# Who Informs Germans About the Russia-Ukraine War on YouTube?

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Even though YouTube is often considered to be a platform for user-generated content, mainstream media has been present on the platform for years. However, the extent to which mainstream media can dominate YouTube is unknown. This study addresses this knowledge gap by exploring the source diversity of German language search results about the Russia-Ukraine War and applying the concepts of mainstream media and alternative media. Two scraping audits collected the top 20 results for the search "*Russland Ukraine*" (meaning "Russia Ukraine" in German) over 21 consecutive days. The results revealed two major findings: first, most of search results came from YouTube channels of the mainstream media (409 out of 420 in the first audit; 410 out of 420 in the second audit). Second, on average, most of the 20 search results were new every day (12 in the first audit; 14 in the second audit). These results demonstrate that German media organizations related to the newspaper, television, radio, and magazine industries can extend their reach from their traditional media channels to YouTube—at least regarding German search results related to the Russia-Ukraine War during data collection.

*Keywords: YouTube, source diversity, search results, Russia-Ukraine War, Germany, mainstream media, alternative media, participatory culture*

YouTube is a paradox. On the one hand, the platform has been widely hailed for being "a site for participatory culture"[1] (Morreale, 2014, p. 114). Similar claims have been made by Uricchio, (2009) and May (2010). It enables users to share videos without the barriers of traditional gatekeepers (Kaiser et al., 2021), which accounts for its tagline: "Broadcast Yourself" (Burgess & Green, 2009a, p. 89; Burgess & Green, 2009b, p. 2). On other hand, YouTube has been criticized for being just another outlet for mainstream media (Kim, 2012). It seems that an increasing amount of content comes from the channels of major media organizations (Van Dijck, 2013). This

presence of leading media organizations was occurring even before YouTube decided to increase the reach of "authoritative voices" (The YouTube Team, 2019). It was not clarified, however, what is meant by "authoritative voices."

The tension between user-generated and professionally produced content on YouTube has been studied (Andrejevic, 2009). Several scholars, such as May (2010), Kim (2012), and Morreale (2014) have conducted theoretical and qualitative research demonstrating that mainstream media plays a relevant role on YouTube. Taking a different approach, Burgess and Green (2009a) have studied this phenomenon using quantitative research. They investigated the amount of popular content produced and uploaded by what they call "traditional media" and "individuals" who were not associated with any media organization and found that half of the popular content was produced by each group. Interestingly, two-thirds of the samples were uploaded by individual users (Burgess & Green, 2009a, p. 92).

More recently, Matamoros-Fernández et al. (2021) have offered additional insights. Focusing on the content and source diversity[2] of English-language recommendations, they found that YouTube amplified the content of news organizations (Matamoros-Fernández et al., 2021). Regarding YouTube's claim that it amplifies "authoritative voices" (The YouTube Team, 2019), Matamoros-Fernández et al. (2021) found that the platform often grants professional media outlets the right to assume these voices of authority by showing their videos.

While mainstream media is present on YouTube, *how* present it can be is unknown. However, the extent to which YouTube's content originates from these media organizations is worth studying. The platform has roughly two billion users. Every day, one million hours of videos are watched on YouTube (Dean, 2021). As a "key content provider" (Roth et al., 2020, p. 2), YouTube shapes the public discourse (Snickars & Vonderau, 2009). Therefore, knowing how much content mainstream media is providing

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[1] Jenkins (2006) popularized the term "participatory culture." The internet is at the center of culture because it has lowered the entry barriers to produce and share media (Jenkins et al., 2009, p. 17), enabling formerly passive media consumers to become media producers (Jenkins et al., 2009, p. 16).

[2] Similar to Krafft et al. (2019), in this project, "content diversity" is differences in content, which means that two different YouTube videos represent two pieces of content. Inspired by Thurman (2011), "source diversity" is the variety of the provider of information. In the context of this study, every YouTube channel represents a different source.

on the platform is important. In other words, to what extent can mainstream media shape the public discourse on YouTube? If YouTube were dominated by mainstream media, users would likely be confronted with the same content they see on television and in newspapers. If the platform were in the hands of YouTube channels not related to mainstream media, users would likely be confronted with different content, possibly otherwise unseen.

In this study, the source diversity of German-language search results concerning the Russia-Ukraine War is explored. This focus was selected for three reasons. First, the Russia-Ukraine War is a relevant news topic during the time of this study. Because media outlets have been reporting constantly about the war since Russia invaded Ukraine, the war is an interesting case to study the presence of mainstream media on YouTube. It can be expected that these media organizations uploaded much content concerning this news event onto the platform. For this reason, the war in Ukraine can illustrate the extent to which YouTube's search results can be dominated by such organizations. This approach has been inspired by Matamoros-Fernández et al. (2021), who studied how COVID-19 could amplify the presence of media organizations on YouTube.

Second, studying YouTube search results is important. While YouTube's recommendations have been frequently analyzed (e.g., by Ledwich & Zaitsev, 2020; Ribeiro et al., 2020; Kaiser et al., 2021), its search results have not (aside from Rieder et al., 2018). Search results are worth studying as well, since they also influence what users watch. In this context, I distinguish between recommendations and search results. The former are suggestions that a user receives based on videos watched. The latter are suggestions a user receives after conducting a search. While recommendations are the outcome of YouTube's recommender algorithm (Airoldi et al., 2016), search results are usually the outcome of the platform's relevance algorithm (Rieder et al., 2018).

Third, studying YouTube with a focus on the German language is important. So far, scholars have almost exclusively focused on English speakers using YouTube. German speakers have not been sufficiently studied (Heuer et al., 2021, are the exception), even though YouTube is highly popular in Germany. In 2021, 34.8% of Germans older than 14 used the platform daily (Die Medienanstalten, 2021a). Many of these users consulted YouTube as a source of information. In 2021, 12.1% of Germans older than 14 years did so

daily (Die Medienanstalten, 2021a). Since the beginning of the war, many Germans have been searching for information about it on YouTube (Google, 2022). Moreover, being German, I am particularly interested in exploring this linguistic context.

Inspired by the findings of Matamoros-Fernández et al. (2021) that many of the top 20 recommended videos on YouTube originate in authoritative media outlets (p. 234), following research question are proposed:

RQ1: To what extent do the top 20 German-language search results concerning the Russia-Ukraine War have their source in mainstream media YouTube channels?

Even though this study focuses on the source diversity of YouTube's search results, content diversity is important as well. To fully understand source diversity, one needs to know how many different videos originate from one source. It makes a difference whether the same video from a channel appears in the top results ten days in a row or if ten different videos from the same channel appear once a day. Inspired by the findings of Rieder et al. (2018) that the top 20 search rankings about current events tend to contain many recently uploaded videos, the second research question is the following:

RQ2: To what extent do the search results change daily?


## BACKGROUND

This section provides an overview of news media in Germany. The country has a dual media system, in which private and public broadcasters coexist (Henseler-Unger et al., 2020). In contrast to private news providers, public providers are contractually obliged to support "the formation of free individual and public opinion through the production and transmission of their offers, thereby serving the democratic, social and cultural needs of society" (Die Medienanstalten, 2019, p. 15). To fulfill this remit, public news providers must objectively "provide a comprehensive overview of international, European, national and regional events in all major areas of life" (Die Medienanstalten, 2019, p. 15) and pay attention to the plurality of opinion.

Another major difference between private and public news providers is that the former is usually commercially oriented and rely on subscriptions and advertising. Conversely, the latter has no commercial interests. They derive funding mainly through compulsory contributions, as well as advertising to some extent. Despite their different

funding models, private and public broadcasters compete for reach, viewers, and advertising clients (Henseler-Unger et al., 2020).

In regard to TV, radio, and print, both private and public news providers are popular in Germany (see Figure 1). Television programs of the two public channels, *ARD*[3] and *ZDF*,[4] dominate. However, most of the media brands that follow are private ones.
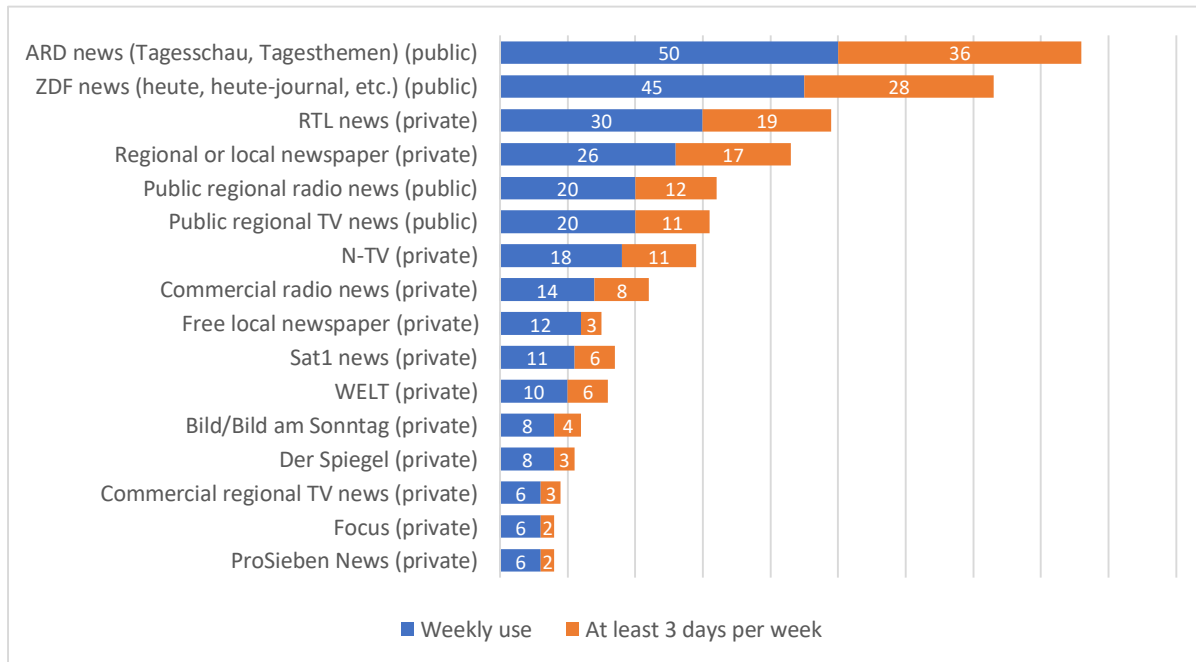


*Figure 1.* Reach of top news media brands from the TV, radio, and print industries by percentage.

*Note.* Adapted from Reuters Institute Digital News Report 2022, by N. Newman, R. Fletcher, C. T. Robertson, K. Eddy & R. K. Nielsen, 2022, p. 81. Copyright 2022 by Reuters Institute for the Study of Journalism.

Regarding online news media, private news providers dominate (see Figure 2). The online news of the public news provider *ARD* is second only to the private news website *t-online*. However, apart from *ARD*, only public regional TV and news websites are among the top 16 brands.

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[3] *ARD* is both the name of a public television channel and the name of the joint organization of Germany's nine regional public-service broadcasters and the country's international broadcaster, *Deutsche Welle* (ARD, 2022).

[4] Similarly, *ZDF* is the name of the public broadcaster and also of its flagship TV channel (ZDF, 2022).
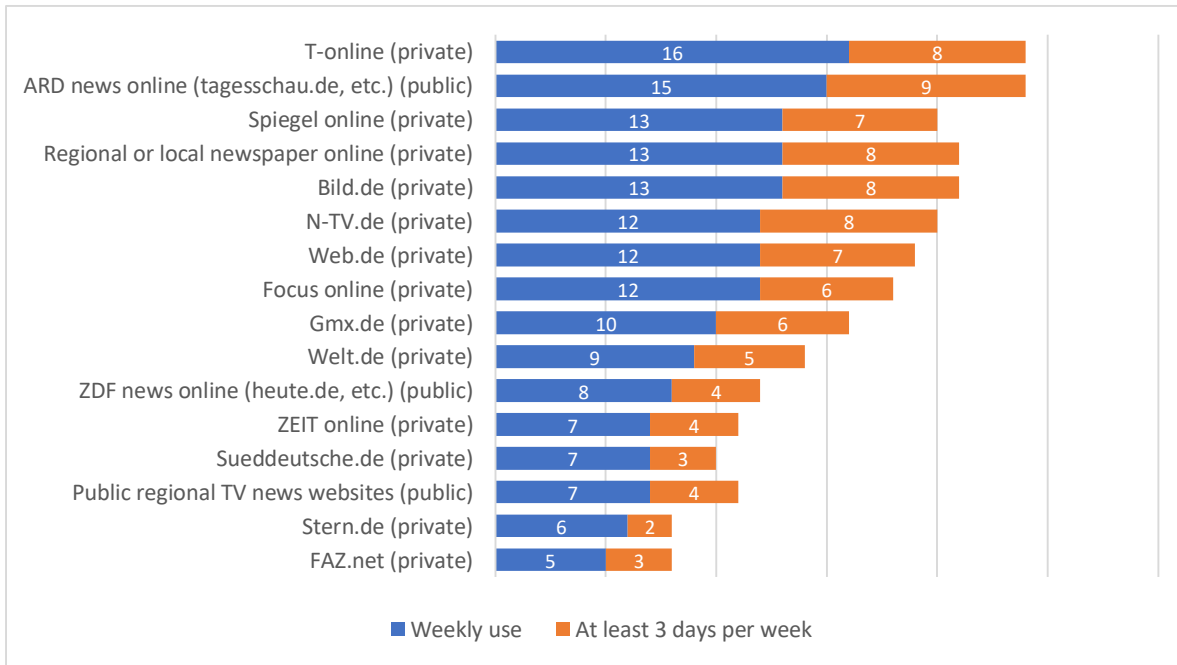
*Figure 2.* Reach of top news media brands online in percentage.

*Note.* Adapted from Reuters Institute Digital News Report 2022, by N. Newman, R. Fletcher, C. T. Robertson, K. Eddy & R. K. Nielsen, 2022, p. 81. Copyright 2022 by Reuters Institute for the Study of Journalism.

Comparing Figure 1 and Figure 2 indicates a convergence between formerly clearly separated media worlds, which characterizes the German media landscape (Die Medienanstalten, 2021b, 2022). Content traditionally broadcast only on television can now be found online as well (Die Medienanstalten, 2021c). For example, the news of the public broadcaster *ARD* ranks first in regard to traditional media *and* second to online media. In addition, private news providers such as the print magazine *Focus* have developed a strong digital presence with *Focus online*. This development is ongoing with the expansion of many news media programs (Hölig et al., 2022).

Popular news providers are not equally trusted by Germans (see Figure 3). Two news programs from two public TV channels are the most trusted brands. Private news providers are less trusted. The least trusted is the newspaper *BILD*.
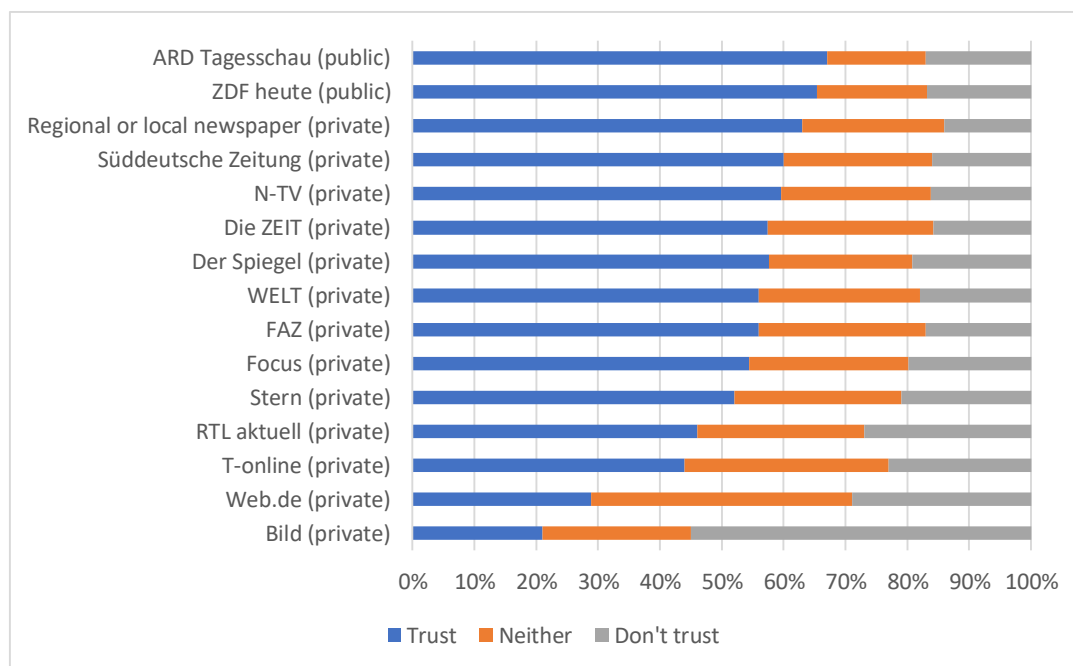
*Figure 3.* Trust scores of German news media brands.

*Note.* Adapted from Reuters Institute Digital News Report 2022, by N. Newman, R. Fletcher, C. T. Robertson, K. Eddy & R. K. Nielsen, 2022, p. 81. Copyright 2022 by Reuters Institute for the Study of Journalism.

## THEORETICAL FRAMEWORK

This study applies the concepts of mainstream media and alternative media to analyze the collected data. The boundaries between the two concepts have become increasingly blurred (Elghul-Bebawi, 2009). As a result, the overlap between both types of media has increased (Kenix, 2011; Rauch, 2016). Nonetheless, some approaches to defining these concepts do exist (see e.g., Rauch, 2016, p. 757; Holt et al., 2019, p. 861). In the context of this study, I define mainstream and alternative media both through ownership as suggested by Dilevko (1997, p. 362) and Kenix (2011, p. 20), and through publishing routines as suggested by Holt et al. (2019, p. 864). A YouTube channel owned by a media organization from the television, daily newspaper, magazine, or radio industry, the so-called "legacy media" (Holt et al., 2019, p. 861), is considered mainstream media in this study. In contrast, entities that share media texts without being related to such media organizations are considered alternative media. Adapting and combining these two approaches to analyze YouTube channels as mainstream or alternative media is suitable

given the limited scope of this study. In most cases, information about the ownership of YouTube channels can be found easily on their "About" pages[5].

Whether YouTube channels are related to a traditional media organization is a relevant question. For their owners, these YouTube channels are only a few among the set of media channels (e.g., television and radio programs, newspapers, magazines) used to reach audiences. In contrast, the owners of YouTube channels not associated with "legacy media" need to rely on social, networked media (Holt et al., 2019, p. 864) such as YouTube to publish content.

This way of understanding YouTube channels has a limitation. Both concepts serve as umbrella terms under which a wide array of YouTube channels may be placed. For example, the YouTube channel of a late-night show from a major German television network and a YouTube channel of a small local radio station would be defined as mainstream media. The other category might include a YouTube channel of a 14-year-old YouTuber or the channel of news show that Rieder et al. (2018) call "YouTube-native" (p. 50) (that is a format or content that originated on the platform).

## METHODS

### Subjects

This study's sample consists of 840 search results. It is not representative of the population, which consists of all top 20 search results for the search term "*Russland Ukraine*." These search results—and of course search results in general—are not fixed. They can change depending on many factors, including location and time. For this reason, the population is unknown. Consequently, I used single-stage non-probability sampling, in which not every element of the population has the same chance to be collected (Blaike & Priest, 2019); therefore, generalization from the sample to the population is not possible.

Because the study focuses on YouTube's search results, I conduct what Townsend and Wallace (2006) call "social media research." This kind of research has four key areas of ethical concern: distinguishing between public and private data, obtaining informed

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[5] Unlike Kenix (2011), who is mainly concerned with corporate ownership, this study focuses on ownership at a basic level (i.e., who is behind the YouTube channels).

consent, ensuring anonymity, and minimizing the risk of harm (Townsend & Wallace, 2006).

The search results, which are analyzed in this study, can be considered public data. They were uploaded intentionally as freely available by channels that agreed to YouTube's terms and conditions (that is, not password-protected). Informed consent from the participants (in this case, YouTube channels) was not obtained because only their rankings (not their content) in YouTube's search results were studied. YouTube channels were not anonymized. This study aims to explore *which* YouTube channels provide top search results, which could not have been achieved if the channels had been anonymized. As YouTube channels generally try to reach the highest possible number of viewers with their videos, studying them without anonymized data raises no risk of harm.

## Materials and Procedure

The data collection involved two steps. First, I collected the search results in two scraping audits using the term "*Russland Ukraine*" at noon from March 11, 2022 to March 31, 2022. Repeatedly using the same queries is unlikely to represent the behavior of a real user (Sandvig et al., 2014). This limitation means that a scraping audit cannot provide insights into the search results users receive. The method is suitable only for investigating publicly available information (Sandvig et al., 2014), which is the aim of this study. I acknowledge that real YouTube users might receive different search results than I did based on circumstances such as their watch history, location, and time of searching.

The methodology was inspired by the methods of Rieder et al. (2018) and Matamoros-Fernández et al. (2020) to gather search results once a day over a period of time rather than at only one time. This study's research questions were inspired by their findings. I used the search term "*Ukraine Russland*," one of the most frequently searched terms at the time I started data collection, because its generality allowed for the inclusion of a wide range of search results concerning the war. Using a German search term, I expected to restrict the search results to those in the German language. This approach was inspired by Airoldi et al. (2016).

I conducted searches based in Germany using a German IP address. Since YouTube takes the location of users into consideration when providing search results, I expected to receive not only German language search results, but also search results from German

YouTube channels. Even though German is also spoken in Austria and regions in Switzerland, I did not expect to retrieve search results from Austrian and Swiss YouTube channels.

Two audits were conducted to indicate the range of different search results. Roth et al. (2020) proposed to study YouTube on the so-called "platform-level" because it is likely these findings apply globally to many users (p. 2). However, personalization should also be taken into consideration to observe how fast the "platform-level" search results can change.

The first audit was conducted while logged out of YouTube. The second audit was conducted while I was logged onto a YouTube account created for the purpose of data collection. Using this account, I watched the first five minutes of six videos about the war in Ukraine from the YouTube channel *WELT Nachrichtensender* every day – two in the morning, two at noon, and two in the evening. I acknowledge, however, that while I could indicate some degree of personalization based on previous searches and videos watched, I could not fully account for YouTube's potential for personalization.

For several reasons, data were collected on YouTube manually. Some scholars have used YouTube API (e.g., Airoldi et al., 2016; Kaiser et al., 2021; Ledwich & Zaitsev, 2020) to collect data from the platform. However, I rejected this method because the tool requires users to be logged onto YouTube; instead, I chose to conduct one scraping audit while logged out. I considered gathering the data for the first audit manually on YouTube and the data for the second audit using the program YouTube API or the independent tool YouTube Data Tools (Rieder, 2015). However, my initial attempts revealed that the same search on YouTube and using YouTube API or Data Tools resulted in different results. To be able to compare the audits' data, I decided to collect both sets of data manually on YouTube.

After I deleted my browser's cache daily before visiting YouTube, I then searched "*Russland Ukraine*" using YouTube's default setting for search; that is, its parameter set to "relevance" to find the most relevant search results (Rieder et al., 2018, p. 54). Next, I logged onto YouTube and made the same query using the same parameter from the same location. I took screenshots of the results and transferred them to Excel spreadsheets for data analysis.

The scraping audit identified those YouTube channels providing the most relevant search results. To collect data about these channels' possible relationships to media organizations in the television, radio, daily newspaper, and magazine industries, I conducted what Ventresca and Mohr (2017) call "archival research" (p. 805). I first turned to the "About" pages on the YouTube's channels. For example, the "About" page of "Unser Land" indicates that the channel belongs to the public television and radio broadcaster "Bayerischer Rundfunk." Where information on the channel's "About" pages was insufficient, their websites was examined. In some cases, I doubled-checked the information found there with the media database of the German commission for evaluating media concentration.[6]

Analysis of the data involved three steps. First, I used descriptive statistics to conduct a univariate analysis of the YouTube channels that provided the search results. Univariate descriptive methods are common for quantitative data analysis. They focus on single variables and can be used to produce summary measures such as frequency counts (Blaikie & Priest, 2019). Specifically, the frequency of the YouTube channels in the data set was counted.

Second, I conducted a quantitative content analysis. Information about the YouTube channels' ownership needed to be categorized. The categories of "mainstream media" and "alternative media" were derived deductively beforehand. Whenever a channel belonged to a media organization in the television, radio, daily newspaper, and magazine industries, I coded it as "mainstream media." For example, the YouTube channel *ARTEde* is an official YouTube channel of the French-German television channel *ARTE*. It and the YouTube channel STRG_F were categorized as mainstream media. The latter is owned by the media organization FUNK, which is jointly owned by the public broadcasters *ARD* and *ZDF*. Channels that did not belong to any media organizations from the traditional media sectors were categorized as alternative media. For example, because the YouTube channel *Jung & Naiv* is not related to any such organization, I labeled it as alternative media.

Third, the videos of the search results were analyzed. To make the data suitable for analysis, it was reduced by using index construction, which involves combining data into a

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[6] The database, which is only available in German, can be accessed via this link: https://www.kek-online.de/medienkonzentration/mediendatenbank/#/.

composite measure (Blaikie & Priest, 2019). The video titles were replaced with numbers. For example, the video that ranked first in the first audit on the first day of data collection, "*PUTINS KRIEG: Intensive Kämpfe—Ukraine kann russischen Vorstoß nur verlangsamen | WELT Newsstream*" [PUTIN'S WAR: Intense fighting—Ukraine can only slow Russian advance | WELT Newsstream] was classified as number "1," the second video as "2," and so on. Once reduced, I data were analyzed using univariate statistics. As was the case with the channels, the frequency of the posting of new videos was noted.

## RESULTS AND ANALYSIS

### Number of Mainstream and Alternative Media YouTube Channels

The two scraping audits produced similar results in regard to the number of channels. The 420 search results came from 29 channels while I was logged out and 23 while logged in (see Table 1). (The likely reason the second audit yielded slightly fewer results is discussed later in the paper.) The search results in both audits originated most often from the same channels. Twenty-two of the 23 channels that provided search results in the second audit also did so in the first. The one exception is channel *ZDFinfo Dokus und Reportage*. The following seven channels provided search results only in the first audit: *India Today*, *Julienco*, *Jung & Naiv*, *MrWissen2go*, *stern*, *STRG_F*, and *ZDF MAGAZIN ROYALE*.

Across both audits, most of the channels were in German. When searching while logged out as well as while logged in, the channel *Österreichs Bundesheer* appeared only once—a German-language channel from Austria. The only non-German language channel in the data set was *India Today*, an English-language channel from India. This provided one search result in the first audit.

Content analysis revealed that most of the channels originate in the mainstream media (see Table 1). As discussed in the introduction, any channel owned by a traditional media organization (media outlets in the TV, print or radio industries), was categorized as mainstream media. If not, it was categorized as alternative media. Based on this approach, 23 channels from the 29 channels that appeared in the first audit can be categorized as mainstream media and six as alternative media. In the second audit, 19 of

the 23 channels were defined as mainstream media and four as alternative media (see Table 3 in the Appendix for more information about the YouTube channels).

The mainstream media YouTube channels were almost equally often private and public media ones. In the first audit, 11 YouTube channels had a private background and 12 a public one. Similarly, 9 channels could be associated with private news providers and 10 with public providers in the second audit.

Table 1
*YouTube channels that provided search results*

| Name of channel | Audit | Ownership | Category | Media background |
|---|---|---|---|---|
| *AbuGullo* | Logged out, logged in | Private | Alternative media | - |
| *AFP Deutschland* | Logged out, logged in | Private | Alternative media | - |
| *ARTEde* | Logged out, logged in | Public | Mainstream media | Television |
| *Bayerischer Rundfunk* | Logged out, logged in | Public | Mainstream media | Radio and television |
| *BILD* | Logged out, logged in | Private | Mainstream media | Newspaper |
| *BR24* | Logged out, logged in | Public | Mainstream media | Radio and television |
| *DER SPIEGEL* | Logged out, logged in | Private | Mainstream media | Magazine |
| *DW Deutsch* | Logged out, logged in | Public | Mainstream media | Radio |
| *euronews (deutsch)* | Logged out, logged in | Private | Mainstream media | Television |
| *faz* | Logged out, logged in | Private | Mainstream media | Newspaper |
| *FOCUS Online* | Logged out, logged in | Private | Mainstream media | Magazine |
| *India Today* | Logged out | Private | Mainstream media | Magazine |
| *Julienco* | Logged out | Private | Alternative media | - |
| *Jung & Naiv* | Logged out | Private | Alternative media | - |
| *MrWissen2go* | Logged out | Public | Mainstream media | Radio and television |
| *Österreichs Bundesheer* | Logged out, logged in | Public | Alternative media | - |
| *phoenix* | Logged out, logged in | Public | Mainstream media | Television |
| *stern* | Logged out | Private | Mainstream media | Magazine |
| *STRG_F* | Logged out | Public | Mainstream media | Television |
| *Stuttgarter Zeitung & Stuttgarter Nachrichten* | Logged out, logged in | Private | Mainstream media | Newspaper |
| *tagesschau* | Logged out, logged in | Public | Mainstream media | Television |
| *Terra X* | Logged out, logged in | Public | Mainstream media | Television |
| *TV.Berlin - Der Hauptstadtsender* | Logged out, logged in | Private | Mainstream media | Television |
| *Unser Land* | Logged out, logged in | Public | Mainstream media | Television |
| *WELT Nachrichtensender* | Logged out, logged in | Private | Mainstream media | Television |
| *WELT Netzreporter* | Logged out, logged in | Private | Mainstream media | Television |
| *ZDF MAGAZIN ROYALE* | Logged out | Public | Mainstream media | Television |
| *ZDFheute Nachrichten* | Logged out, logged in | Public | Mainstream media | Television |
| *ZDFinfo Dokus und Reportagen* | Logged in | Public | Mainstream media | Television |
| *ZOY News* | Logged out, logged in | Private | Alternative media | - |

## Number of Search Results per Mainstream and Alternative Media YouTube Channels

Across the audits, mainstream media channels provided most of the search results. In the first audit, 409 of the 420 search results originated from these channels. In the

second audit, mainstream media channels provided 410 of the 420 search results, which means that alternative media channels provided only 11 results when searched while logged out and 10 when searched while logged on.

An interesting finding is that the mainstream media channel *WELT Nachrichtensender* dominated in both cases. When logged out, this channel provided 246 search results, by far the most. The channels that appeared the second and third most often—*ZDFheute Nachrichten* (37 times) and *BILD* (24 times)—lagged behind. Thirteen channels, which represent a large group, appeared only once or twice during the 21 days of data collection.

Watching the videos of *WELT Nachrichtensender* led to significantly more search results from this channel (281). For this reason, the gap widened between *WELT Nachrichtensender* and the channels appearing second and third most often, *BILD* (29 times) and *ZDFheute Nachrichten* (28 times). In this audit, only eight channels appeared once or twice. This finding suggests that *WELT Nachrichtensender* replaced some of the channels that appeared once or twice in the first audit.

### Ranking of Mainstream and Alternative Media YouTube Channels

The ranking of the channels is also of interest. Not only did the channel *WELT Nachrichtensender* dominate in terms of both number of appearances and position, in both audits, it also provided the first search results every day during the three-week period. *WELT Nachrichtensender* provided most of the top five results. When searching while logged out, 85 of 105 of these results originated from *WELT Nachrichtensender*. Only *BILD* (11 times) and *ZDFheute Nachrichten* (4 times) also appeared more than once in the top five. Similarly, *WELT Nachrichtensender* dominated the top five results in the second audit (83 results). As in the first audit, *BILD* (11) and *ZDFheute Nachrichten* (4) were the only other channels that provided more than one of the top five search results.

The alternative media YouTube channels did not appear in the top five. The best ranking channel was *AFP Deutschland*, ranking sixth in both audits (see Table 2). Except *Jung & Naiv*, the other YouTube channels categorized as alternative media provided search results that ranked outside of the top 10.

Table 2
*Ranking of alternative media YouTube channels*

| Channel | Date | Logged out | Logged in |
|---|---|---|---|
| *AbuGullo* | March 21, 2022 | 10 | 11 |
| | March 22, 2022 | 19 | 18 |
| *AFP Deutschland* | March 11, 2022 | 7 | 7 |
| | March 17, 2022 | - | 6 |
| | March 24, 2022 | 19 | 18 |
| | March 29, 2022 | 13 | 13 |
| | March 30, 2022 | 13 | 13 |
| | March 31, 2022 | 6 | 6 |
| *Julienco* | March 31, 2022 | 18 | - |
| *Jung & Naiv* | March 11, 2022 | 8 | - |
| *Österreichs Bundesheer* | March 20, 2022 | 15 | 15 |
| *ZOY News* | March 20, 2022 | 13 | 13 |

## Number of New Videos

Exploring the search results at a video level revealed a high degree of content diversity. When searching while logged out, the 420 search results that were gathered over three weeks consisted of 258 different videos; searching while logged in this number was higher (290).

According to the videos' titles and thumbnails, the vast majority of the videos were in German and about the war. In the first audit on March 13, one English-language video from the India Today channel titled "Russia-Ukraine War: Russian Tanks Attack Ukrainian City | Top Defining Images | Top War Updates" ranked 12th. In the same audit, two German language videos were unrelated to the war: the video "*heute 19:00 Uhr vom 20.03.2022*" [*heute* 7:00 pm from March 20, 2022] from the channel *ZDFheute Nachrichten* was ranked seventeenth on March 21. The video "*DAS ist mir am wichtigsten im Bett...*", [THIS is the most important to me in bed…] from the channel Julienco ranked 18th on March 31. In the second audit, the same number of videos were unrelated to the war: the video "*heute journal vom 14.03.2022*" [*heute* journal from March 14, 2022] from the channel *ZDFheute Nachrichten*, which ranked seventeenth on March 15, and the video "*GYSI ZUR IMPFPFLICHT: 'Ein Gesetz, das man nicht durchsetzen kann, darf man nicht beschließen*'" [GYSI ON MANDATORY VACCINATION: "You can't pass a law that you can't enforce"] from channel *WELT Nachrichtensender*, which ranked 12th on March 18.

The number of new videos varied across the audits and from day to day (see Figure 4). On March 11, 2022, the first day of data collection, both audits produced search results that appeared for the first time. As a result, there were 20 new videos. On the next day, the number of new videos dropped to 15 while logged out and 16 while logged in. Here, the number of videos fluctuated. In the first audit, the number hit its lowest point (8) toward the end of data collection (on March 28 and 30). In the second audit, the lowest point (7) was reached in the middle and toward the end of the three-week period (on March 20 and 30). On average, searching while logged in led to 12 new videos per day; searching while logged out to 14.
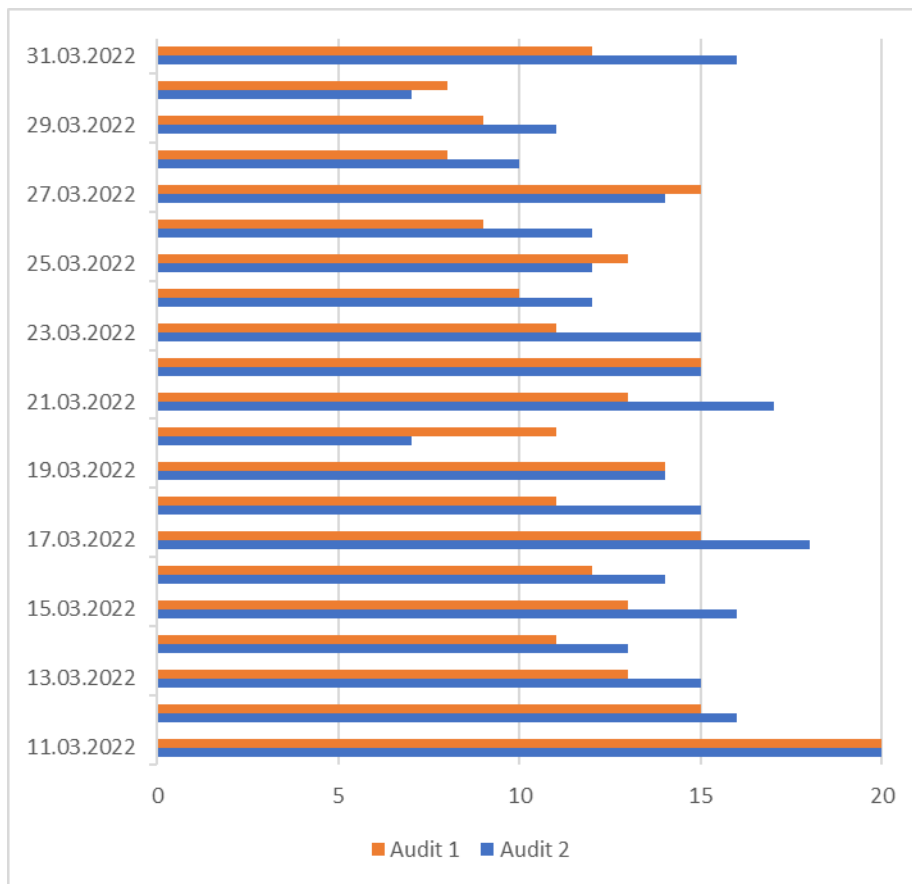


*Figure 4.* Number of new videos per day per audit.

The frequency of change for the search results at the top varied considerably. In both audits, a new video ranked first every day. Also, across both audits, the videos that ranked first, second, third, fourth, and fifth changed every day. However, they sometimes

appeared more than once. For example, a video could rank third on its first day and then appear outside of the top five on the following day.

When viewing the findings about the content diversity of the search results through the theoretical framework, it becomes clear that mainstream media YouTube channels dominated. They occupied top positions with new content day after day (especially *WELT Nachrichtensender).* This channel did not achieve this position by uploading one particular relevant and popular video that ranked first every day. More interestingly, over time it consistently ranked first with 21 different videos.

## DISCUSSION AND CONCLUSION

The starting point of this study was the research question: To what extent do the top 20 German-language search results concerning the Russia-Ukraine War on YouTube originate from mainstream media YouTube channels? The data, gathered using two scraping audits, clearly answers this question: When searching while logged out, 409 out of 420 search results originated from channels categorized as mainstream media. While logged in with an account created to watch videos of the mainstream media channel *WELT Nachrichtensender*, mainstream media channels provided 410 out of 420 search results.

The study also answered the second research question: To what extent do the top search results change daily? In the first audit, on average, 12 out of 20 search results were new. In the second audit, the average value of 14 was slightly higher.

In summary, the frequency of the changes on the video level (content diversity) was dynamic, unlike on the channel level (source diversity), which was static. In other words, while the videos changed frequently, the channels stayed the same. These findings were surprising. I did not expect that mainstream media would dominate so clearly and that one mainstream media channel, in this case *WELT Nachrichtensender*, would provide more than half of the research results. This channel provided not only 246 (in the first audit) and 281 (in the second audit) of the 420 search results, but also every first and most of the second, third, fourth, and fifth search results across both audits.

## Significance of Findings

The content found on YouTube about the Russia-Ukraine War originated primarily from mainstream media outlets. This finding shows that German media organizations related to the television, radio, newspaper, and magazine industries can extend their reach from their traditional media channels to YouTube. In other words, these organizations can be dominant offline *and* online.

The extension of traditional media organizations' reach can be linked to the convergence observed in the German media landscape (Die Medienanstalten, 2021b, 2022). This becomes clear when looking at one channel from a private and one channel from a public media organization that provided many search results: *ZDFheute Nachrichten* and *BILD*, respectively.

*ZDFheute Nachrichten* is the official YouTube of the television program *heute*, which airs on Germany's TV channel with largest market share—the public TV channel *ZDF* (owned by the major media organization of the same name) (Die Medienanstalten, 2021b). Behind the YouTube channel *BILD* is Germany's leading daily newspaper of the same name, which has just recently launched its TV channel called *BildTV* (Die Medienanstalten, 2021b; Hölig et al., 2022).

That both private and public media organizations were present on YouTube is interesting when looking at it through the lens of a recently started debate: It has been questioned how present Germany's public media should be on the internet in general and on social media in particular. Public news providers increasingly adjust their content to social media logic (Eichler, 2022). This observation has raised the question to what extent the content of public news providers can still be differentiated from that of private news providers and to what extent the former can still fulfill its remits (e.g., Fanta, 2022; Passek 2022; Tieschky, 2018). This study demonstrates that private and public news providers alike used the same platform to report about the Russia-Ukraine War. This implies that both types of news providers compete for audiences on YouTube.

As a result, regarding the war in Ukraine, YouTube functions as an outlet for mainstream media in Germany. From browsing through the titles, thumbnails, and descriptions of the search results, these media outlets apparently publish the same content on YouTube that they share on their traditional media channels (such as

television). If this were true, mainstream media would simply use YouTube to amplify their reach.

The dominance of mainstream media outlets on YouTube affects the source diversity in Germany. Democracies benefit from a variety of voices and viewpoints of public life (see Anderson, 2016; Benson, 2013; McQuail, 1992). Germans who turn to YouTube for content about the Russia-Ukraine War not produced by mainstream media outlets are unlikely to find what they are looking for. Instead, in many cases, they are exposed to the same voices and viewpoints they find when watching television or reading newspapers or magazines. The search results did not originate from otherwise unheard voices that have no other way than using the internet to get noticed, but from media organizations that do not need to share their content on YouTube to be heard, because their traditional media channels already reach audiences.

The findings are also interesting in light of conflicts between German media organizations and internet companies. Recently in Germany, an EU directive commonly called "neighboring rights" was implemented. This directive requires platforms to pay a publishing fee when they publish content from media organizations (Hölig et al., 2022). While there have been heated debates about what information news providers such as Google and Facebook are allowed to display and how news providers should be compensated (Hölig et al., 2022), media organizations apparently present their content on YouTube voluntarily.

Contemporary digital environments have the potential to be participatory and can empower formerly passive users to create and share content. However, these digital environments are not automatically "more participatory than old media" (Carpentier, 2007, p. 112), as the findings in this study demonstrate. Regarding German language search results related to the Russia-Ukraine War, YouTube cannot be considered an example of participatory culture.

The reasons that the highest number of search results originate in mainstream media channels are not clearly established. However, some explanations seem plausible. For example, YouTube's relevance algorithm may be biased toward mainstream media channels. Another explanation could be that these channels intentionally made their videos "algorithmically recognizable" (Gillespie, 2017, p. 63) by using certain keywords in

their titles and video descriptions. This is done frequently since content creators are increasingly aware of optimization tactics that increase their visibility (Bishop, 2019). Yet another explanation could be that these channels frequently uploaded many videos about the Russia-Ukraine War. Years ago, May (2010) observed that some mainstream media YouTube uploaded many videos.

## Contribution

This study contributes theoretically and empirically. First, it adapts the concepts of mainstream and alterative media and uses them as theoretical lenses to analyze empirical material. These concepts have not yet been used as a theoretical framework to research YouTube channels. Researchers often refer to these concepts, but they don't define them or use them to interpret their data (see e.g., Burgees & Green, 2009b; Kim, 2012; Rieder et al., 2018). By drawing on mainstream and alternative media to guide my analysis, I present a theoretical framework that can be taken into consideration when researching YouTube channels in the future. Second, source diversity on YouTube is investigated in times of a major news event. The context of the Russia-Ukraine War was selected because this event would demonstrate the dominance of mainstream media organizations on YouTube. As far as my research has revealed, the source diversity of YouTube's search results has not yet been studied in the context of a news event.

## Limitations

The study is solely exploratory. Even though this study's findings contribute to existing research, the study has limitations. First and most importantly, the findings are not representative. Due to the limited scope of this study, data were collected using only one search term and within a limited time frame of three weeks. Using different search terms, such as "*Ukraine Krieg*" or "*Putin Krieg,*" (*Krieg* means war in German) on different days may have delivered search results from other channels. For these reasons, the findings from this sample cannot be used to make general claims about the larger population, which would include all the search results related to the Russia-Ukraine War.

The study's results are constrained by the context of the Russia-Ukraine War. It is likely that searching for other issues would have led to significantly fewer search results from mainstream media organizations (and perhaps to a more stable ordering of search results). For example, one might expect that searching for topics not usually related to

news events, such as music, gardening, or literature, would have led to many search results from YouTube channels not related to media organizations from the television, radio, newspaper, and magazine industries. For this reason, the study's findings cannot be generalized to other issues. Findings are limited by their German context, which I chose because German-language videos on YouTube have not yet been studied extensively. Whether search results about the Russia-Ukraine War in other countries and in other languages are equally dominated by mainstream media channels and subject to frequent changes on the video level cannot be determined. This study indicates only the effects of personalization to a small extent. Real YouTube users might have received different search results based on their watch history. However, I did not intend to fully account for personalization, but rather to study YouTube on the platform-level (Roth et al., 2020). The categories used to identify YouTube channels—mainstream and alternative media—were very broad.

According to my approach, every YouTube channel that has no traditional media channels (TV, print, radio) or is owned by such an organization was defined as alternative media. For this reason, the YouTube channel *AFP Deutschland*, which is the official YouTube channel of the major news agency Agence-France Presse, I classified as alternative media. This classification is problematic, because AFP is by most definitions a major player in the international news world; putting it in the same category as personal YouTube channels (e.g., YouTuber Abu Bakr) has only limited analytical value.

## Further Research

Since this study's major limitation is its lack of representativeness, future studies could broaden the scope to reveal more representative findings. One possible method would study what happens when more than one search term is used and when the study is conducted over a longer time period (a feasible approach, since the war is still ongoing).

If new data and studies support this study's findings, other less relevant limitations—its focus on Germany and on the issue of the Russia-Ukraine War—could then be addressed. Future studies could also explore whether certain types of channels (that is, mainstream vs. alternative media) in other countries or in other languages produce similar search results about the war. In addition, they could examine to what extent search results about other issues are dominated by mainstream media channels. So

far, the latter question has only been partly addressed by Matamoros-Fernández et al. (2021).

If such studies were to support the finding that most top search results come from mainstream media channels, follow-up studies could try to discover why this is the case. For example, explanatory research could use Rieder and Hofmann's (2020) approach of "platform observability" (p. 1) to understand what Gibbs et al. (2015, p. 255) refer to as "platform vernaculars," which are common communication practices on YouTube. An example might be how channels use specific keywords in video titles or how they upload videos with a specific runtime to become "algorithmically recognizable" (Gillespie, 2017, p. 63). Studies using the approach of "platform observability" would take the role of both users (in this case, YouTube channels) and the platform into consideration.

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## Funding and Acknowledgements

# Appendix

Table 3    *Information about identified YouTube channels*

| Channel | Description | Subscribers (a) | Videos (a) | Views (a) |
|---|---|---|---|---|
| *AbuGullo* | YouTube channel of YouTuber Abu Bakr (e) | 106,000 | 104 | 6,077,128 |
| *AFP Deutschland* | Official German YouTube channel of the globally active news agency AFP (a) | 317,000 | 30,000 | 253,710,060 |
| *ARTEde* | Official YouTube channel of the public television channel *ARTE* (a) | 1,710,000 | 1,693 | 306,142,313 |
| *Bayerischer Rundfunk* | Official YouTube channel of the public broadcaster *Bayerischer Rundfunk* (a) | 666,000 | 7,544 | 393,004,033 |
| *BILD* | Official YouTube channel of the newspaper *BILD* (a) | 1,350,000 | 25,823 | 2,059,876,623 |
| *BR24* | YouTube channel of public broadcaster *Bayerischer Rundfunk*, which focuses on news and current information (a) | 284,000 | 8,360 | 238,597,633 |
| *DER SPIEGEL* | Official YouTube channel of the magazine *DER SPIEGEL* and the TV program *SPIEGEL TV* (a) | 1,560,000 | 9,530 | 1,489,371,564 |
| *DW Deutsch* | The official YouTube channel of the broadcaster *Deutsche Welle*, which is member of the organization *ARD* (a; b) | 833,000 | 29,572 | 409,672,192 |
| *euronews (deutsch)* | Official German YouTube channel of European television news channel *Euronews* (a) | 231,000 | 111,387 | 256,871,220 |
| *faz* | Official YouTube channel of the newspaper *Frankfurter Allgemeine Zeitung* (a) | 218,000 | 28,824 | 254,652,255 |
| *FOCUS Online* | Official YouTube channel of the magazine *FOCUS* (a) | 196,000 | 3,648 | 232,569,625 |
| *India Today* | Official YouTube channel of the English language television news channel *India Today* (a) | 6,720,000 | 127,444 | 2,085,195,454 |
| *Julienco* | Official YouTube channel of the influencer Julian Claßen (c) | 3,970,000 | 600 | 1,475,163,205 |
| *Jung & Naiv* | YouTube channel of the interview show *Jung & Naiv* (a, d) | 500,000 | 3,610 | 15,578,0007 |
| *MrWissen2go* | YouTube channel that offers general knowledge, which is part of *Funk* and is jointly owned by the public broadcasters *ARD* and *ZDF* (a) | 1,970,000 | 759 | 319,339,881 |
| *Österreichs Bundesheer* | Official YouTube channel of the Austrian Armed Forces (a) | 188,000 | 1,313 | 42,442,961 |
| *phoenix* | Official YouTube channel of the TV channel *phoenix*, which is jointly owned by the public broadcasters *ARD* and *ZDF*. phoenix mainly broadcasts events and documentaries (a) | 320,000 | 37,212 | 278,045,804 |
| *stern* | Official YouTube channel of the magazine *stern* (a) | 176,000 | 3,330 | 165,937,738 |
| *STRG_F* | YouTube channel showing investigative reports owned by *FUNK*, which is jointly | 1,070,000 | 242 | 250,303,828 |

| | owned by *ARD* and *ZDF* (a) | | | |
|---|---|---|---|---|
| *Stuttgarter Zeitung & Stuttgarter Nachrichten* | Official YouTube channel of the local newspapers *Stuttgarter Zeitung* and *Stuttgarter Nachrichten* (a) | 36,000 | 2,541 | 29,413,292 |
| *tagesschau* | Official YouTube channel of the news program *Tagesschau*, which runs on the public TV channel *ARD* (a) | 1,290,000 | 18,593 | 966,031,924 |
| *Terra X* | Official YouTube channel of the documentary television program *Terra X*, which runs on TV channel *ZDF* (a) | 902,000 | 577 | 260,570,600 |
| *TV.Berlin - Der Hauptstadt-sender* | Official YouTube channel of the TV channel *TV.Berlin* (a) | 192,000 | 14,279 | 83,476,230 |
| *Unser Land* | YouTube Channel of the public broadcaster *Bayerischer Rundfunk*, which focuses on agriculture and forestry (a) | 99,100 | 865 | 59,471,271 |
| *WELT Nachrichten-sender* | Official YouTube channel of the television news channel *WELT* (a) | 1,510,000 | 50,274 | 2,236,797,667 |
| *WELT Netzreporter* | YouTube channel of *WELT Nachrichtensender*, which offers news in brief, statements, and short videos (a) | 117,000 | 6,200 | 153,265,837 |
| *ZDF MAGAZIN ROYALE* | Official YouTube channel of the satirical late night show *ZDF Magazin Royale*, which runs on TV channel *ZDF* (a) | 1,270,000 | 1,272 | 610,199,738 |
| *ZDFheute Nachrichten* | Official YouTube channel of the news program *heute*, which runs on the TV channel *ZDF* (a) | 812,000 | 4,741 | 553,126,334 |
| *ZDFinfo Dokus und Reportagen* | Official YouTube channel of the TV channel *ZDFinfo*, which shows documentaries and reports and is part of the public broadcaster *ZDF* (a) | 331,000 | 226 | 81,570,598 |
| *ZOY News* | There is no information about this channel available other than that it is based in the U.S.A. (a) | 7,990 | 1,138 | 9,243,059 |

(a) Rieder (2015), (b) *Deutsche Welle* (n.d.), (c) Lottritz (2022), (d) *Jung & Naiv* (2022), (e) Bakr (n.d.)