NORDIS – NORdic observatory for digital media and information DISorders

Verified false content in Europe on social media

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NORDIS

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Introduction

This report presents the main findings from our preprint article *Misinformation exposure on Facebook in the EU and UK* (Holt et al., 2023). In the executive summary, shortened versions of the result sections are provided. Our full preprint article describing methods and detailed results can be found through the following link: https://pure.au.dk/portal/en/persons/anja-bechmann(b093426c-3157-465e-bd29-fe73ee20d446)/publications/misinformation-exposure-on-facebook-in-the-eu-and-uk(c5d8eb73-a877-4e82-bf44-322eb0ee88d9).html

Executive Summary

As modern crises are accompanied by increasing amounts of misinformation and social media platforms are becoming increasingly important for ensuring public acceptance of policies, it is more important than ever to uncover who is exposed to misinformation, and what types of misinformation stories are spread.

The increased importance of these issues has also led to an increased research focus. Much of the resulting research, however, has focused on the US (Bak et al., 2022), mainly because of easier data access and laxer privacy legislation. There has also been research conducted in the EU, but mostly at the national level. Furthermore, most research about the spread of misinformation has used engagement metrics such as likes, comments and shares as a proxy for spread. While this can be beneficial, there are proven differences in the demographic groups that engage with social media content in different ways, with older demographics being more likely to actively engage than younger ones, thereby skewing results (see e.g., Guess et al., 2019; Ortellado et al., 2021).

The research underlying this report and the preprint article (Holt et al., 2023) used the unique URL Shares dataset (Messing et al., 2020), provided to us by Social Science One in collaboration with Meta, to analyze misinformation viewing data at an EU-level and uncover similarities within the 27 EU member states and the UK over a six-year period from January 2017 to October 2022. Our analysis provides insights on the demographic groups that have been most exposed to misinformation in the period. Additionally, content analysis reveals the most popular misinformation topics and shows content differences between demographic groups (based on gender and age), as well as between geographic regions, and time periods.

In the report, two main research questions (RQs) will be addressed, namely:

> RQ1: Who is most exposed to misinformation in the EU and UK? And are there regional differences in the exposed demographics by gender and age?
>
> RQ2: What misinformation topics are most prevalent in the EU and UK? And how does this differ between: demographic groups, time periods, and geographic regions?

Below we present the main results from our research along with short comments on methodology for each of the two research questions.

Who is most exposed to misinformation in the EU?

Demographic analysis was conducted for the EU and UK as a whole, for five geographic regions, and for each of the included 28 countries separately. For a definition of the five geographic regions, see Figure 1 below (or see original in Holt et al., 2023).

For analysis of the URL Shares dataset, we developed a method for filtering out most of the added differential privacy noise, basing results on the most reliable parts of the dataset (see original in Holt et al., 2023). Misinformation was operationalized as URLs that were marked as "False" by an IFCN approved fact-checker within the Facebook Third Party Fact-Checking program, resulting in a sample of verifiable false content (hereafter VFC). For comparison, a general sample consisting of 500 randomly selected non-VFC URLs from each of the 28 countries and 14,000 URLs from the US was collected (hereafter the general sample).

Results for RQ1 shows that the demographic group that is most exposed to misinformation within the 27 EU member states and the UK are females aged 35-44. Further analysis showed that the population exposed to misinformation on Facebook in the time-period from January 2017 to October 2022 has a median age of 41 years and consists of 52.8 % females. Furthermore, we find regional differences in the demographic groups that have been exposed to misinformation in the time-period, with the Nordic and Continental regions having older median ages and a higher percentage of males, the Mediterranean region being similar to the European average, and the Eastern and Anglo-Saxon regions to have populations with a younger median age and a higher percentage of females. Compared to the general sample, there is a higher percentage of males exposed to misinformation, but similarities in the populations age. Figure 2 and 3 (see original in Holt et al., 2023), below, show the most viewing and the most sharing demographic groups of each country. The figures illustrate the demographic differences in engagement behavior and show differences between the groups that engage with VFC and non-VFC content on Facebook. These results highlight the need to take viewing audiences and not just the sharing or liking audiences of misinformation into consideration when designing interventions, since they are both younger and have a higher percentage of males.

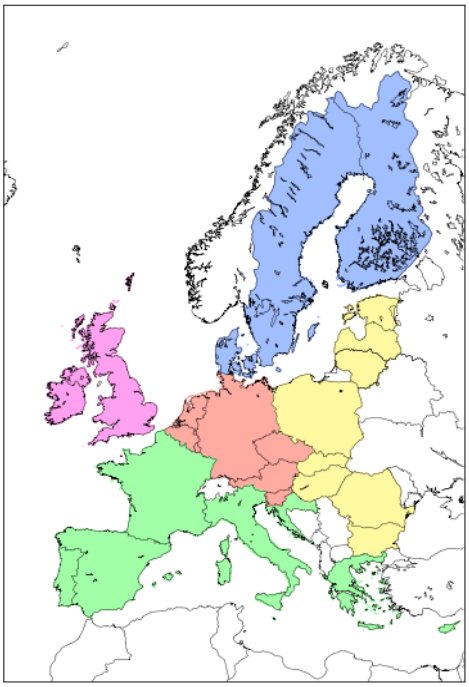

Figure 1 *– Geographic regions used for analysis: Nordics (blue), Continental (red), Eastern (yellow), Mediterranean (green), and Anglo-Saxon (pink)*

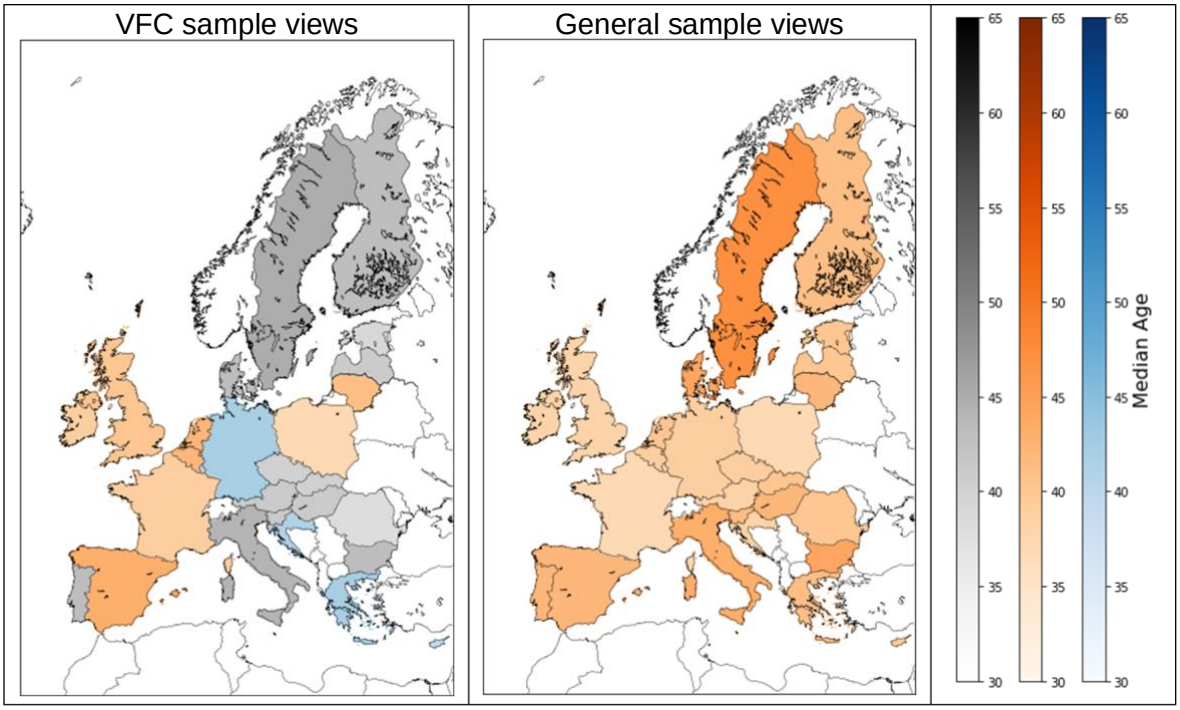

***Figure 2**: Median age and gender distribution for demographic groups viewing content throughout the EU and UK. Colors denote the significantly most viewing gender (grey = no significant difference, red = female, blue = male). Color saturation denotes median age, darker colors signal higher median age.*

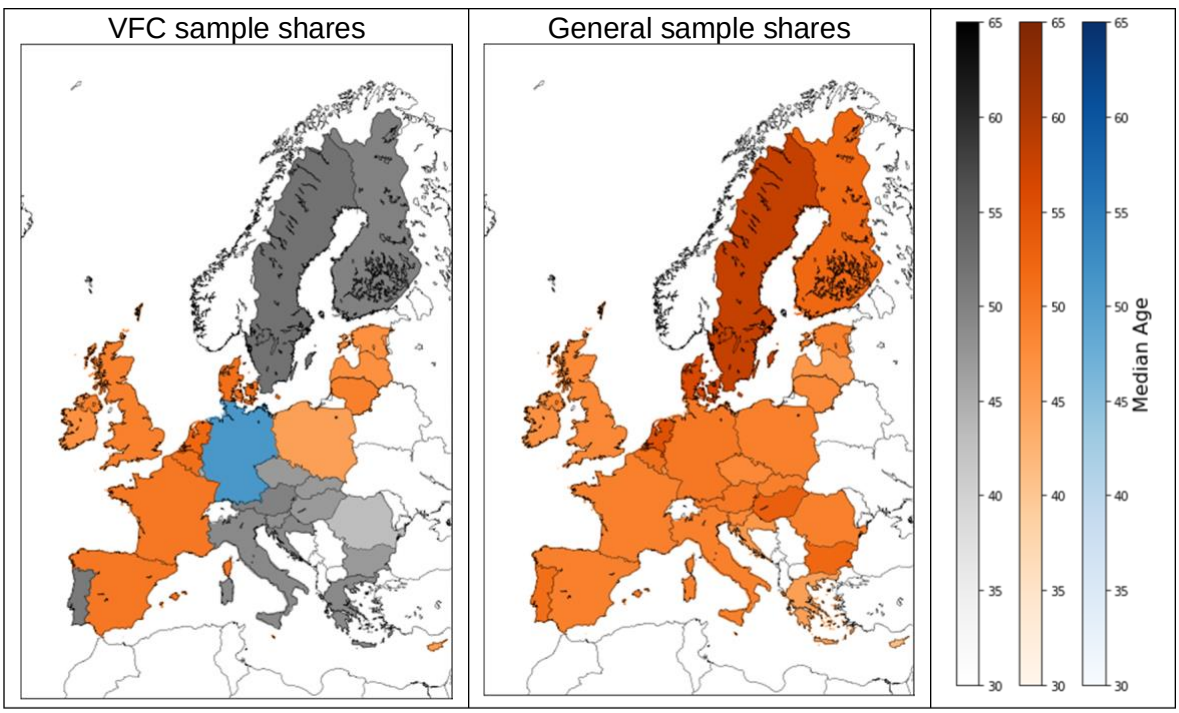

***Figure 3**: Median age and gender distribution for demographic groups sharing content throughout the EU and UK. Colors denote the significantly most viewing gender (grey = no significant difference, red = female, blue = male). Color saturation denotes median age, darker colors signal higher median age.*

What misinformation topics are most prevalent?

To answer RQ2 content analysis was conducted via two different methods.

The first analysis was conducted to show the most viewed stories across the dataset. This was done by first identifying the months with the highest spikes in exposure. For each of the identified months, the ten stories with the highest number of views were then assessed qualitatively and their topics were derived. For clarity the dataset was split into three distinct periods, namely: pre-Covid (January 2017 – December 2019), during Covid (January 2020 – December 2022), and post-Covid (January 2022 – November 2022).

Results from the first analysis can be seen in Figure 4, showing the months with exposure spikes, and Table 1, showing the top stories or themes for each month (see originals in Holt et al., 2023). These results show that the pre-Covid period was marked by a high diversity in story topics, ranging from politically themed stories about Trump or Macron to entertainment, environmental, and health-related stories. During Covid, most stories tied to the pandemic with different claims about both the cause of the pandemic and the measures taken to prevent its spread, additionally, a single story about an alleged new cure for cancer was present. In the post-Covid period, most stories tied to the Russo-Ukrainian war, bringing claims about president Zelensky, Ukrainian refugees, additionally, a single story about the dangers of the Covid-19 vaccines made it into the top 10 most viewed stories.

The second analysis focused on content differences between different demographic groups, analyzing differences for: young vs. old, males vs. females, differences between geographic regions, and differences between time-periods. Here, the 200 most viewed stories for each group were compared with a method adopted from Kessler (2017).

Results for RQ2 showed that health related stories have been prominent throughout the period, although with different foci. Analysis of the content differences between young and old age groups showed that younger people are exposed to more sensationalistic stories about accidents and celebrities, as well as more stories about get-rich-quick schemes. Older people were more exposed to stories about global conspiracies and health-related content as well as political stories. Analysis of content differences over time showed that global events had a big impact on top-viewed stories with especially Covid19 and the Ukraine war impacting the misinformation content on Facebook. The analysis failed to show effects of national or EU elections, likely due to the broad scope of analysis or that dedicated teams were installed to mitigate against misinformation spread during election periods. Analysis of regional content differences showed that the Nordic region saw many stories about the US and 5g, as well as climate change. The Eastern European region saw more stories about the Ukraine war, Covid19, and vaccines. In the Anglo-Saxon region, stories about Princess Diana, Hollywood, and autism were prevalent. In the Continental region many stories tied to refugees and climate change. Lastly, the Mediterranean region saw more stories about get-rich-quick schemes, electronic cigarettes, and vaccines.

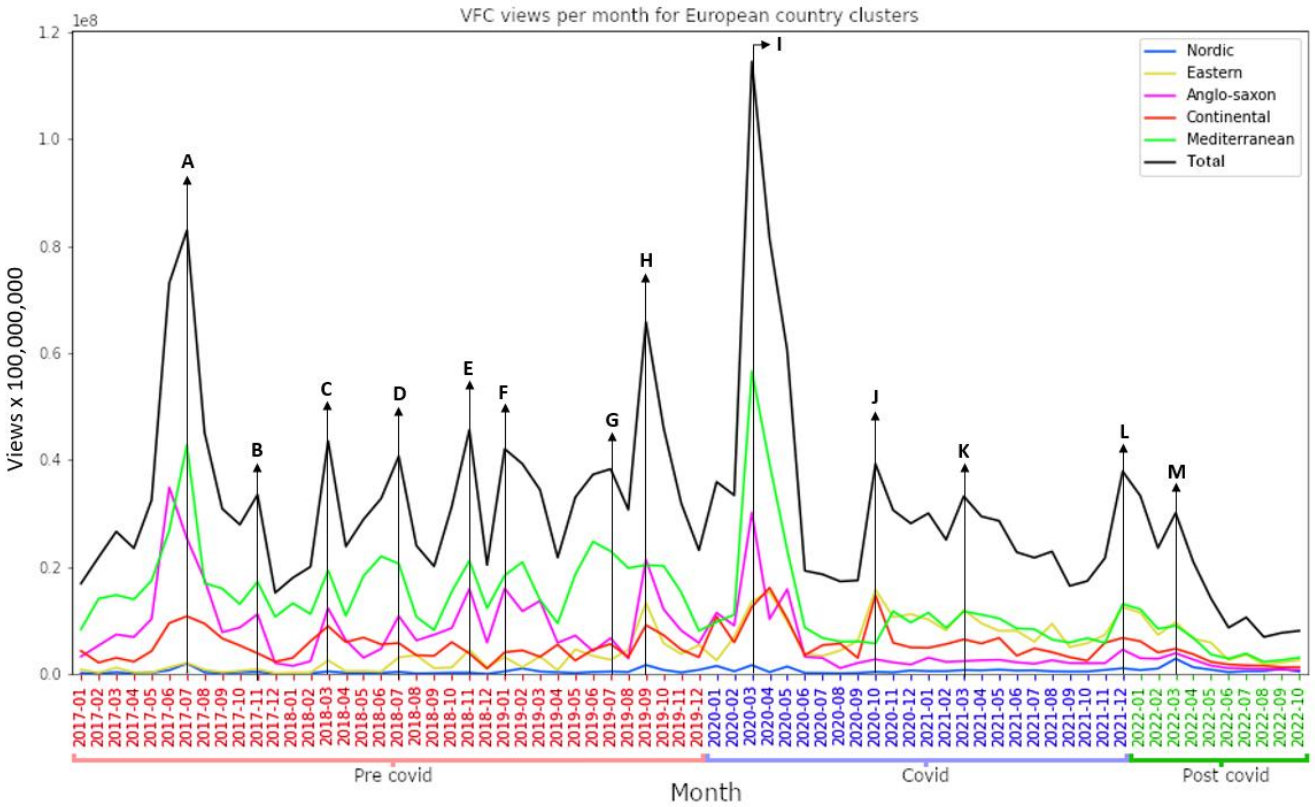

Figure 4 (above) shows aggregated views per month by geographical region and as total. Exposure spikes are marked with letters. Key terms from the top 10 stories for each spike are presented in **Table 1** (following):

#	Month	Top stories
A	2017-07	Facebook hacker; Great Barrier Reef is dying; Trump and Macron had dinner
B	2017-11	E-cigarettes worse than cigarettes; Vaccines cause autism; Age of consent lowered to 13
C	2018-03	Bulldog bites pedophile; Swedish social care; TV-series gets new season
D	2018-07	Exploding gas station; Cosmic event, Mars as big as Moon; Fast food chain use horse meat
E	2018-11	Macron pension reform; Swedish social care; Alternative cancer cure researcher murdered
F	2019-01	Vaccine causes multiple sclerosis; Wine is healthy; Whales killed by plastic
G	2019-07	Celebrity says to put sugar in your garden; Be paid to watch TV; Gender politics
H	2019-09	Plastic-eating bacteria discovered; Aliens live on Earth; Trump's family are pimps and KKK
I	2020-03	Bill Gates Covid 19; Covid 19 brought by God; Covid 19 quarantines
J	2020-10	Covid 19 is a hoax; Compulsory vaccination; WHO tests are lying
K	2021-03	Facemasks cause disease; New cure for cancer; Antigen tests does not work
L	2021-12	Covid 19 is a hoax; mRNA vaccines are dangerous; Depopulation
M	2022-03	Zelensky plays piano; Ukrainian refugees; War in Ukraine; (Pfizer vaccine is dangerous)

Key limitations

There are three key limitations of the research presented above that each tie to different parts of the methodological setup, namely: the dataset, fact-checking focus, and available tools. Below these limitations will be presented shortly, for a deeper discussion of limitations, please refer to Holt et al. (2023).

First, the URL Shares dataset has as a criterion of inclusion that each URL must have been shared at least 100 times publicly on Facebook. This leads to the exclusion of links that have primarily been shared in private groups or via Facebook Messenger, as well as the long tail of stories that have not been shared more than 100 times or do not link to an external source. This inclusion criterion is especially problematic for smaller-language countries, where links are rarely spread internationally and thus less likely reach this criterion.

Second, fact-checkers serve a critical role in today's societies by guarding citizens against misinformation campaigns. However, they have limited resources and especially in times of crises, their work tends to focus on the stories where it can have the biggest impact. This can lead to results being skewed by political focus. For example, during the Covid-19 pandemic, debunking misinformation stories about vaccines was a matter of public safety, and thus fact-checkers might have prioritized these stories, while others went under the radar. This could be one explanation for why we see so many stories about Covid-19 in the dataset during the pandemic.

Third, the number of different languages in the dataset required translation to properly compare stories between countries. While the research conducted for this report strived to employ the best available tools, the tools' quality varied and peculiarities of the tools might have impacted the results. While considerable efforts were exerted to ensure that key terms were translated correctly, qualitative assessment of translations showed that Eastern European language translations were of a poorer quality than the rest.

Conclusion

While the key limitations must be kept in mind when assessing the results, the research conducted for this report provides a first broad insight into the demographic composition of the EU population that is exposed to misinformation on Facebook and highlights the most popular misinformation topics for different demographic groups, geographic regions, and time-periods.

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