

# The German online media market: Online-born information offerings and their audiences – A shift towards digital inequalities?<sup>1</sup>

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## Abstract<sup>3</sup>

Media market and media-related inequalities in society have been intensively discussed in academia. Yet it is unclear if the online media market environment reproduces existing inequalities, smoothens them or even creates new ones among media offerings and users, potentially reinforcing a social divide. In this study, we test to which extent inequalities found are truly digital-induced or reproduced from offline context using the German *Longitudinal IntermediaPlus 2014-2016* dataset and descriptive statistics. Based on an integrative analysis we combine the perspectives of German media offerings (supply side) and media audiences (demand side). We rely on the comparison of the genre portfolios of offline-originated and online-born media offerings to evaluate inequalities in the German online media market, based on past research, assuming that offline-originated media providers primarily replicate their strategic product portfolio from the offline media market to the online media market. Using the media providers' origin, we identify a typology of offline-originated and online-born media offerings. For inequalities in media use and potentially resulting social divides we refer to research on the knowledge gap hypothesis and digital

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divide studies. For 2016, we found German online-born media offerings having a thematically contradictory, entertainment-focused product portfolio that balances existing offline-originated inequalities. However, it provokes a ‘silent’ de-polarization, with political offerings almost exclusively offline-originated evolving into a niche market on the supply side. On the demand side, we found stronger inequalities in the use of offline-originated online media offerings by gender, education and socio-economic status. These mainly mirror the inequalities known from the offline context. For age, we found uniquely digital inequalities in online media use.

## Keywords

Digital inequalities, German online media offerings and use, online-born offerings, knowledge gap, digital divide.

## Introduction

In this study, we analyse if digitalization balances, reinforces, or creates new inequalities in the German online media market and whether it reinforces, or creates, new social divides. We combine the market perspective (supply side) with the audience perspective (demand side) and differentiate between online-born and offline-originated online media offerings to identify digital, online-born, and offline-originated inequalities.

First, for our analysis on supply- and demand-sided inequalities we review relevant literature from the offline context as well as the online media surrounding and refer to the online media market conditions and media-specific strategic orientation of media providers. Next, we formulate our hypotheses to test whether inequalities amongst online-born and offline-originated media offerings and their users’ socio-demographic background in the German online media market are new or mirror inequalities from the offline context. To identify digital (what we define as ‘online-born’) and offline-originated inequalities, we use an innovative approach that rests on the market supply perspective when analysing digital inequalities in online media use. The explanatory power of our analysis is supported by our unique, very detailed dataset, the *Longitudinal IntermediaPlus 2014-2016* as our basis to determine the characteristics of offline-originated and online-born offerings to assess supply- and demand-sided inequalities in the German online media market using descriptive statistics.

Referring to the online media market conditions and media-specific strategic orientation of media providers, we operationalize supply-sided inequalities

using the number and media reach of genre-specific online media offerings. They serve as structural and economic determinants of media providers' individual product portfolio, that, in its entirety, centrally characterizes media supply in (online) media markets. We proceed from the assumption that online media offerings from offline-originated media providers primarily correspond to their offline portfolio (Carpenter, 2010: 1069; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 299). Using the typology of offline-originated and online-born offerings, we identify genre portfolio gaps to delimit offline-originated and online-born inequalities on the supply side. Build on this, we compare the audiences of offline-originated and online-born online media offerings. We calculate media use gaps for audiences in the most common socio-demographic metrics that have been found to account for online media use variation (e.g. Ragnedda et al., 2020: 796f, 804f; Peiser & Jandura, 2015; van Deursen & van Dijk, 2013: 520; Zillien & Hargittai, 2009; Wei & Hindman, 2011: 224), namely: age, gender, education, income and socio-economic status (SES). We investigate whether online media use inequalities are newly created through digitalization or originating from the offline context, that they mirror offline media use and are replicated in digitalization.

Next, we briefly describe the German online media market dataset, combining supply-sided information per offering (i.a. media-type origin and thematic genre) and demand-sided information on users' social background. The operationalization of the supply- and demand-sided digital inequalities serves as the basis for our analysis and results. We compare these with findings on offline-originated inequalities to triangulate our new research design. Our conclusion section summarizes our main findings and its implications for German society.

## **Inequalities in online and offline media markets**

Media-related social inequalities have always been discussed intensively while new media genres emerged in societies (Allen & Miller, 2000: 47; Dutton & Reisdorf, 2019: 3; van Dijk, 2005; van Dijk, 2020: 4; Zillien, 2006: 70). It is understood that the online media market environment may reproduce existing inequalities, or even create new ones (Zillien & Marr, 2013: 55). Some fear the innovating online media market conditions may trigger genre-specific information supply inequalities to the disadvantage of the normatively desired (thematic) representation of online media offerings (Dahlgren, 2009: 37; Hallin & Mancini, 2004: 277; Kiefer & Steininger, 2014: 27; Klinenberg, 2005: 61; Sjøvaag & Kvalheim, 2019: 294ff, 302). This would put the democratically

desired, integrative, and central information functions of online media at risk, (Cunningham, 2018: 44; Mancini, 2013: 44; Ragnedda & Mutsvario, 2018: 2ff; Sjøvaag & Kvalheim, 2019: 294) whilst the unequal use of information offerings further increases the knowledge gap amongst media audiences rather than decreases it (Tichenor et al., 1970: 159f). When media cannot fulfil its information function, digital inequalities in media supply and use could result in a social divide and social exclusion. This would undermine the initial hope that the online media (environment) could redress existing knowledge gaps and underlying social inequalities (Dahlgren, 2009: 9, 41; Wei & Hindman, 2011: 229), instead increasing the democratic divide through social exclusion (Norris, 2001: 230f; Ragnedda et al., 2020: 795).

Although often solely focused on the media market's demand side, the extant literature recommends including both the supply and demand side of the online media market when analysing digital inequalities (Bonfadelli, 2002: 71f; Owen & Wei, 2019). Focusing on the supply side, it becomes apparent that the online media market, in particular, has undergone radical changes compared to offline media markets (Lee, 2007: 745; Pira International, 2003: 16; Robinson et al., 2015: 578). Two characteristics tend to favour digital inequalities amongst genre-specific online media offerings whilst indirectly equally impacting online media use. First, increased technological possibilities (Jensen & Sund, 2017: 289, 291) allow innovative business models focussed on commercially-oriented activities and offerings (e.g. e-commerce) (Hendrickx, 2020: 5; Marr, 2006: 268). Second, a democratization of market barriers for new online media providers (Allen & Miller, 2000: 57; Napoli, 2019: 93; Pira International, 2003: 124; Cunningham, 2018: 38, 43) diminishes the once-existing journalistic gatekeeping function (Budzinski & Kuchinke, 2020: 25; Cunningham, 2018: 37; Dahlgren, 2009: 37). Both characteristics create a digital environment that allows more-heterogeneous structures of media offerings compared to offline media markets on the supply side (Campbell & Grimm, 2019: 111) and ultimately shifts the gatekeeping function with an increasing need of media selection to the users.

New, pure online-born media providers, especially take advantage of these characteristics with their offerings (Cunningham, 2018: 38, 43; Egan & Tsao, 2015: 4; Kiefer & Steininger, 2014: 24, 26f; Sjøvaag & Kvalheim, 2019: 302). In contrast, media providers with offline-originated online media offerings primarily mirror their offline product portfolio (Carpenter, 2010: 1069; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 299). Differentiating between the genre portfolio of offline-originated and online-

born offerings enables us to isolate new supply-sided digital, online-born from already existing offline-originated inequalities in the genre-specific supply of online media offerings. It also enables us to define a product portfolio typology of offline-originated and online-born offerings resulting in two thematic genres that serve as the empirical basis for analysing demand-sided digital inequalities in online media use among socio-demographic metrics.

### **Supply-sided inequalities: Thematic genre metrics**

The extent to which the genre portfolio of online-born and offline-originated online media offerings differ, forms the basis for our analysis of supply-sided digital inequalities. It refers to the structure of thematic genres offered within the product portfolio. In the offline media market, the product portfolio offered is characterized by the supply of genres whose information value is rather high from a normative, democratically relevant perspective, e.g. business, culture, economy, news, politics or regional (Brekken et al., 2012: 67f; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 304). The product portfolio and its respective media providers are characterized by their journalistic self-perception (Carpenter, 2010: 1069; Dahlberg, 2007: 838; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 299). From past research (Carpenter, 2010: 1069; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 299), we can assume that offline-originated media providers primarily replicate their genre-specific portfolio from the offline media market to the online media market. Thus, to distinguish new, digital inequalities from existing inequalities, the offline-originated product portfolio of offerings serves as our assessment scale.

In contrast, online-born offerings and their media providers follow commercial, rather than journalistic, maxims of action (Cunningham, 2018: 38, 43; Egan & Tsao, 2015: 4; Hallin & Mancini, 2004: 277; Kiefer & Steininger, 2014: 24, 26f; Sjøvaag & Kvalheim, 2019: 302). They aim to benefit from a maximized economic efficiency (Hendrickx, 2020: 2; Küng, 2001: 222; Whitney et al., 2004: 406). These emerging, numerically increasing online-born media offerings tend to focus on high media reach and audience-maximizing content strategies; especially strategies with particularly low production costs (Anderson & Gabszewicz, 2006: 570; Gentzkow & Shapiro, 2008: 147; Hamilton, 2011: 16; Küng, 2001: 223; Sjøvaag & Kvalheim, 2019: 295f). Consequently, a commercially-dominated product portfolio contains entertainment-oriented thematic offerings that lack “the breadth and depth of stories” (Brekken et al.,

2012: 65) and include entertainment, family, health, lifestyle or sports genres (Brekken et al., 2012: 70). An increasing orientation towards content's commercial usability is posited to negatively impact the normatively desired (thematic) representation of online media offerings (Dahlgren, 2009: 37; Hallin & Mancini, 2004: 277; Kiefer & Steininger, 2014: 27; Klinenberg, 2005: 61; Sjøvaag & Kvalheim, 2019: 294ff, 302).

Based on the online media market conditions and strategic orientation ascribed to online-born media offerings and their media providers in past research, we expect digital inequalities to appear from differences in the thematic genre portfolio comparing offline-originated and online-born information offerings (genre portfolio gaps). Based on the number and media reach as metrics of genre-specific online media offerings building the structural and economic determinants of online media market supply, our first hypothesis predicts:

H1: Patterns of inequalities in the genre portfolio identified by the number and media reach of online-born offerings will differ from those of offline-originated offerings.

If the genre portfolio of online-born offerings differs from the offline-originated genre portfolio, genre portfolio gaps exist. If existing, we aim to identify the characteristics of genre portfolio gaps, drawing on the existing literature that ascribes different normatively charged maxims of action to online-born and offline-originated media providers (i.a. Anderson & Gabszewicz, 2006: 570; Dahlgren, 2009: 35; Gentzkow & Shapiro, 2008: 147; Küng, 2001: 223; Sjøvaag & Kvalheim, 2019: 293ff, 302), leading to H2:

H2: Genre portfolio gaps among online-born and offline-originated offerings will be characterized by the former's skew toward entertainment-oriented genres based on the number and media reach of offerings.

If true, online-born offerings should supersede offline-originated offerings and their media provider from the online media market with economic-oriented maxims of action. This would enforce a de-politicization, to the detriment of genres perceived as having special importance for society's democratic constitution (Hindman, 2009: 100, 131; Cunningham, 2018: 44). If true, this may negatively influence online media audiences' media consumption (Mancini, 2013: 45f). To analyse digital demand side inequalities, the characteristics of online-born versus offline-originated offerings is reduced to two genres, as typical cases.

## **Demand-sided inequalities: Socio-demographic metrics**

Yet it is unclear to what extent online media is producing new inequalities or mirroring existing ones (van Deursen & van Dijk, 2013: 521f; Wei & Hindman, 2011: 217f). Offline media use inequalities in audience's socio-demographic metrics have been observed in well-educated men, with a high SES, use media such as newspapers, while those with lower education, and SES, use television as an information source (Bonfadelli, 2002: 69; Peiser & Jandura, 2015; Wei & Hindman 2011, 222). Television is dominated by commercial channels that are supposed to be entertainment-oriented and, therefore, lower on political-information supply (Bonfadelli, 2002: 71). As online-born media offerings are more commercially- and entertainment-oriented (Cunningham, 2018: 38; Brekken et al., 2012) a similar pattern of audiences' socio-demographic characteristics to that of television audiences could be assumed. For age, increases in offline media use throughout the lifecycle has been demonstrated and decreasing again approaching old age (Peiser & Jandura, 2015).

Initially, online media access inequalities were attributable to technical and economic barriers (Bonfadelli, 2002: 72; van Deursen & van Dijk, 2013: 521f), known as first digital divide. Later, social demographics accounted for much of the observed variation in online media use, the second digital divide. SES – although measured in different ways – proved to be a good predictor for online use (Zillien & Hargittai, 2009: 278, 284ff). Men use online media (as information source) more frequently than women (Initiative D21, 2016: 13; Bonfadelli, 2002: 78ff; Wei & Hindman, 2011: 226), well-educated people use them more than less-educated people (Initiative D21, 2016: 14; Bonfadelli, 2002: 77ff). Further, the well-educated and those with a higher SES are able to more efficiently search for information (Zillien & Hargittai, 2009: 288). Older people are online less frequently than younger ones (Initiative D21, 2016: 13, 58) and younger people use online media news more often than older people (Peiser & Jandura, 2015), despite the fact younger cohorts mostly use online media for entertainment (Bonfadelli, 2002: 80).

Consistent with these prior, mainly digital divide research findings, our third hypothesis predicts:

H3: Patterns of inequalities in the online media audience socio-demographic metrics of gender, education and SES will mirror those of offline media.

The knowledge gap hypothesis and digital divide literature review showed different inequalities in offline and online media use for age (see e.g. Ragnedda et al., 2020: 808f; Peiser & Jandura, 2015) our fourth hypothesis is:

H4: Patterns of inequalities in the online media audience socio-demographic metric of age will differ from those of offline media.

If our demand-sided hypothesis withstands falsification, we can conclude online media use inequalities mainly mirrored the offline-context, and are not new. But for age, there would be newly created inequalities through digitalization; they would be real digital inequalities in media use requiring special attention for (new) actions to be taken countering social exclusion.

## Research Approach

Our research approach isolates online- and offline-related effects. The online media market can create digital inequalities (Zillien & Marr, 2013: 55), and in contrast to existing inequalities, these digital inequalities are caused by the digital environment and impact both supply- and demand-related structures within the online media market. Online media market analysis, of course, must also control for any offline contexts that might appear to attribute to the online media market inequalities that actually originate from the offline media context (van Dijk, 2020: 6). Accordingly, our supply-sided analysis of the online media market distinguishes between the media-type origin of the media providers resulting in online-born and offline-originated online media offerings. The empirical results on the demand side are based on two thematic genres each characteristically for online-born and offline-originated media offerings compared to inequalities known from offline media use. We thus cover two dimensions that Bonfadelli (2002: 71) defined for analysing potential media-related social inequalities: first, caused by inequalities in information supply, and second, by its use.

## Data

We used the *Longitudinal IntermediaPlus (2014-2016)* to test our H1-H4, predicting the sources of digital inequalities in the German online media market using the most recent year: 2016. This unique and representative dataset for online media use in Germany is collected from Germany's leading media-analysis agencies and is limited to non-public, private online media offerings. It combines variables for cross-media use (press-media, radio, tv and online), socio-demographic metrics and a respondents' background for German speaking



residents of Germany 14 years of age and older. The data is collected via survey and technical measures based on digital trace. This enables us to refer to the actual use of online media (covered by the variables page impressions and daily-basis use) and not on potentially biased self-declarations of respondents going beyond aggregated use categories as in past research of digital divide and knowledge gap hypothesis (e.g. van Deursen & van Dijk, 2013; Zillien & Hargittai, 2009; Bonfadelli, 2002). Further, our analysis benefits from the detailed online media supply and use data on the level of single website offerings (e.g. FAZ/politics) and its added supply-sided information (i.a. thematic genre per offering). For 2016 – the year used for our analysis – the dataset includes over 4,300 online media offerings and 300,000 people. This new *Longitudinal IntermediaPlus (2014-2016)* data is made accessible for academic use by Brentel et al. (2020; Brentel & Winters, forthcoming) augmented with supply-sided primary data (see Kampes, 2020).

### **Operationalization of metrics**

**Offerings:** The underlying strategic business model of media offerings (structured as connection, content, context, commerce (Wirtz, 2018: 307-309) and games) delimitates the extended business model options within the online media market (Marr, 2006: 268; Hendrickx, 2020: 5; van Dijk, 2004: 151) and dataset to information offerings. These are of special importance for the decision building process in society (Christians et al., 2009; Iversen & Knudsen, 2019) and thus in focus when analysing digital inequalities. Further, they are enriched with primary data on the media-type origin of the respective media provider to distinct two samples: offline-originated and online-born information offerings. The media-type origin is derived from the media provider's initial media background either originating offline (newspapers, magazines, tv or radio channel) or online. However, for the distinction of online-born versus offline-originated offerings the latter exclusively refers to newspaper and magazine offerings. The delimited dataset for the supply-sided analysis consists of 1,152 offline-originated and online-born information offerings resulting in two genre product portfolios.

**Genres:** The information offerings are structured by thematic genres that were identified inductively and assigned originally based on 24 different genres (Kampes, 2020: 32ff). However, for our study, the genres 'Nachrichten' (German word for news), 'news' and 'newsletter' were merged to news as neither the language of presented news, nor their form of presentation is of relevance. This results in a total of 22 genres: advice, car, career, culture, digital,

economy, entertainment, family, finance, forum, games, health, knowledge, lifestyle, news, politics, real estate, regional, soccer, sports, style and travel. The analysis of thematic genres within the product portfolio is based on their number and media reach. The media reach consists of page impressions from a three-months-period<sup>4</sup> provided in the *Longitudinal IntermediaPlus (2014-2016)*. As the number of offerings and cumulated media reach varies amongst online-born and offline-originated offerings, the analysis bases on the relative number and media reach of information offerings.

Users: We have defined two categories of users: a ‘user’ is someone who has used the website entity at least one day in a three-month-period while a ‘regular user’ is someone who has used the website entity on an average of at least one day per week. This is done by aggregating the variable ‘Nutzung tagesbasis’, the daily-based use of an information offering for a respondent indicating the number of days in a three-month period a respondent used the information offering.<sup>5</sup>

Socio-demographic metrics: The audience is characterised based on the variables age, gender, education and income. Age is coded for twelve cohorts in four-year steps beginning with ‘14-19’ and ending with ‘70 or older’. Gender comprises two categories: men and women. Education is measured in four categories and aggregated to the three categories low, mid and high education, where the categories of ‘matriculation standard’ and ‘university’ are pooled. Education is further combined to an additive index with income<sup>6</sup> to create a variable for SES having again three categories, low, mid and high SES.

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<sup>4</sup> The page impressions from a three-months-period are constructed as an average of two three-month-periods (October to December 2015 and January to March of 2016) (Brentel et al., 2020).

<sup>5</sup> If a respondent has more than 0 contacts with one online-offering of the genre (variable ‘Nutzung tagesbasis’ of a genre greater than ‘0’) it is a user of the genre; If a respondent has at least 13 contacts within the three-month period he or she uses the genre at an average of once a week and is seen as a regular user; if a respondent has more than 89 contacts with an online offering of the genre he or she is defined as a daily user of the genre. A three-months-period is constructed as an average of two three-month-periods (October to December 2015 and January to March of 2016) (Brentel et al., 2020).

<sup>6</sup> Income is measured in eight categories and aggregated to the three categories low (less than 1,500 Euros), mid (1,500 to 2,500 Euros) and high (2,500 Euros and more) income. For the SES index, smaller than 1.5 was coded as “low”, 1.5 and smaller 2.5 as “mid”, and 2.5 and above as “high” SES.

## Methods of analysis

Descriptive statistics were used to analyse the genre portfolios of online media offerings and socio-demographic characteristics of the audience grouped to allow the comparison of offline-originated and online-born offerings by respective genres. To reveal the existence of digital inequalities on the supply side (H1), we compare the thematic characteristics of the genre portfolio of offline-originated and online-born offerings on their entirety based on their numerical and media reach-related distribution. Following a brief description of both genre portfolios, we perform a linear correlation analysis for both genre metrics (number and media reach) for the offline-originated and online-born genre portfolio. With the genre portfolio of offline-originated offerings corresponding to the offline media market (Carpenter, 2010: 1069; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 299) and thus serving as the assessment scale for digital inequalities, a linear correlation to the online-born genre portfolio would state that genre portfolio gaps as new, digital inequalities do not exist, rejecting H1. It would result in a duplication of offline-originated inequalities through online-born offerings in the online media market. The absence of a correlation between the offline-originated to the online-born genre portfolio, thus demonstrating genre portfolio gaps confirming H1, further is the prerequisite for analysing H2.

To identify the characteristics of genre portfolio gaps (H2), we compare the numerical and media reach-related coverage of offline-originated offerings by online-born offerings per genre. The comparison of the offline-originated and online-born genre portfolio results in a three-step-characterization of gaps as forms of digital inequalities: First, thematic offerings that are underrepresented in both variables (numerical and media reach-related) within the online-born portfolio (illustrated below the assessment scale of 100 percent resembling the offline-originated distribution). In contrast, thematic genres above the assessment scale are overrepresented since online-born offerings supplement the online media market. Third, thematic offerings may be underrepresented with respect to one variable (either numerical or media reach-related) whereas overrepresented in terms of the other variable considered. According to literature, we expect online-born offerings to be overrepresented in terms of their number and media reach especially with respect to entertainment-oriented genres such as entertainment, family, health, lifestyle or sports (Brekken et al., 2012: 70). Genres whose information value is rather high from a normative, democratically relevant perspective like business, culture, economy, news, politics or regional are expected to rather be underrepresented within the online-

born portfolio of offerings (Brekken et al., 2012: 67f; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 304) thus confirming H2. The description of both genre portfolios as well as the characteristics of genre portfolio gaps ultimately lead to a typology of both portfolios for which one genre each is identified as a typical case and analytical basis for the demand-sided analysis: the genres politics (offline-originated offerings) and digital (online-born offerings).

To test our third hypothesis, we calculate for each socio-demographic metric the gap between the groups of categories. For gender one group are men and the other are women, for education and SES we have three groups: low-, mid- and high-level education or SES. Men and the low-level groups of education and SES build the reference category. Doing so we follow the methodological approach of Bonfadelli (2002), who calculated these gaps for comparison in online media access and use to evaluate in his pioneer study to what extent the knowledge gap hypothesis is transferred to a digital divide. In our case, we compare the gaps among the audience of online-born media offerings with those of offline-originated online media offerings to evaluate the gaps, measuring unequal media use among those groups, as inequalities that are digital, thus online-born, or coming from the offline context, being offline-originated. We also consider the distribution of the different social groups in our data so we do not over or underestimate a gap found. We calculate the gaps for users, regular users and daily users to be able to compare the different groups among the frequency of their media use as e.g. men and well educated are expected to use online and offline media more (see Bonfadelli, 2002: 77, 79; Peiser & Jandura, 2015).

Are the patterns of gaps, visualized by graph lines, following the same direction we can conclude that inequalities in online media use among those social metrics follow those known from offline media use. Are the graph lines differing in direction we have to reject H3 as the patterns of gaps for online-born and offline-originated online media offerings differ from each other. A steeper line for offline-originated offerings indicates a balancing effect of digitalization on media use. While a steeper line for online-born offerings signals a rather negative impact of digitalization on media use that might reinforce social inequalities. Additionally, we compare the patterns of gaps we find with the patterns of offline media use reviewed in the literature on knowledge gap hypothesis and divide research. Are these patterns of gaps, measured by the direction of the gaps, corresponding we can confirm our H3.

We follow the same method to test our fourth hypothesis and use the age cohort of 14-19 years as reference category to calculate the gaps. As we expect truly digital inequalities in online media use among age, we have to reject H4, once the graph lines follow the same direction.

## Results

The population of 1,152 German online information offerings served as the empirical basis to test the first and second, supply-sided hypotheses whereas the demand-sided third and fourth hypotheses are based on the genre politics, constituting of 16 offerings and 106 digital offerings identified as typical cases for offline-originated and online-born offerings.

### *Genre portfolio of online-born and offline-originated offerings*

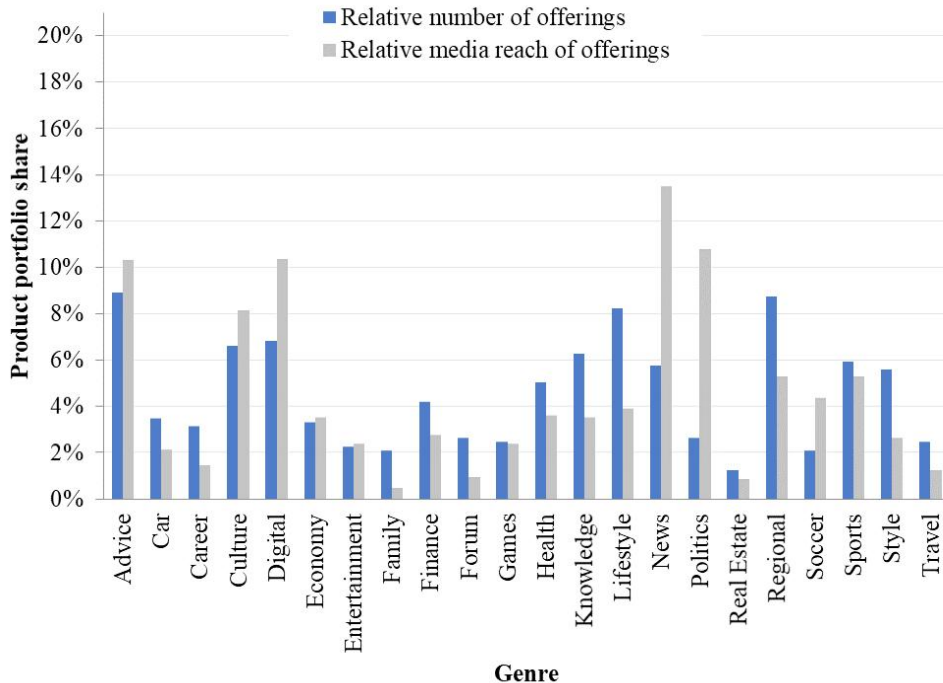
Offline-originated offerings include 572 information offerings (49.65 %) covering 34.43 percent of the cumulated media reach. This two-folded bias to the advantage of online-born offerings within the population reveals not only that the latter has a higher empirical probability to dominate thematic genres online. It further discloses genre-superordinate that offline-originated offerings tend to have a lower media reach and numerical representation in the overall online media market portfolio, whereas especially online-born information offerings are rather high-reach offerings with higher market impacts and (advertising-) revenue streams. Based on this brief introduction of the online media market offerings, we describe the offline-originated and online-born-specific genre portfolios as a basis to test the existence of genre portfolio gaps (H1) and if applicable, describe their characteristics (H2).

### *Hypothesis 1: Existence of genre portfolio gaps*

Serving as assessment scale (Carpenter, 2010: 1069; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 299), the product portfolio of offline-originated information offerings is thematically balanced with none of the 22 genres representing more than ten percent of the numerical share of offline-originated information offerings (see figure 1 with genres in alphabetical order). The genres lifestyle (8.22 %), regional (8.74 %) and advice (8.92 %) dominate the relative number of information offerings in ascending order for 2016. Considering the media reach and thus market impact of offline-originated information offerings, the portfolio is characterized by the genres advice (10.32 %), digital (10.38 %), politics (10.77 %) and news (13.52 %) with the latter covering the highest relative share of media reach amongst offline-originated information offerings.

Figure 1

**Genre portfolio of offline-originated information offerings**

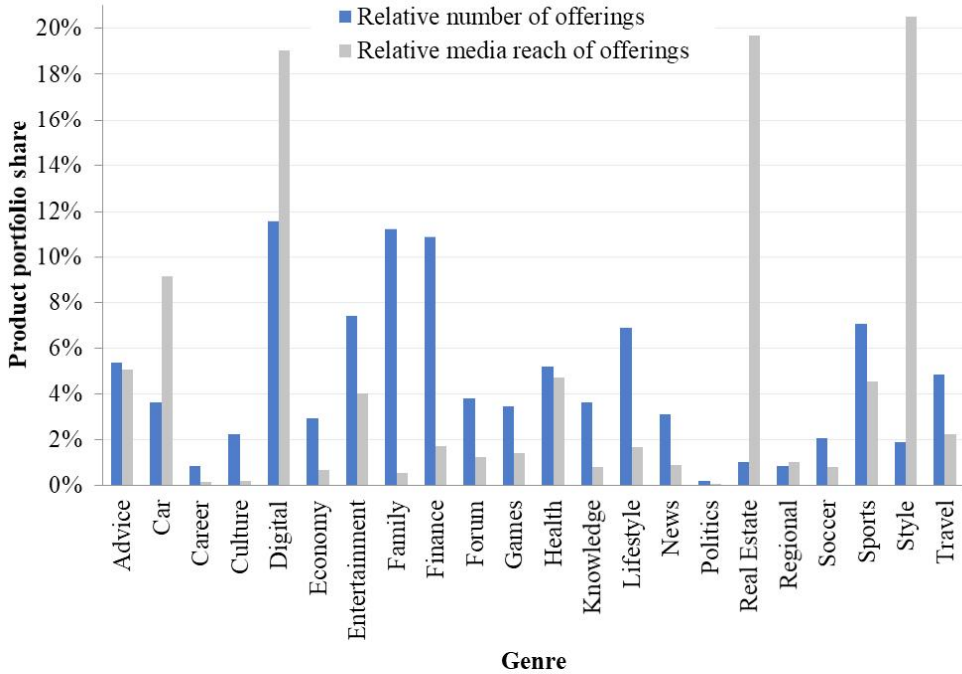


Source: Own figure

In contrast, the genre portfolio of online-born information offerings is more concentrated both in terms of the number and media reach of thematic genres (see figure 2). Online-born information offerings cover leadingly the genres finance (10.86 %), family (11.21 %) and digital (11.55 %) in terms of their relative numerical representation within the sample. The genre digital additionally belongs to the three leading thematic genres with respect to the relative media reach: It is the third most important genre with a relative media reach of 19.04 percent behind real estate (19.69 %) and style (20.51 %).

Figure 2

Genre portfolio of online-born information offerings



Source: Own figure

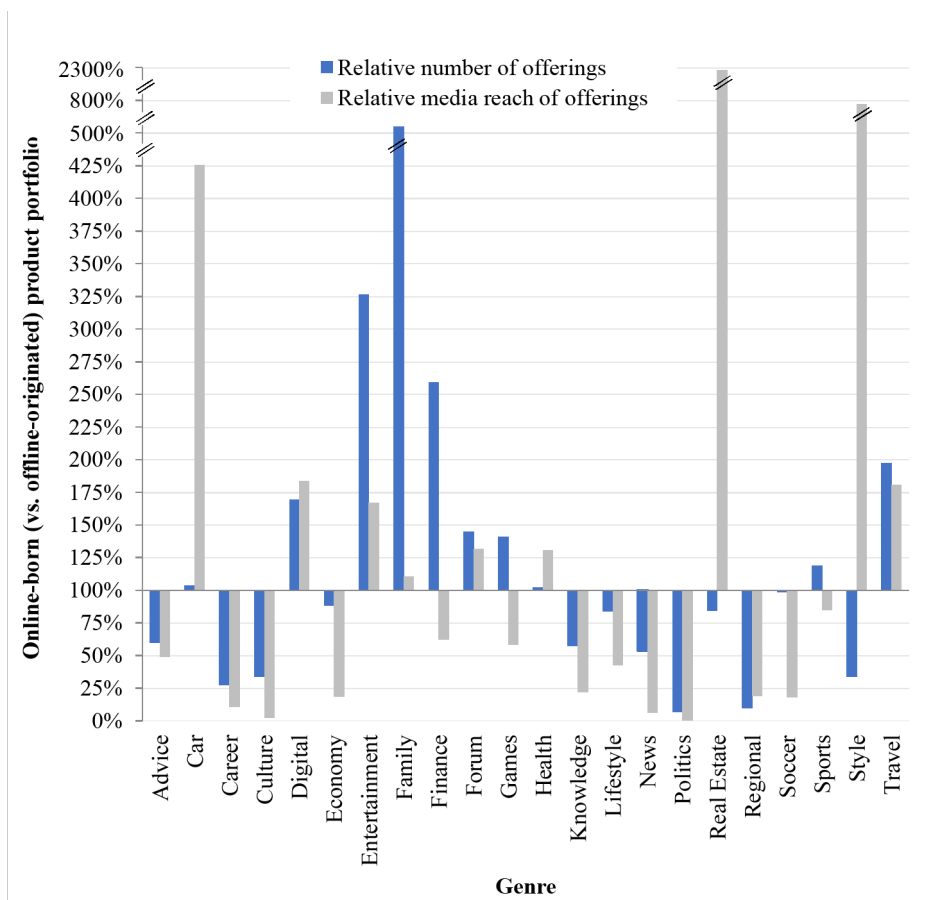
The short description of the two genre portfolios suggests that the genre portfolios do not correlate in their entirety, which is supported by the correlation analysis of both genre portfolios: As the p-value is larger than the significance level of .05, no significant indication for a correlation between both genre portfolios exist neither for the number ( $r = .106$ ;  $p = .637$ ) nor for the media reach of offerings ( $r = -.032$ ;  $p = .887$ ). The genre portfolio of offline-originated and online-born offerings do not correlate in their entirety in terms of the number or media reach of genres. Based on the executed analysis, inequalities from the offline media are not duplicated in the online media market. Thus, new genre portfolio gaps as digital inequalities have arisen (confirming H1), whose characteristics are further characterized on a genre-specific level (H2).

**Hypothesis 2: Digital inequalities - new genre portfolio gaps**

The comparison of the online-born and offline-originated genre portfolio (see figure 3) results in a three-step-characterization of genre portfolio gaps.

Figure 3

**Genre gaps between online-born and offline-originated offerings**



Source: Own figure

Underrepresented genres: In total ten genres are underrepresented within the online-born genre portfolio in terms of the number of offerings provided as well as their cumulated media reach compared to the offline-originated portfolio: advice, career, culture, economy, knowledge, lifestyle, news, politics, regional, soccer. Least numerically represented are career (27.39 %), regional (9.86 %) and politics (6.57 %). Concerning the relative media reach covered



amongst the online-born offerings, news (6.41 %), culture (2.48 %) and politics (0.55 %) are least represented in ascending order. In fact, only one single online-born political offering exists in 2016 so that politics is most underrepresented in terms of the number and media reach within online-born offerings. With culture, economy, news, politics and regional five genres complying a high democratic relevant information function (Brekken et al., 2012: 67f; Gentzkow & Shapiro, 2008: 147; Sjøvaag & Kvalheim, 2019: 304) are underrepresented and thus still dominated by offline-originated offerings in the German online media market.

Overrepresented genres: With car, digital, entertainment, family, forum, health and travel, seven genres are numerically and in terms of their media reach stronger represented amongst online-born information offerings. Whereas the genre family offers five times more offerings (534.20 %) with entertainment (326.21 %) to follow, it only covers 110.45 percent of the media reach already covered by offline-originated offerings. In turn, the genre car covers with a slightly higher number of offerings (103.55 %) a more than quadrupled media reach (425.71 %). In contrast, the digital genre is one of the genres equally overrepresented with respect to both variables covering with almost the double amount of offerings (169.43 %) an almost doubled media reach (183.51 %). With the overrepresented genres primarily fulfilling an entertainment-oriented information function (Brekken et al., 2012: 70), this characteristic can be ascribed to online-born information offerings in general. This is in line with past research expecting online-born media provider to offer rather commercially-motivated, entertainment-oriented genres (Dahlgren, 2009: 35; Sjøvaag & Kvalheim, 2019: 293ff) supporting our second hypothesis (H2).

Under- and overrepresented genres: Five genres are simultaneously under- and overrepresented within online-born offerings. With respect to the number of offerings provided, the genres finance (258.88 %), games (140.89 %) and sports (118.92 %) are overrepresented, but do not cover the media reach of offline-originated offerings. In contrast, the genre style is characterized by only a third of online-born information offerings that however have a high reach per offering (cumulated 776.55 % of offline-originated offerings). The tendency for high-reach online-born offerings becomes even more apparent for the genre real estate that has with less offerings (84.53 %) a more than 22-times higher media reach (2266.40 %) than the offline-originated portfolio.

Due to the contradictory product portfolio of offline-originated and online-born information offerings, not only the overall diversity of genres increases but also the genre portfolio gaps identified above balance offline-originated inequalities in the online media market. Whereas the genres culture, news and politics have a media reach-related high share amongst offline-originated

offerings, they are underrepresented within online-born information offerings balancing the former inequalities (Hindman 2009: 19). In turn, this equally applies to those media reach-related overrepresented genres car, real estate and style amongst online-born offerings that in contrast are underrepresented within offline-originated media offerings. However, especially within the context of the genre politics, the low number of offerings provided by offline-originated offerings (2.62 %) is even reinforced by its underrepresentation amongst online-born information offerings (6.57 %). In consequence, the proportion of political and further democratically relevant information offerings (e.g. news) decreased with online-born, entertainment-oriented offerings increasing in number and media reach. This 'silent' de-polarization evolves these socially relevant offerings to a niche market (Hindman, 2009: 100, 131).

Our findings are in line with past research ascribing the characteristics of high media reach, commercially-oriented offerings to online-born media offerings and their respective providers (Dahlgren, 2009: 35; Sjøvaag & Kvalheim, 2019: 293ff) (H2). The genre-based description of offline-originated and online-born information offerings reveals new, digital inequalities arisen from genre portfolio gaps: The portfolio of offline-originated offerings is characterized by fewer offerings with lower media reach providing offerings but a high relevance for the democratic discourse in society, which especially applies to politics that they almost exclusively provide. In contrast, online-born offerings cover a high number of high-reach, entertainment-oriented information offerings. The genre digital characteristically represents online-born offerings. It has a leading market position in 2016 and is dominated in terms of number and media reach by online-born offerings. Therefore, the genres politics and digital serve as leading examples for offline-originated and online-born information offerings and are the basis for analysing demand-sided inequalities.

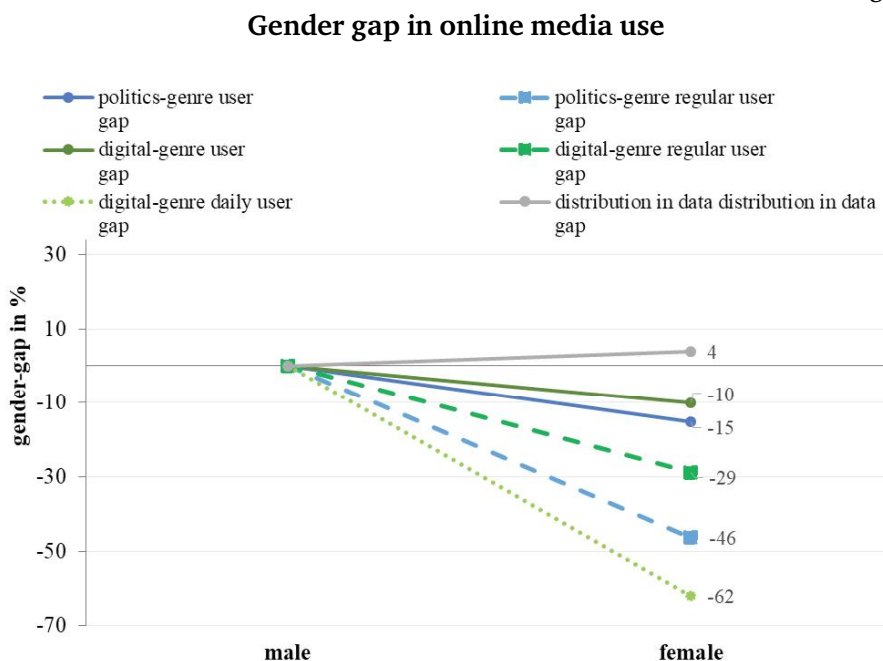
### ***Audience of typical online-born and offline-originated offerings***

Almost half of users (46 %) covered in our data are using online media offerings of digital genre while only a third (28 %) uses those of the politics genre. Since the digital genre includes the largest number of information-offerings online, this is not surprising. For political offerings the number of users is comparatively high as it is one of the genres with the fewest offerings and has only about one tenth of the offerings to catch users (see figure 1 and 2). Explanation offers the frequency of use: 2.7 percent of online users regularly use the offerings of politics genre compared to 1.9 percent for digital genre. That is 9.6 percent of politics-genre users and 4.2 percent of digital-genre users.

**Hypothesis 3: Reinforced inequalities online**

Regards the distribution by gender in our data (+4 % women), we see a strong gender gap in the direction of men, increasing with regular use (see figure 4). This pattern is similar to the one we know from offline media (Bonfadelli, 2002: 78ff; Wei & Hindman, 2011: 226), but comparing the offline-originated offerings of politics genre with the mainly online-born offerings of digital-genre the slope for politics genre is steeper. This indicates a stronger gender-gap for the offline-originated offerings of the politics genre. Only the gender gap for daily users of digital-genre offerings is higher than regular users of politics genre and shows a huge increase of the gender gap<sup>7</sup>.

Figure 4



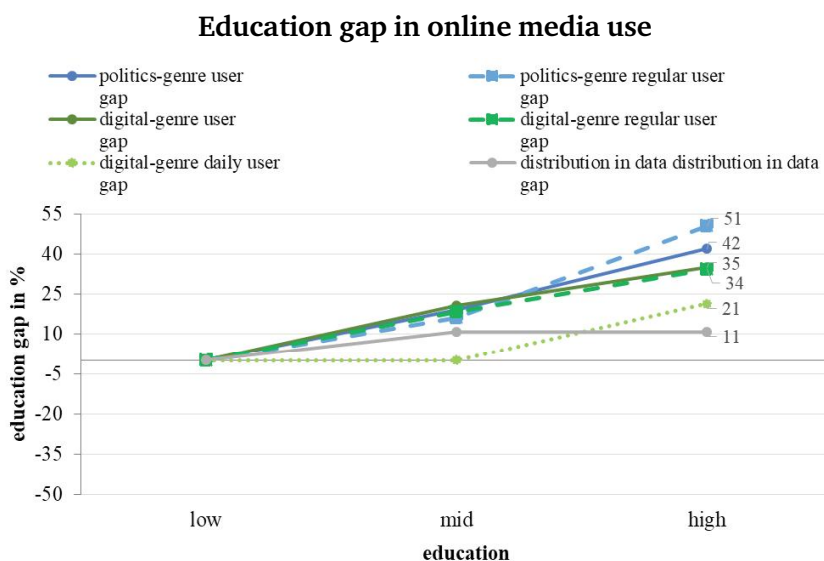
Source: Own figure

Notes: The distribution for gender in our data is 48 % men and 52 % female, among politics user it is 58 % men and 42 % female and for digital user it is 55 % men and 45 % female.

<sup>7</sup> For digital genre the number of users is 154,438 for regular users is 6,435 and daily users is 42. For politics genre the number of users is 93,972 of regular users is 9,006 and of daily users: 6. Due to the small number of daily users, those are not considered for the statistics.

Looking at the educational level of the audiences we also see a similar pattern than in offline media use. However, here the media use of digital genre shows a higher gap for those with a low and mid-level education (see figure 5). If considering the distribution in our data this reverses: We see a lower underrepresentation of users with a lower education and almost an exact representation of those with a mid-level education (see notes of figure 5). The education gap for the politics genre is big for the highest education level and gets bigger with regular use. The overrepresentation is again lowest for the mid-level educated and – like the gap – biggest for high educated users. The education gap seems to be much stronger than the gender-gap especially considering low versus high educated people and their distribution in our data, even if the gap does not increase at the same rate as the gender gap when used regularly. This is in line with the findings of Wei and Hindman (2011: 226) as well as earlier studies of Bonfadelli (2002: 81) underlining the importance of education for predicting online media use particularly with regard to the differences between the offline-originated politics offerings and online-born dominated digital genre.

Figure 5

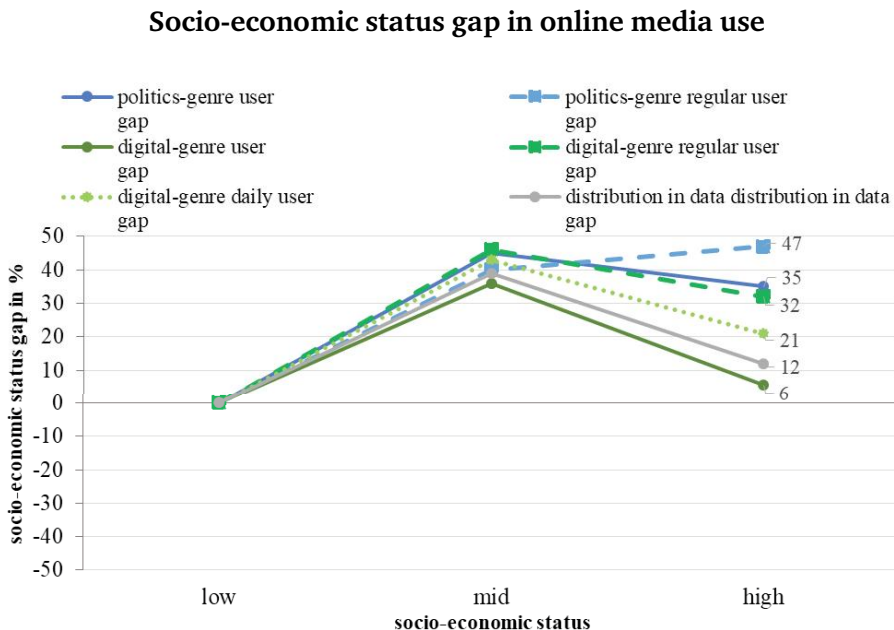


Source: Own figure

Notes: The distribution for education in our data shows 26 % with a low, 37 % mid and 37 % high level education, among politics user it is 13 % low, 32 % mid and 55 % high levelled educated and for digital user are 15 % low, 35 % mid and 50 % high-levelled educated.

Characterizing the audience among the SES also mirrors the patterns of inequalities from old-media use (e.g. Wei & Hindman, 2011; Peiser & Jandura, 2015) and at the same time it is lower than our results for the education gaps (see figure 5). This is remarkable as the income usually positively correlates with online media use (and newspaper use) and SES gaps are anticipated to be wider than education gaps. It underlines again the relevance of education for inequalities in online media use. For digital-genre users we see a lower gap and more balanced distribution by the SES. A higher status is correlated with an increase of media use, especially, for regular users, considering the bias distribution in our data towards the mid-level SES (see figure 6). For politics-genre use we see the same patterns at a higher level, ignoring regular users with mid-level SES. Only regular use of politics offerings shows a substantial increase in the gap for high SES. Digitization seems to balance the inequalities in media use looking at SES as the offline-originated gaps, represented by politics-genre users, are on a higher level than digital-genre gaps, besides regular users with a mid-level SES.

Figure 6



Source: Own figure

Notes: The distribution for SES in our data shows 16 % with a low, 56 % mid and 28 % high SES level, among politics user it is 7 % with a low, 52 % mid and 42% high SES level and for digital user 8 % low, 56 % mid and 36 % high SES level.

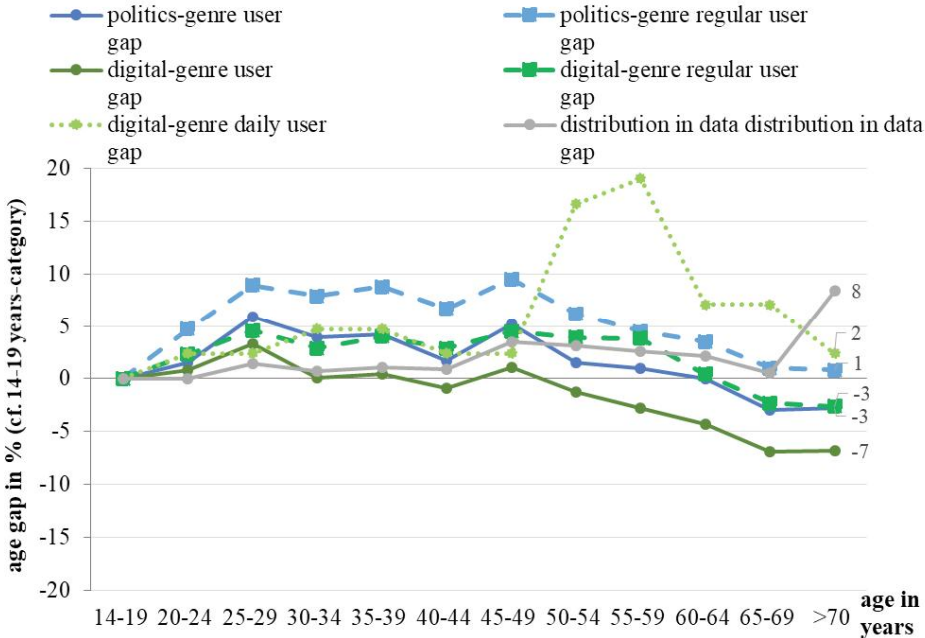
These results show similar patterns of gaps among gender, education and SES of online-born and offline-originated online media offerings. Our findings also correspond with the patterns of offline media use found in the literature review. Therefore, we accept our H3 for gender, education and SES. As the graph for education shows a steeper slope of politics genre in the end, we can further conclude that there seems to be a reinforcing effect on online media use for high-level educated groups.

**Hypothesis 4: Digital inequalities - a new age gap**

In case of age it is noticeable that the lines for the gaps in politics-genre of figure 7 are constantly at a much higher level than digital offerings – leaving aside the outlier for daily use of digital genre at the age of 50 to 59. Also considering the distribution in our data the use of politics-genre offerings online is surprisingly high and overrepresented up to the age of 50, clearly differing from patterns known in old-media use.

Figure 7

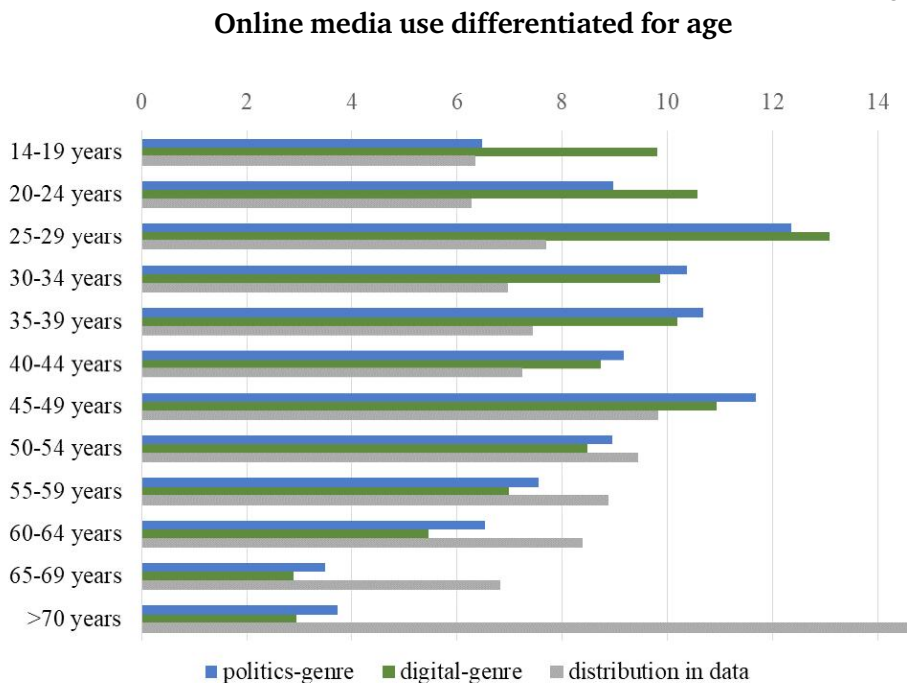
**Age gap in online media use**



Source: Own figure

However, the use of digital genre is higher for the cohorts younger 30 and following the observations made for (online and offline) news-media use (see figure 8). Still it is remarkable, that already at the age of 30 the use of politics-offerings is higher than of digital genre. For regular users the turning point is already at 25 years (politics-genre use = 12 % vs. digital-genre use = 10.9 %) and there is another turning point at 50+ years towards the use of digital genre (politics-genre use = 9.6 % vs. digital-genre use = 10.2 % increasing with rising cohorts). In sum, the results show a clear age gap differing from pattern of offline media use and confirming our assumption of a new digital inequality for age. We therefore accept our H4.

Figure 8



Source: Own figure

Our results also provide evidence for the third assumption (H3), that the patterns of inequalities in the audiences are similar to those known from offline media and are not explicitly digital inequalities, even though they seem partly stronger. When comparing offline-originated offerings of politics genre and the online-born dominated digital genre that effect becomes more apparent.

## Conclusion

Our analysis covers both the supply and demand side of the online media market and thus two of the five dimensions Bonfadelli (2002: 71) defined for analysing media-related social inequalities: inequalities in information supply and the use of them. Inequalities in information supply were revealed based on the comparison of offline-originated and online-born information offerings. We found that the offline-originated product portfolio is not replicated genre-superordinate by the online-born offerings within the online media market. Instead online-born information offerings focus on high-reach media offerings primarily far from journalistic-established content as their product portfolio is numerically and media reach-related characterized by entertainment-oriented genres like car, digital, family, entertainment, style or real estate. In contrast, the analysis confirmed that offline-originated offerings stick to their value proposition from the offline world (Dahlberg, 2007: 838) focusing on normatively desired information offerings (e.g. news, politics, regional). The thematically contradictory product portfolio of offline-originated and online-born media offerings enlarges the overall diversity of genres offered, with online-born information offerings in part balancing existing offline-originated genre inequalities (Hindman, 2009: 19). The feared shift in guiding principles of online-born information offerings with their rather commercially-oriented maxims of action scarcely effect information offerings of special social impact (Hindman, 2009: 100, 131) as offline-originated information offerings still dominate genres such as politics and news. However, especially within the genre politics, the low number of offerings provided by offline-originated offerings compared to the overall offline-originated genre portfolio is even enforced by its underrepresentation amongst the genre-portfolio of online-born information offerings. Even though this might lead to the statement of a non-existing de-polarization, the proportion of political and further democratically relevant information offerings (e.g. news) decreased with non-journalistic offerings increasing in number and media reach. This 'silent' de-polarization evolves these socially relevant offerings to a niche market (Hindman, 2009: 100, 131) underlining the persistence of the digital divide in the online media market (Hindman, 2009: 142).

The online media market has served to balance some existing inequalities on the supply side, but it has also created new ones (Fenton, 2010: 9; Hamilton, 2011: 15f; Hindman 2009: 19), which is equally applicable for the demand side of digital inequalities (gaps in the use of information media). The online media access is close to the ceiling-effect (Raggnedda & Mutsvairo, 2018) with almost



80 percent being online in 2016 and a rising trend (D21-Index, 2016: 54; Hölig & Hasebrink, 2019). However, the access to information through online media use differs according to the gaps in online media use. Based on our findings, specifically digital in the inequalities in online media use is the pattern of age gaps and the relevance of education in predicting the audiences. As online-born offerings are usually more entertainment-oriented than offline-originated offerings our results also imply an answer to Bonfadelli's question if there is "a dominance of entertainment functions" (2002: 81) in online media use that could reason the relevance of education. Moreover, it can be assumed that the differences in the gap levels between the audiences of the two types of genres are linked to the degree of commercialisation resulting in a product portfolio increasingly used by online-based offerings, while offline-originated offerings tend to transfer the offline formats into their online offerings. This is similar to the effect known from newspaper and tv use (Wei & Hindman, 2011: 222; Bonfadelli, 2002: 69)

As our findings for digital inequalities are geographically focused on Germany and for the analysis of information use limited to two typical genres for offline-originated and online-born information offerings, more exploration is needed geographically (including further media markets), thematically for the media use (including more genres) and time-related (including recent market data) to analyse digital inequalities in information supply and use. Further the dimension of gaps in the resulting knowledge (Bonfadelli, 2002: 71) could help to evaluate the consequences of those digital inequalities identified for possibly resulting social exclusion and social as well as democratic divides.

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