine
Hilfe	15.11	11.35	15.64	10.47
Unterkunft	5.33	6.72	8.69	8.72
Geld	11.56	12.11	6.15	10.36
Platz	5.33	6.81	4.68	15.05
Unterstützung	2.67	1.51	5.75	2.51
Asyl	7.11	7.1	1.07	2.73
Arbeit	4	5.77	3.61	2.62
Euro	4.89	12.11	2.01	3.6
Aufnahme	4	12.02	8.42	10.58
Wohnung	2.22	9.74	4.01	6.22
Mensch	37.78	14.76	39.97	27.15

At the table's forefront, the word "Hilfe" itself takes prominence. This term is predominantly employed by tweeters who advocate in favour of supporting refugees. This holds true for both those advocating for Syrian reception (15.11%) and those endorsing Ukrainian reception (15.64%). However, among migration opponents, the use of "Hilfe" is notably less frequent. For those opposing Syrian migration, the term "Hilfe" accounts for only 11.35% of the examined words, whereas for those against Ukrainian migration, this figure drops further to 10.47%.

The word "Unterkunft" (Accommodation) takes on a more neutral stance, appearing evenly among both migration supporters and opponents. Interestingly, its usage is more prevalent in the context of Ukrainian migration (8.69% in the pro-Ukrainian group and 8.72% in the counter-Ukrainian group) compared to Syrian migration (6.72% in the anti-Syrian group and 5.33% in the pro-Syrian group). This variance might indicate a greater willingness among Germans to offer private shelter to Ukrainian refugees, potentially due to a heightened sense of ethnic affinity with them.

This assumption could also elucidate a reverse trend concerning the slightly lower placement of the term "Asyl" (Asylum) in the table. "Asyl" references the formal process of accepting refugees, while "Unterkunft" underscores the supportive role played by the German public. "Asyl" comprises 7.11% of the words used in pro-Syrian tweets and 7.1% in anti-Syrian tweets. However, these numbers drop significantly within the Ukrainian context, with 1.07% in the pro-Ukrainian group and 2.73% in the counter-Ukrainian group. An alternative explanation is that Ukrainian refugees, given European protection, might require less reliance on the formal asylum procedure.

Moving forward, let us delve into the words "Geld" (money) and "Euro." These terms pertain to the financial implications of hosting refugees. The frequency of these words, "Geld" and "Euro," increases in contexts marked by a prevailing negative sentiment towards migration. For instance, consider this disgruntled tweet: "Welcome to Stupid-Germany! We have enough housing, money and above all.... Idiots." The anti-Syrian group employs "Geld" and "Euro" most frequently (12.11% for "Money" and an equal percentage for "Euro"). Conversely, the pro-Ukrainian group uses these terms less often (6.15% for "Money" and 2.01% for "Euro"). The pro-Syrian group (11.56% for "Geld" and 4.89% for "Euro") aligns more closely with the anti-Syrian group than the anti-Ukrainian group (10.36% for "Geld" and 3.6% for "Euro").

The term "Platz" (place) can assume both neutral and pejorative connotations. In the pejorative sense, it refers to space being occupied that should be available for the native population. This negative connotation is evident in tweets like: "Homeless Karl [native homeless person], long celebrated as an idol by enthusiastic Samaritans, makes way [Platz] for refugees -..." and "City of #Lübekke closes #Realschule [vocational school in Germany] - no classes because space is needed for #refugees." "Platz" is more prevalent in the anti-groups, particularly in the anti-Ukrainian group (15.05%), as well as in the anti-Syrian group (6.81%), compared to the pro-Syrian (5.33%) and pro-Ukrainian groups (4.68%).

The term "Unterstützung" (support) brings forth a distinct focus on the refugees who require assistance. Although not extensively used overall, it constitutes 5.75% of the words in the pro-Ukrainian corpus and 2.67% in the pro-Syrian corpus. In the anti-Ukrainian corpus, "Unterstützung" accounts for 2.51% of the words, and in the anti-Syrian corpus, merely 1.51%. Illustrative tweets from the pro-Ukrainian corpus include: "Dear ‘Law Bubble incl.’ students, Ukrainian refugees also need legal support. Who among you possesses knowledge in Refugee Law and a few hours in the upcoming weeks for pro bono work?" and "Today the six refugees come from Ukraine, they get a visa for 90 days but no financial support. I'm angry right now."

While support is extended by the German population to refugees, "Arbeit" (work) can be interpreted as something refugees owe to the German people. For instance: “It is unbelievable, first of all you should make sure that the refugees who are already here are integrated (housing + work) or sent back." This emphasis is particularly pronounced among opponents of Syrian migration (5.77%). It holds less prominence within the pro-Syrian group (4%), the pro-Ukrainian group (3.61%), and even less among the anti-Ukrainian group (2.62%).

The term "Aufnahme" (acceptance) also carries a negative connotation, as evident in tweets like: "In Germany, the capacity limit for the acceptance of refugees has clearly been exceeded." This negative connotation is prevalent in the anti-groups, with the highest frequency in the anti-Syrian group (12.02%) and also in the anti-Ukrainian group (10.58%). The pro-Ukrainian tweeters use it to a lesser extent (8.42%), and the pro-Syrian tweeters the least (4%).

The concept of integration into society encompasses the idea of housing ("Wohnung"). While somewhat similar in semantic scope to the previously discussed term "Unterkunft," where the differences among groups mainly align with tweets about Ukraine and Syria, in the case of "Wohnung," we observe its predominant usage in the anti-groups (9.74% in the anti-Syrian group and 6.22% in the anti-Ukrainian group), compared to 4.01% in the pro-Ukrainian group and 2.22% in the pro-Syrian group. An instance of negatively connoted use of "Wohnung" is found in the following example: "In a country where 400,000 housing units are missing, there is also room for millions of refugees...!"

The final word in the table is also the most frequently used one. While the term "Mensch" (human) might appear neutral at first glance, it also reflects a conscious choice to primarily refer to refugees as individuals. "Mensch" constitutes 37.78% of the words used in the pro-Syrian sample and an slightly higher (39,97) percentage in the pro-Ukrainian group. However, anti-Ukrainian tweeters reference refugees as people to a lesser extent (27.15%), and anti-Syrian tweeters use this term the least (14.76%).

In summary, the words "Hilfe," "Unterstützung," and "Mensch" feature prominently in the vocabulary of those supporting refugee acceptance, whereas "Platz," "Wohnung," "Aufnahme," and "Arbeit" are more frequently employed by opponents. "Unterkunft" is more prevalent in tweets concerning Ukraine, while

"Asyl" is more common in discussions about Syrian migration. Financial considerations (reflected in the usage of "Money" and "Euro") are more apparent among migration opponents and tweets about Syria.

Table 6. Percentage of total words investigated for each word in every national group (German-Austrian comparison)

Word	Germany 2015	Germany 2022	Austria 2015	Austria 2022
Hilfe	12.01	12.80	20.44	16.80
Unterkunft	6.47	8.71	2.90	5.96
Geld	12.01	8.47	8.01	4.07
Platz	6.55	10.40	5.79	5.42
Unterstützung	1.72	3.97	4.09	8.67
Asyl	7.10	1.92	8.69	1.63
Arbeit	5.46	3.06	3.07	1.63
Euro	10.84	2.88	8.35	2.17
Aufnahme	10.61	9.62	6.64	17.07
Wohnung	8.42	5.23	1.19	4.34
Mensch	18.80	32.93	30.83	32.25

An additional comparison was made for the same words to check if the Austrian debate has a different emphasis compared to the German debate. Corpus sizes are 181,759 words for the 2015 German corpus and 171,159 words for the 2022 German corpus. The Austrian corpora are 105,998 words in 2015 and 33,821 words in 2022.

Let us start with the three words with a pro-refugee leaning in the former corpus linguistic exercise. We see that “Hilfe” gets mentioned more often in Austria compared to Germany, both in 2015 (20.44% versus 12.01%) and in 2022 (16.80% versus 12.80%). Also “Unterstützung” is used more often in Austria, both in 2015 (4.09 versus 1.72%) and in 2022 (8.67% versus 3.97%). “Mensch” (human being) is also definitely used more often in 2015 in Austria (30.83% versus 18.80%), but very slightly less (32.22 % versus 32.93%) in 2022. In all, it seems that the Austrian debate is somewhat more pro-refugee than the German debate.

The same conclusions apply to the words covering financial considerations (“Geld” and “Euro”). The preoccupation with money is higher in both countries in the period of the Syrian crisis, but Austria has less emphasis on “Geld” than Germany in 2015 (8.01 versus 12.01%) and in 2022 (4.07% versus 8.47%). The emphasis on the word “Euro” is similarly lower in 2015 in Austria (8.35% versus 10.84%) and in 2022 (2.17% versus 2.88%).

Four words we identified in the former corpus linguistic exercise as being used more often in tweets with an anti-refugee stance are “Platz”, “Arbeit”, “Wohnung” and “Aufnahme”. If we follow our reasoning, these words would be used more often in Germany compared to Austria, both in 2015 and in 2022. This is true in most of the cases. “Platz” gets used less often In Austria in 2015 (5.79% versus 6.55%) and in 2022 (5.42% versus 10.40%). The word choice for “Arbeit” is also less pronounced in Austria in 2015 (3.07% versus 5.46%) and in 2022 (1.63% versus 3.06%). The same trend is observed in the decreased occurrence of the term “Wohnung.” In 2015, its use was lower in Austria (1.19% versus 8.42%), and this trend persisted in 2022 as well (4.34% versus 5.23%). Similarly, “Aufnahme” is no exception in 2015 (6.46% appearance in Austria versus 10.61% in Germany). However, contrary to expectations, it is

mentioned in 17.07% of all analysed words in Austria in 2022, while only in 9.62% of all cases in Germany.

Finally, we look at the words “Unterkunft” and “Asyl” that in our analysis of the German case were skewed towards the 2015 debate in the case of the word “Asyl” and towards the 2022 debate in the case of the word “Unterkunft”. “Asyl” is mentioned slightly more in Austria in 2015 (8.69% versus 7.10%) and in 2022 (8.69% versus 7.10%), while “Unterkunft” is more popular in Germany, both in 2015 (with 2.90% Austrian occurrences versus 6.47% in Germany) and in 2022 (5.96% versus 8.71%). Still in both countries “Asyl” is more a word from the 2015 debate, while “Unterkunft” gets mentioned more often in 2022.

In all, we conclude that the words associated with a more negative stance in our within-Germany case are more pronounced in the German data, while the Austrian tweeters seem to use words that resemble the pro-refugee stance more clearly.

6. Discussion and Conclusion

The present study was aimed at 1) the analysis of the online communication networks on Twitter concerning the Syrian and Ukrainian refugee crises (referred to as N1 and N2 respectively), specifically focusing on retweets and the structure of communities; 2) the corpus linguistics analysis of the differences between the main pro-refugee and opposing communities.

The findings reveal that, despite not always having the largest numbers, the anti-refugee community displays higher activity levels. In contrast, the pro-refugee users, constituting the majority on Twitter, exhibit looser connections with fewer ties among themselves, indicating less individual engagement and activity, leading to a less cohesive community. Furthermore, the same community in N2 exhibits more transnational connections compared to the main pro-refugee community. These outcomes align with prior research conducted in various national contexts, indicating that anti-migration communities often represent a vocal minority phenomenon. Despite limitations in our focus on strict data criteria and lack of tweet content analysis, our study contributes to the understanding of online communication about migrants by examining network structure and information diffusion on Twitter. Additionally, it underscores the significance of transnational analysis when examining virtual public discussions, offering insights to move beyond methodological nationalism. Looking ahead, our results highlight the urgency of improved online discourse around migration. This urgency calls for improved moderation efforts to counteract hateful content and amplified far-right propaganda. Additionally, pro-refugee organisations should bolster their social media presence and initiate transnational campaigns to promote inclusivity and counter far-right activism.

To summarise , our findings in the corpus linguistic part of the study, the terms "Hilfe," "Unterstützung," and "Mensch" are prominently used in the lexicon of individuals advocating for refugee acceptance, whereas "Platz," "Wohnung," "Aufnahme," and "Arbeit" are more frequently used by those who oppose it. The term "Unterkunft" is more prevalent in tweets related to Ukraine, whereas "Asyl" is more frequent in discussions regarding Syrian migration. Financial aspects, as indicated by the usage of "Money" and "Euro," are more noticeable in the language of migration opponents and in tweets discussing Syria in the ideologically opposed communities in the network. When comparing national retweet corpora, we observe that terms linked to a less favourable viewpoint in our analysis of the situation within Germany exhibit stronger prominence in the German dataset. In contrast, Austrian Twitter users appear to employ words that closely resemble a pro-refugee standpoint.

The intricate relationship between social media dynamics and the diverse narratives surrounding refugee reception unfolds against the broader canvas of shifting political climates, distinct refugee experiences, and evolving communication technologies. Apart from offering insights that extend beyond academia, this research sheds light on social media use of different groups via network analysis and their ideas, arguments, and rhetoric via textual analysis. This information can be useful for NGOs who work on democratisation of the public communication, prevent the spread of disinformation, protect minority groups, or facilitate the integration of newcomers into society. Moreover, our results can be used by politicians or media who are tackling these questions and could develop a better social media strategy to achieve higher virality and consequently visibility.

opportunities
for a fair narrative on migration

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