

Local versus National News about COVID-19 in Spain: Coverage and Public Engagement

Tatiana Santos-Gonçalves & Sebastian Napp

To cite this article: Tatiana Santos-Gonçalves & Sebastian Napp (2023): Local versus National News about COVID-19 in Spain: Coverage and Public Engagement, *Journalism Practice*, DOI: [10.1080/17512786.2023.2187863](https://doi.org/10.1080/17512786.2023.2187863)

To link to this article: <https://doi.org/10.1080/17512786.2023.2187863>



© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 16 Mar 2023.



Submit your article to this journal [↗](#)



Article views: 116



View related articles [↗](#)



View Crossmark data [↗](#)

Local versus National News about COVID-19 in Spain: Coverage and Public Engagement

Tatiana Santos-Gonçalves ^a and Sebastian Napp ^b

^aCenter for Studies in Education, Technologies and Health (CI&DETS), Polytechnic Institute of Viseu, Viseu, Portugal; ^bDept. Epidemiology, IRTA, Programa de Sanitat Animal, Centre de Recerca en Sanitat Animal (CRESA), Campus de la Universitat Autònoma de Barcelona (UAB), Bellaterra, Barcelona, Spain

ABSTRACT

In this study, we evaluated the differences between national and local newspapers coverage of the COVID-19 pandemic in Spain using a dataset of 421,438 Facebook posts. We assessed the trends in the interest in COVID-19 of local and national newspapers, measured as the proportion of COVID-19 news; and also, the trends in the interest of their readers, measured as the proportion of interactions related to COVID-19. While the overall interest in COVID-19 in local and national newspapers was similar and high, some differences were observed between several of the pandemic phases. National news media interest was higher during the long central phases of the pandemic, but certain news fatigue was observed by the end of 2021. Local news media interest seemed more constant throughout the pandemic. Surprisingly, the overall interest of national and local newspapers was consistently lower than the interest of their readers. Our study also shows homogenous responses among local newspapers during the key phases of the pandemic and heterogeneous responses in the remaining phases. Finally, we found that in the case of local media, their news and interactions were more correlated with the national epidemiological indicators (i.e., cases and deaths) than with the local indicators.

ARTICLE HISTORY

Received 23 September 2022
Accepted 27 February 2023

KEYWORDS: Local journalism; news coverage; social media; public engagement; Facebook; COVID-19

Introduction

The COVID-19 pandemic has caused not only a devastating health crisis but also serious disruptions in business, politics and communications, and has changed forever the life of people worldwide. The pandemic created great confusion among citizens, which led to a significant increase in the consumption of news about COVID-19. In this context, the media played an essential role not only providing adequate information but also affecting people's behavior and consequently influencing the spread of the virus (Kim, Shepherd, and Clinton 2020; Olsen, Pickard, and Westlund 2020). On the other hand, initially, there was little knowledge about COVID-19, and governments and public health experts battled against the widespread distribution of false information through

CONTACT Tatiana Santos-Gonçalves  tgoncalves@esev.ipv.pt

© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

the internet and social media (Evanega et al. 2020; Noar and Austin 2020). In a devastating situation such as that caused by the pandemic is when proximity and trust in local journalism become more essential than ever. Local news media has been considered one of the most reliable sources of local epidemic data and so, it has been crucial to fight against misinformation spreading through the internet and social networks during the COVID-19 pandemic (Frank 2020; Olsen, Pickard, and Westlund 2020; Shearer 2020; Schulz 2021).

On the other hand, local news organizations are currently under immense financial pressure. Over the last decade, there has been a transition of local audiences to large platforms which, in turn, has created a serious decline in the sector (Toff and Mathews 2021; Olsen 2021; Jerónimo, Correia, and Gradim 2022). To survive, the local news media needs to provide distinguishing and attractive products to compete with larger national corporations, and for that, they must understand the trends of local news consumption, evaluation, and dissemination. The coronavirus pandemic provides a unique opportunity to examine these issues.

The study of when and how extensively media covered the COVID-19 crisis has been an active research topic. Most of these studies have focused on the differences in coverage across the national media (Pearman et al. 2021; Van Aelst et al. 2021; Noar and Austin 2020; Quandt et al. 2020; Ersoy and Dambo 2021), but the role of local news media coverage has been much less investigated (Castriota, Delmastro, and Tonin 2020; Joseph et al. 2022; Le Quéré, Chiang, and Naaman 2022; Santos-Gonçalves and Napp 2022).

In this study, we focused on how the interest in the COVID-19 pandemic of local newspapers and their readers in Spain differed from the national newspapers. We aimed at understanding the complex dynamics of these two media, and to what extent COVID-19 has fostered public engagement of their corresponding users. Therefore, we first evaluated how the interest in news related to COVID-19 evolved during the pandemic in Spanish local newspapers as compared to national newspapers. Then, we assessed the evolution of the interest in COVID-19 of the readers of both local and national newspapers. To improve our understanding of the local coverage of COVID-19 news, we also looked at whether the interest of the local newspapers included in our study and of their readers was homogeneous. Finally, we evaluated whether the interest in COVID-19 of local and national newspapers and their readers were influenced by the number of new cases of COVID-19 (i.e., incidence) or the mortality at local or national level. In this work, we selected Spain to carry out our study case since it is one of the countries that have been most severely affected by the COVID-19 pandemic and local news media has always played an important role in the country.

Local News Media and the Coverage of COVID-19

Local journalism plays a crucial role in the preservation of the local culture and economy since it covers local affairs that are seldom reported on the mainstream media. With the advent of the Internet, local journalism is evolving as part of a wider structural transformation of the media environment, driven in large part by the increase of corporate consolidation and the rise of big digital platforms (Olsen, Pickard, and Westlund 2020; Jerónimo, Correia, and Gradim 2022). Internet has critically changed the way the press operates, triggering profound changes in the traditional models of journalism, forcing radical adaptations in the newsrooms and in the relationship of the media with their audiences (Jenkins and Jerónimo 2021).

Local news media organizations are particularly vulnerable to these changes, and so, face an increasingly challenging future. In the last years, reader's attention has progressively flowed to larger corporations and big digital platforms that refuse to pay for content, which has led the sector to experience a decreasing advertising revenue and waves of consolidation and closures. The business model of local news is falling apart. Their transition from print to digital has exacerbated the crisis and local news publishers increasingly struggle to keep a profitable stream of advertising revenue (Olsen, Pickard, and Westlund 2020; Olsen 2021). Local press has many disadvantages when it comes to competing with larger media organizations, which have more economic and technological resources, but it also has some advantages. Several studies have revealed that the globalization of journalism shows some nuances characteristic to each country, region and even to each community, and such local characteristics can greatly help the maintenance of the local press (Almgren 2017; Napoli et al. 2017; Jenkins and Nielsen 2018; Negreira-Rey, López-García, and Vázquez-Herrero 2020). Even though globalization tends to homogenize the content of media, local specificities survive in digital news markets (García-Perdomo et al. 2018; Jenkins and Jerónimo 2021; Finneman, Mari, and Thomas 2021). Hence, local news media need to understand the interests of the local audiences to provide personalized products and services that can compete with the ones of larger media organizations (Napoli et al. 2017; Olsen 2021; Jerónimo, Correia, and Gradim 2022).

At the begging of 2020, with the onset of the pandemic, COVID-19 generated an endless stream of misinformation in the media and the information supply was mainly characterized by confusion (Evanega et al. 2020; Noar and Austin 2020). On February 1st, the World Health Organization warned about the excess of information about COVID-19. The pandemic caused a significant disruption in the way journalism function and forced journalists worldwide to quickly adapt their editorial processes to meet the needs of online audiences. In fact, during the pandemic, many local newspapers were hit hard and announced they could no longer keep their presses running despite the increase in demand for credible news (Olsen, Pickard, and Westlund 2020). Within this environment of uncertainty, governments were fighting for a space to communicate to the public the most essential information and policies, and local news organizations proved to be one the most reliable sources to do so (Frank 2020; Shearer 2020; Schulz 2021). This is not surprising, as previous research had already shown that local news media have the capacity of influencing the opinion and behavior of local communities (Hayes and Lawless 2015; Kim, Shepherd, and Clinton 2020). The importance of accessing reliable information about one's own locality has been more essential than ever as the impact of the COVID-19 pandemic varies enormously across communities (Evanega et al. 2020; Noar and Austin 2020).

National versus Local News Media

With the proliferation of choices, new users have access to a great variety of national news media for low or no cost, which has led to higher competition in the local news market (Jenkins and Jerónimo 2021; Jerónimo, Correia, and Gradim 2022). Several cross-national studies have shown that national and local news organizations frame stories differently and that one event may have very different effects in each organization (Martin and McCrain 2019; Gutsche and Shumow 2019; Nagel 2020; Finneman, Mari, and Thomas

2021; Guo and Sun 2022). For example, a local election is expected to result in more demand of political news and public engagement in the corresponding local news media, and barely have any effect in the number of political news and social media interactions in the national news media. Hence, it would be reasonable to expect that local coverage of COVID-19 and public engagement of local audiences was more associated with the incidence of COVID-19 in the local area rather than at the national or international level.

However, in the last decade, due to obvious economics of scale, there has been a shift towards dedicating less journalistic resources to cover local news as opposed to national news. The acquisition of local news media by larger national conglomerates allows to cover the same event in several markets reducing costs but impacting the coverage of independent local outlets (Bradshaw 2019). All this has led to creating supply-side pressure towards the nationalization of the news. For instance, most local news outlets in the US are now owned by national or international news organizations, and they frequently avoid paying local journalists by boosting national content (Thorson et al. 2020b; Martin and McCrain 2019).

Public Engagement in Social Media

The preservation of identity is essential for local news media, and in this regard the interaction with their readers is very important. For this reason, one of the main features of local news is the central role played by the audience's feedback, and the close relation with the local journalists, in contrast with the less personalized association in the national news media (Thorson, Chen, and Lacy 2020b; Newman et al. 2022 ; Jenkins and Jerónimo 2021). Analyzing the costumers' use patterns in different contexts has shown that audience participation has become increasingly important in promoting or abating local news contents (Pérez-Vega, Waite, and O'Gorman 2016; Thorson et al. 2020a). Hence, it is not surprising that recent studies have observed that there is a fast-growing tendency for an open and more collaborative approach between local news media and local public (Almgren 2017; Olsen 2021). Research has focused on users as news disseminators, and the way by which they share news on social media indicates if particular local news has been promoted (García-Perdomo et al. 2018; Weber, Andringa, and Napoli 2019; Thorson et al. 2020a). The study of the dynamics of what types of stories are shared the most on social media can help to understand when media might be pandering to the masses, promoting news that engages and capture readers, and perhaps, revenue.

Due to its openness and interactive nature, the use of social networks has gained a lot of interest in recent years and provides an ideal environment for the interaction between journalists and readers (Park and Kaye 2021). Jenkins and Nielsen (2018) have argued that the growth of local news will be driven by large part by social media consumption behavior. For all these reasons, understanding the complex relationship between journalists, audiences and social media is of particular interest in the context of local journalism.

Within this social media news ecosystem, Facebook has a dominant position as it has captured more and more online traffic in the last decade, achieving the largest number of news posts and public interactions (Pérez-Vega, Waite, and O'Gorman 2016; Carlson 2018;

Quandt et al. 2020; Toff and Mathews 2021). Because local news organizations are decentralized, gathering and analyzing local news content at a larger scale remains challenging. One approach to collect large amounts of data of local news is by means of Facebook posts of the news, which has hence become a valuable alternative for researchers to evaluate public engagement and dissemination of news (Le Quéré, Chiang, and Naaman 2022; Thorson et al. 2020a). According to The Social Media Family report (2022) 87.1% of the population in Spain uses Social Networks, being the eleventh country by use rate. This represents an increase of 7.1% compared to the data for 2021. Compared with other social networks, in 2021 Facebook had 21,7 million users in Spain while Twitter had only 4.2 million. There is a large body of literature delving into the impact of public engagement in Facebook that indicates that consumers have a direct influence over the impact of what type of information spreads by disseminating and evaluating the news posted (Larsson 2017; Almgren 2017; Carlson 2018; Hallinan, Brubaker, and Fiesler 2020; Thorson et al. 2020a; Toff and Mathews 2021). However, there is a less substantial body of research exploring Facebook use in the local news context, even though many readers consider local news media and social media among their best sources of news (Shearer 2020; Schulz 2021; Guo and Sun 2022). During the coronavirus pandemic, remarkably higher use and reliance on social networks was observed (Van Aelst et al. 2021; Pérez-Escoda et al. 2020). This indicates that, in times of great confusion, audiences are more inclined to seek news from sources that offer an instant coverage and are easily available, such as social networks like Facebook (Van Aelst et al. 2021). Interactions such as shares, comments or likes of posts of news, have become valuable data to measure public engagement.

The Spanish Context

The crisis in the local press sector shares some similarities among developed countries, such as the decline in the number of printed newspapers, but each region has been affected differently. The local news media in Spain historically had around 50% of the national share market (Salaverría, Martínez-Costa, and Breiner 2018). Therefore, the financial crisis of the local news organizations is particularly worrisome in the case of Spain (Negreira-Rey et al. 2020). According to a recent study by the Reuters Institute (Newman et al. 2022), Spain is one of the last countries in the world in terms of the percentage of users who pay for online news. In 2021, only 12 percent of users paid for online news content or accessed a paid-for online news service, compared to an average of 17 percent for the study's 20 markets. Therefore, it is not surprising that the pandemic had a dramatic impact on Spanish news outlets, which lost over 24,500 journalists in the first months of 2020 (García-Avilés 2021; Villena-Alarcón and Caballero-Galeote 2021), even though during the pandemic, national and local news consumption in Spain significantly increased, particularly on social media (Gevers 2020; Pérez-Escoda et al. 2020).

On the 30th of January 2020, the World Health Organization decreed an international alert for the coronavirus, and on the 31st of January, the first case was detected in Spain, becoming one of the first countries outside China affected by COVID-19. The 2nd of April 2020 Spain had the largest number of deaths in one day by any country in the world. This initial critical situation led to a complete national lockdown of the country, so the

population had to stay at home from March 14th to June 22nd of 2020. The policies for fighting the pandemic were first implemented by the national government and later were transferred to the 17 Autonomous Communities (i.e., regional governments) in which Spain is divided. The national government gave autonomy to each Autonomous Community to implement different policies, such as restrictions to mobility or opening hours of stores and restaurants, depending on the local severity of the pandemic. During 2020 and 2021, over 90,000 people died in Spain from coronavirus and almost 9 million people got infected, the fourth largest number in Europe and ninth in the world (Centro Nacional de Epidemiología 2021).

Research Questions

In this work, to measure the coverage of news about COVID-19 at the national and local levels (i.e., interest of national and local news media), we used the percentage of COVID-19 news posted in Facebook with respect to the total news. Following previous studies, we considered that the higher this percentage, the larger the interest as considered in several previous studies, see for instance (Brown et al. 2018; Weber, Andringa, and Napoli 2019). As for the public engagement, we estimated it as the proportion of interactions (likes, shares and comments) in COVID-19 news with respect to the total interactions in those media (Larsson 2017; García-Perdomo et al. 2018; Weber, Andringa, and Napoli 2019; Toff and Mathews 2021).

We next present our four research questions:

RQ1: *Was the interest in COVID-19 related-news in Spanish local news media the same than in national news media for the 2020–2021 period of the pandemic?*

RQ1-a) Was the interest in COVID-19 related-news in Spanish local news media the same than in national news media for the whole period of study?

RQ1-b) Was the interest in COVID-19 related-news in Spanish local news media the same than in national news media for the different COVID-19 epidemic phases?

RQ2: *Was the interest in COVID-19 related-news in Spanish local news media readers the same than in national news media readers for the 2020–2021 period of the pandemic?*

RQ2-a) Was the interest in COVID-19 related-news in Spanish local news media readers the same than in national news media readers for the whole period of study?

RQ2-b) Was the interest in COVID-19 related-news in Spanish local news media readers the same than in national news media readers for the different COVID-19 epidemic phases?

To further characterize the local news media responses to the COVID-19 pandemic, we also evaluated whether the proportion of COVID-19 news and the proportion of COVID-19 interactions were homogeneous for the different local newspapers included in our study.

RQ3: *Were the interests in COVID-19 related-news in Spanish local news media and national news media influenced by the number of new cases of COVID-19 (i.e., incidence) or by the mortality at local or national level?*

RQ4: *Were the interests in COVID-19 related-news in Spanish local news media readers and national news media readers influenced by the number of new cases of COVID-19 (i.e., incidence) or by the mortality at local or national level?*

Methodology and Data Analyses

Data on Local and National News and Interactions

To investigate our research questions, we collected and analyzed a unique set of Facebook engagement data constituted by 237,482 articles. This was performed through the application *CrowdTangle*, a social monitoring tool owned by Facebook that tracks public posts performance such as users' interactions and engagement with pages and links posted on Facebook. Due to the *CrowdTangle* terms and conditions, raw data with the details of the posts cannot be shared, but we provide (via GitHub¹) the processed dataset (i.e., daily data) used for this study.

Among the Autonomous Communities in Spain, we considered the most popular purely local news newspaper in each one of them in terms of the number of Facebook followers. Within this group, we selected 6 of the most popular ones out of the set of 17 local journals, namely: *La voz de Galicia* (962,642 followers), *Diario de Mallorca* (206,064 followers), *Heraldo de Aragón* (223,271 followers), *hoy.es* (228,351 followers), *La Verdad de Murcia* (153,341 followers) and *Levante-EMV* (309,210 followers). We collected all the articles of these local journals from 1st of January of 2020 to 31st of December of 2021. This resulted in a total of 237,482 shared posts related to any type of news and we identified a subset of 43,338 news about COVID-19. To classify a COVID-19-related news, we used a dictionary-based analysis of the titles.

As a country, Spain is served by a great variety of national news media. Using the same criteria used for local newspapers, we selected the four most popular national newspapers: *El País* (6,742,903 followers), *El Mundo* (3,288,937 followers), *La Vanguardia* (5,520,528 followers) and *ABC* (1,642,878 followers).

For each story URL, *CrowdTangle* was able to provide the total number of likes, comments, and shares. We shall refer to the sum of these metrics as engagement or interactions.

Measures of Coverage and Public Engagement

To measure the interest in COVID-19 in local and national newspapers (i.e., coverage), we estimated the proportion of news related to COVID-19. News was classified as related to COVID-19 if it contained at least one of the keywords associated with the pandemic. These keywords (used in Spanish) were: COVID-19, COVID, PCR, pandemic, vaccine, omicron, screening, coronavirus, antigen. If the news did not contain any of those key word, it was classified as not related to COVID-19. Then, for each day during the study period, we calculated the proportion of news related to COVID-19 as the number of news related to COVID-19 divided by the total news on that day.

To measure public engagement, we obtained the number of interactions in both news related to COVID-19 and in news not related to COVID-19. Then, for each day during the study period, we calculated the proportion of interactions related to COVID-19 as the number of interactions in news related to COVID-19 divided by the total number of interactions on that day (including those not related to COVID-19 news). The coding using keywords and the measure of interactions were performed through the *CrowdTangle* application.

COVID-19 Epidemiological Data

The epidemiological data regarding the Spanish COVID-19 pandemic was downloaded from the official source, of *Centro Nacional de Epidemiología* (Epidemiology National Center): <https://cneccovid.isciii.es/covid19/#documentaci%C3%B3n-y-datos>

The data included the number of cases of COVID-19 and the number of deaths by day and province.

Phases of the COVID-19 Pandemic in Spain

As in Santos-Gonçalves and Napp (2022), the COVID-19 pandemic in Spain was divided into five phases based exclusively on accepted epidemiological criteria, which also considered epidemiological interventions like lockdowns and immunization.

- Phase 1: Beginning with week 1 (1st of January 2020), when the emergence of the COVID-19 in Wuhan (China) was first reported, to the end of week 9 (1st of March 2020), when the first wave in Spain began.
- Phase 2: Beginning with week 10, to the end of week 20 (17th of May 2020). Corresponded to the first wave of COVID-19 in Spain, characterized by moderate–high appearance of new cases, and included most of the lockdown period.
- Phase 3: Beginning with week 21 to week 61 (28th of February 2021) corresponding to the second and third COVID-19 waves, with a high rate of new cases appearing and a high mortality.
- Phase 4: Beginning with week 62 to week 98 (14th of November 2021), corresponding to the fourth and fifth waves of COVID-19, with minimal mortality due to high vaccination rates and a moderate incidence of new cases.
- Phase 5: Beginning with week 99 to week 105 (31st of December 2021), corresponding to the sixth wave of COVID-19, which had very low mortality but a very high incidence. The advent of the omicron variation is a part of this phase.

Statistical Analyses

RQ1: For comparing the means of the proportions of news about COVID-19 (i.e., dependent variable) in national news media versus local news media (i.e., independent variable), first, the normality of the data was tested using the Shapiro–Wilk test (McDonald 2009). If data was normally distributed, a *t*-test to compare the means of the proportions was used. If data was not normally distributed, then a Wilcoxon rank sum test (i.e., Mann–Whitney *U*-test) was used (McDonald 2009). We compared the means of the proportions for the whole 2020–2021 epidemic (RQ1-a) and then for each of the phases of the pandemic in Spain independently (RQ1-b). The same approach was used for RQ2 for comparing the means of the proportions of interactions about COVID-19 (i.e., dependent variable) in national news media versus local news media (i.e., independent variable), for the whole epidemic and for the COVID-19 periods (RQ2-a and RQ2-b). Additionally, we evaluated the difference in the interest in COVID-19 (i.e., independent variable) between local newspapers and their readers (i.e., dependent variable). To do that, we compared the mean proportion of news about COVID-19 in national news media versus the mean

proportion of interactions in national news media, using the same statistical methods as in RQ1. And we repeated the comparison for national news media versus national interactions.

For evaluating whether the interest of local newspapers in COVID-19 was influenced by the number of new cases of COVID-19 or deaths at the local or national level (RQ3), we tested the correlation between the daily proportion of local news versus local and national daily incidence and deaths. Given the non-parametric nature of the data, we used the Spearman rank correlation test. The same approach was used for comparing whether the interest in COVID-19 of the readers of local newspapers was influenced by the number of new cases of COVID-19 at the local or national level (RQ4). After Schober and collaborators (2018), the following interpretation was given to the correlation coefficients (ρ): from 0.00 to 0.10 negligible correlation, from 0.10 to 0.39 weak, from 0.40 to 0.69 moderate, from 0.70 to 0.89 strong, and from 0.90 to 1.00 very strong.

Statistical significance was set at 0.05 (i.e., 5%).

Results

RQ1: Coverage of COVID-19 news in local versus national news media

In Spain, during the 2020–2021 period of the pandemic, the proportion of COVID-19 news was 17.4% in local newspapers and 18.7% in national newspapers (Table 1A), and that difference was not statistically significant (p -value 0.32).

Throughout the pandemic, the proportion of COVID-19 related-news in local and national news media followed relatively parallel patterns in some periods and different patterns in others (Figure 1A; Table 1A). In phase 1, the interests were low and similar in local and national news media (p -value = 0.45). In phase 2, the proportion of COVID-19 news grew considerably in local news media (to 31.2%), but even more in national news media (to 42.3%), resulting in a statistically significant difference (p -value < 0.001). During the long phase 3, the proportion of COVID-19 news was maintained relatively constant throughout the whole period, with lower mean values in local news media (20.5%) compared to national news media (22.9%), and that difference was statistically significant (p -value < 0.001). In phase 4, the proportion of COVID-19 news decreased in both national

Table 1. A: Statistical evaluation of the differences in the proportion of news (about COVID-19) in local news media versus national news media for the whole pandemic and for the different periods. B: Statistical evaluation of the differences in the proportion of interactions (to COVID-19 news) in local news media versus national news media for the whole pandemic and different periods. Higher percentages in gray. Statistically significant results in green, not statistically significant results in red.

	A: % COVID-19 news			B: % COVID-19 interactions		
	Local (%)	National (%)	p -value	Local (%)	National (%)	p -value
Total	17.4	18.7	0.32	20.0	20.8	0.81
Phase 1	5.0	6.6	0.45	5.1	7.3	0.10
Phase 2	31.2	42.3	<0.001	36.9	45.1	<0.001
Phase 3	20.5	22.9	<0.001	24.5	25.8	0.01
Phase 4	13.4	10.8	<0.001	13.0	12.0	0.18
Phase 5	14.4	13.7	0.39	23.0	16.7	<0.001

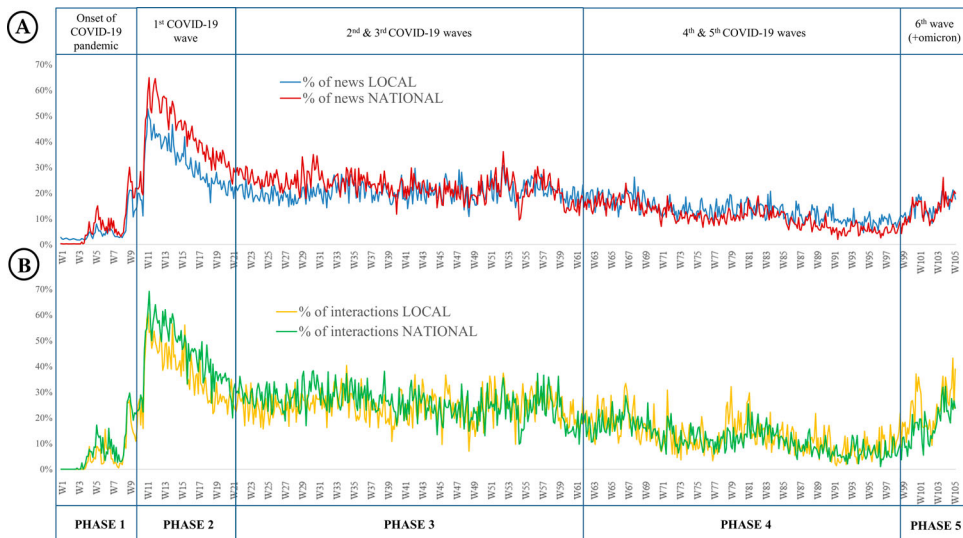


Figure 1. A: Proportion of news (about COVID-19) in local news media versus national news media by COVID-19 periods. B: Proportion of interactions (about COVID-19) in local news media versus national news media by COVID-19 periods.

and local news media, but the reduction was more evident at the national level, resulting in mean values of 13.4% of COVID-19 news in local news media that were significantly higher (p -value < 0.001) than the 10.8% in national news media. In phase 5, local and national news media interest increased resulting in similar proportions of COVID-19 news in both (Table 1A).

RQ2: Local versus national public engagement in COVID-19 news

The general patterns of interest in COVID-19 related-news in readers of local and national newspapers were relatively similar (Figure 1B). Even though the proportion of COVID-19 interactions for the whole pandemic was higher in national newspapers (20.8%) compared to local newspapers (20.0%), this difference was not statistically significant (p -value = 0.81). However, when phases were evaluated independently, some differences appeared. In phases 2 and 3, the proportion of interactions of the readers of national newspapers (45.1% and 25.8%, respectively) were significantly higher than those of readers of local newspapers (36.9% and 24.5%, respectively) (Table 1B). In contrast, in phase 5, the proportion of interactions was significantly higher in readers of local newspapers than in readers of national newspapers (23.0% and 16.7%, respectively). Both at the national and local levels, the interests of readers were significantly higher than the interests of newspapers (p < 0.001).

Evaluation of the Homogeneity in Local News Media Responses

We also assessed whether the proportion of COVID-19 news and the proportion of COVID-19 interactions were homogeneous among the different local newspapers included in our study to further characterize the local news media responses to the COVID-19 pandemic.

Interestingly, we found that local news media responses to the COVID-19 pandemic varied significantly for the different phases. In phases 1, 2 and 5, responses of the different local newspapers were quite homogeneous (Figures 2A and B). In contrast, during phases 3 and 4, responses were very heterogeneous with some newspapers behaving similarly with values around the mean, but some newspapers with responses significantly higher or lower. Differences were clear for the proportion of COVID-19 news (Figure 2A) but even more so for the proportion of COVID-19 interactions (Figure 2B).

RQ3: Evaluation of the differences in the behavior of local versus national news media in relation to the course of the epidemic at the local and national levels

In Spain, both local and national news media had some similarities in their behavior in relation to the COVID-19 pandemic. During the first wave of the pandemic (phase 2) local and national news media interest increased in response to the growth of local and national incidences, and then decreased in response to the reduction of local and national cases (Figure 3). Then, for a period that lasted one and a half out of the 2 years of study (phases 3 and 4), the evolutions of national and local news media interest were characterized by a slight but constant decrease. In those phases, media interest patterns seemed independent of the incidences at the local or national level. Lack of correlation was more evident during the third COVID-19 wave (weeks 53–59) and the fourth (weeks 79–89) (Figure 3A and B). As a result, national and local news media interests had a significant but only weak correlation with national and local incidences (Table 2). The decreasing trend after phase 4 ended in phase 5 coinciding with the emergence of the omicron variant, and increased local and national news media interests (Figures 3A and B) in response to the exponential increase of national incidence (data not shown).

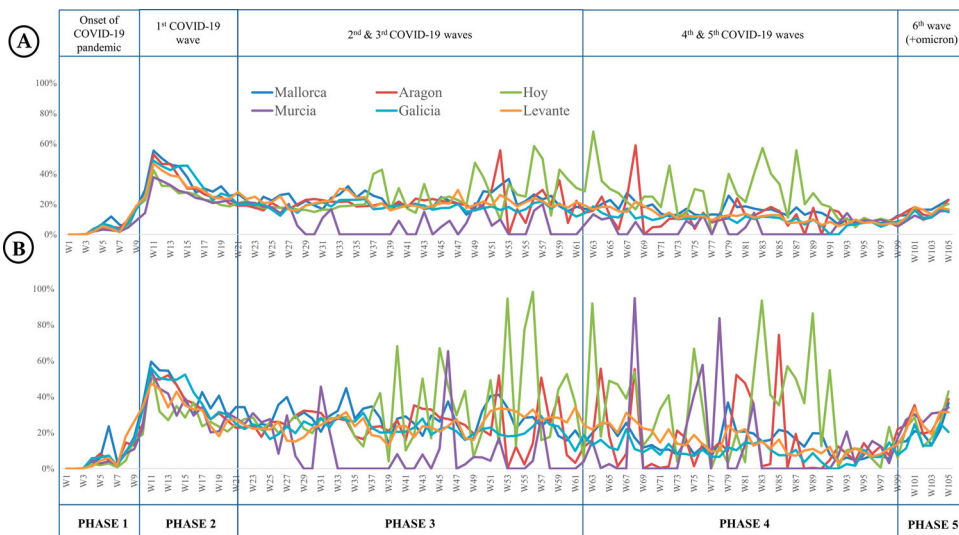


Figure 2. A: Variation in the proportion of COVID-19 news through the pandemic by the different local news media. B: Variation in the proportion of COVID-19 interactions through the pandemic by the different local news media.

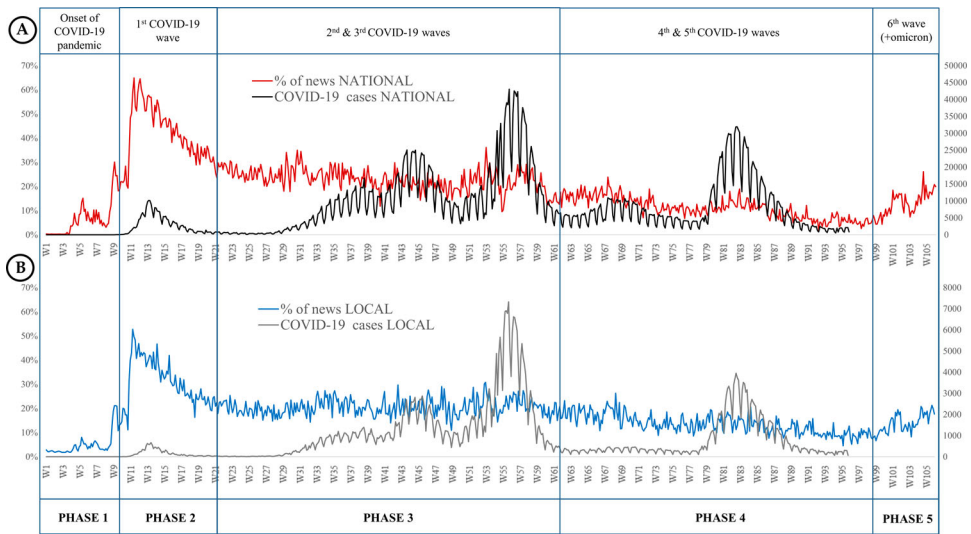


Figure 3. A: Proportion of national news (about COVID-19) versus national incidence. B: Proportion of local news (about COVID-19) versus local incidence. *Data on the number of new cases at the local level only available until week 95, so only that period was considered for analyses at the national and local levels.

While correlations between local and national news media interest with local and national incidences were low, correlations with local and national deaths were moderate (Table 2). Surprisingly, local news media interest was more correlated with national deaths ($\rho = 0.59$) than with local deaths ($\rho = 0.48$).

RQ4: Evaluation of the differences in the behavior of local versus national news media readers in relation to the course of the epidemic at local and national levels.

The behavior of local news media readers was similar to that of national news media readers (Figure 4). The interest of readers of local and national news media followed the curves of local and national incidences in phase 2, then there was also a long period of

Table 2. Results of the Spearman correlation test between local and national news and interactions versus local and national cases and deaths. Statistically significant results in green. Orange cells indicate moderate correlation, while yellow cells indicate weak correlations. News in gray and interactions in white.

Correlation		p-value	rho
Local news	Local cases	<0.0001	0.25
Local news	National cases	<0.0001	0.30
National news	National cases	0.002	0.12
Local interactions	Local cases	<0.0001	0.22
Local interactions	National cases	<0.0001	0.26
National interactions	National cases	0.0004	0.14
Local news	Local deaths	<0.0001	0.48
Local news	National deaths	<0.0001	0.59
National news	National deaths	<0.0001	0.45
Local interactions	Local deaths	<0.0001	0.40
Local interactions	National deaths	<0.0001	0.50
National interactions	National deaths	<0.0001	0.44

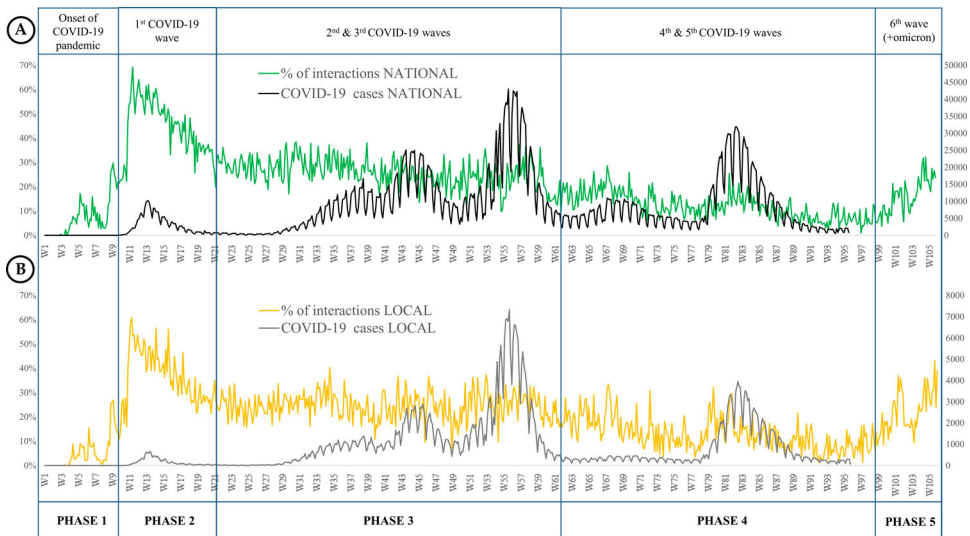


Figure 4. A.- Proportion of local interactions (about COVID-19) versus local incidence. B.- Proportion of national news (about COVID-19) versus national incidence. *Data on the number of new cases at the local level only available until week 95.

slight but constant decrease in national and local news media interest independent of COVID-19 incidence, and a final increase of interactions by local and national news media readers in the last phase because of the omicron emergence (Figures 4A and B). As a result, interactions in local and national news media had only a significant but weak correlation with national and local incidences, while the correlations with local and national deaths, respectively, were moderate (Table 2).

Discussion

This study analyzed the interest of local news media and their readers in COVID-19 during the 2020–2021 pandemic in Spain in comparison with the interest of national news media and their readers. This contributes to the scarce research on the local news media coverage of COVID-19 and the corresponding engagement of their readers in COVID-19 through social media (Santos-Gonçalves and Napp 2022).

The evolution of the COVID-19 pandemic was driven not only by the national and local policies but also by how those policies were received by the public (Kim, Shepherd, and Clinton 2020; Hayes and Lawless 2015). In this regard, how the news media decides how the information is being published has a direct impact in the behavior of the public and consequently on the course of the pandemic (Evanega et al. 2020; Noar and Austin 2020). Our results indicate that the overall interest in COVID-19 shown by the Spanish local and national newspapers was relatively similar and high (17.4% and 18.7%, respectively). In both types of media organizations, after the initial peak, the coverage of COVID-19 decreased progressively but very slowly, with the exception of the last short period that correspond to the emergence of the omicron variant.

According to different studies, national and local news media interpret events differently, and the same event may receive different levels of attention from them (Nagel

2020; Martin and McCrain 2019). While no significant difference was observed between the overall media coverage of the COVID-19 pandemic between local and national news media, the interests of local and national newspapers did not always evolve in parallel during the phases of the pandemic. Though the proportion of COVID-19 news was significantly higher in national newspapers during the phases 2 and 3 of the pandemic, that tendency changed in phase 4 resulting in a higher interest in local newspapers. Whereas a certain loss of interest in COVID-19 news was observed in national news media towards the end of the study period, local news media maintained a more constant interest in this later stage. The slight news fatigue observed in national news media can be associated with the fact that, during that later period, the most essential public health policies were transferred to regional authorities and therefore local news media may have played a bigger role. Our results on local newspaper coverage of the COVID-19 pandemic in Spain are in line with recent studies in the US that observed coverage fatigue of local newspapers with similar decline, during the period from April 2020 to March 2021, when the percentage of articles related to COVID-19 went from over 70% after the initial peak of cases to 30%, whereas in our study went from about 65% to slightly over 20% during the same period (Joseph et al. 2022).

Our study also shows that in Spain the interests of the readers of national and local throughout the pandemic were similarly high (20.0% and 20.8%, respectively). This demonstrates the key role of social media like Facebook during a serious crisis like the COVID-19 pandemic since what newspapers shared met the audience interest. Nonetheless, some degree of news fatigue with COVID-19 was observed in readers of both national news media and local news media, as shown by the progressive reduction in the proportion of interactions in phases 3 and 4. According to Gurr (2022), such a trend is normal because when readers are repeatedly exposed to large quantities of news about the same subject, they frequently develop negative feelings towards that subject (i.e., news fatigue) and so, they are less likely to engage with it. Despite a progressive loss of interest in COVID-19 of national and local Spanish newspapers and their readers, the interest in the subject has essentially remained high (with overall values in the range of 20%) considering the time passed since the emergence of the virus.

Surprisingly, our results show that the overall interest of both national and local readers was consistently higher than the interest of the newspapers. In contrast, researchers have long documented that the media tend to provide the audiences with more “hard” news and valuable content, such as the ones related to COVID-19, while the public seeks “soft” news that entertains them (Boczkowski and Mitchelstein 2013; Almgren 2017). In fact, due to the growing challenges associated with attracting and retaining readers, local news organizations are being forced to ignore important issues in favor of emphasizing “soft” news. Still, our findings indicate that such a supply-and-demand news gap (i.e., *coverage gap*) between what the newspapers provide and what the readers want, did not occur in Spain with COVID-19 news coverage at the local and national levels. On the contrary, our data reinforces recent research (Masullo, Jennings, and Stroud 2021; Santos-Gonçalves and Napp 2022) that argues that in times of severe crisis, the standard well-documented coverage gap disappears or even reverses.

Interestingly, our study detected differences when analyzing the variations in the responses of local news media and their readers by phases and newspapers. Homogeneous responses during phases 1, 2 and 5 were likely because those were the key

stages, phase 1 was the onset of the pandemic, phase 2 included the first wave and the start of the lockdown and phase 5 represented the omicron wave with the highest incidence rate. In contrast, during the intermediate phases (3 and 4) some local newspapers showed above-average responses, while others showed below-average responses. It is well-known that local specificities persist even in digital news markets even though globalization tends to homogenize media content (García-Perdomo et al. 2018). The way in which each news organization selects the news and posts to share is different from one location to another and depends on the local particularities such as culture, size, population or socio-economic factors (Jenkins and Nielsen 2018).

Our results show that local and national news and interactions about COVID-19 were somehow associated with local and national incidences and deaths (as shown by the statistical significance of their correlations). Remarkably, those interests of local and national newspapers and their readers were more correlated with deaths than with cases, and in the case of local news media, their news and interactions were more associated with the national epidemiological indicators than with the local. In recent years, to draw attention and clicks, local news media has been reported to pivot toward more national coverage, with a detrimental influence on the quality of local news coverage (Index 2017; Martin and McCrain 2019). Thus our findings reflect a continuing trend towards the nationalization of local news (Bradshaw 2019) and suggest that local newspapers have failed to provide sufficient information about COVID-19 epidemiologic local events to local communities. Therefore, local news media must comprehend the preferences of the regional audiences to offer tailored goods and services that may rival those of larger media companies (Napoli et al. 2017; Olsen 2021). The complete nationalization of the local news media poses a significant threat to the production of reliable information that could damage local democracy and leave local audiences under-informed.

On the other hand, it was quite clear that in Spain the relationship between local and national news media interest in COVID-19 and COVID-19 cases and deaths changed as the pandemic progressed. During the first wave, newspapers and readers both nationally and locally were extremely sensitive to those epidemiological indicators. In contrast, in later stages, the slow but constant decrease in the interest in COVID-19 seemed independent of the number of COVID-19 cases that were occurring in the population. Besides some fatigue, that finding was likely associated also with the fact that in Spain COVID-19 vaccine coverage was very high and that resulted in a significant reduction of the mortality rate, and as a consequence the public perception of the severity of COVID-19 changed. In a study carried out in the US, the authors also found that COVID-19 coverage by local news was primarily driven by deaths at the national level, and that effect was less clear as the pandemic progressed (Joseph et al. 2021; Pearman et al. 2021).

As in any other study, our work has limitations that must be acknowledged. Although we have used a large database for our analyses, only a limited number of local and national newspapers could be included in our study. Therefore, we cannot rule out that the national or local newspapers that were not included presented some particularities that could not be captured in our study. In view of the heterogeneities observed in local news media, further studies looking at the factors that determine those differences are needed. Another limitation is that the study was carried out in Spain and therefore the conclusions derived cannot be generalized to other countries. Most of the research in this

area has been carried out in the US local news media, and we urge replication and comparison in other countries (García-Perdomo et al. 2018).

This study aims to contribute to the understanding of the Spanish local and national news media responses to COVID-19. Here, we were interested in analyzing differences in the coverage of COVID-19 in Spain between local and national newspapers and between their readers. We also evaluated the association between that coverage and different local and national epidemiological indicators.

Note

1. <https://github.com/national-local-data/social-media>

Data Availability Statement

The data that support the findings of this study are openly available on GitHub at <https://github.com/national-local-data/social-media>.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

ORCID

Tatiana Santos-Gonçalves  <http://orcid.org/0000-0003-1534-7704>

Sebastian Napp  <http://orcid.org/0000-0001-5813-7286>

References

- Almgren, S. M. 2017. "Undoing Churnalism?" *Digital Journalism* 5 (8): 1060–1079. doi:10.1080/21670811.2017.1343089.
- Boczkowski, P. J., and E. Mitchelstein. 2013. *The News Gap: When the Information Preferences of the Media and the Public Diverge*. Cambridge, MA: MIT Press.
- Bradshaw, A. 2019. "The Nationalization of News." *Nature Human Behaviour* 3: 421. doi:10.1038/s41562-019-0601-y.
- Brown, D. K., S. Harlow, V. García-Perdomo, and R. Salaverría. 2018. "A New Sensation? An International Exploration of Sensationalism and Social Media Recommendations in Online News Publications." *Journalism* 19 (11): 1497–1516. doi:10.1177/1464884916683549.
- Carlson, M. 2018. "Facebook in the News: Social Media, Journalism, and Public Responsibility Following the 2016 Trending Topics." *Digital Journalism* 6 (1): 4–20. doi:10.1080/21670811.2017.1298044.
- Castriota, S., M. Delmastro, and M. Tonin. 2020. "National or Local? The Demand for News in Italy During Covid-19." *CESifo Working Paper Series* 8699. CESifo. https://ideas.repec.org/p/ces/ceswps/_8699.html.
- Centro Nacional de Epidemiología. 2021. <https://cnecovid.isciii.es/>.
- Ersoy, M., and T. H. Dambo. 2021. "Covering the Covid-19 Pandemic Using Peace Journalism Approach." *Journalism Practice*. doi:10.1080/17512786.2021.1945482.
- Evanega, S., M. Lynas, J. Adams, and K. Smolenyak. 2020. "Quantifying Sources and Themes in the COVID-19 'Infodemic'". Cornell Alliance For Science.

- Finneman, T., W. Mari, and R. J. Thomas. 2021. "“I Didn’t Know How We Were Going to Survive”: U.S. Community Newspapers’ Resilience During COVID-19." *Journalism Practice*. doi:10.1080/17512786.2021.1957703.
- Frank, R. 2020. *COVID-19 Drives Traffic to News Sites, But Will Publishers Benefit?*. <https://www.newsmediaalliance.org/covid-drives-traffic-to-news-but-will-publishers-benefit/>.
- García-Avilés, J. A. 2021. "Journalism as Usual? Managing Disruption in Virtual Newsrooms During the COVID-19 Crisis." *Digital Journalism* 9 (9): 1239–1260. doi:10.1080/21670811.2021.1942112.
- García-Perdomo, V., R. Salaverría, D. K. Kilgo, and S. Harlow. 2018. "To Share or Not to Share: The Influence of News Values and Topics on Popular Social Media Content in the United States, Brazil, and Argentina." *Journalism Studies* 19 (8): 1180–1201. doi:10.1080/1461670X.2016.1265896.
- Gevers, A. 2020. *Coronavirus Pandemic and Online Behavioural Shifts*; Comscore: Reston, VA, USA, 2020. Accessed July 22 2022. <https://www.comscore.com/Insights/Blog/Coronavirus-pandemic-and-online-behavioural-shifts>.
- Guo, M., and F.-S. Sun. 2022. "Local News on Facebook: How Television Broadcasters use Facebook to Enhance Social Media News Engagement." *Journalism Practice*. doi:10.1080/17512786.2022.2074519.
- Gurr, G. 2022. "Does Fatigue from Ongoing News Issues Harm News Media? Assessing Reciprocal Relationships Between Audience Issue Fatigue and News Media Evaluations." *Journalism Studies* 23 (7): 858–875. doi:10.1080/1461670X.2022.2049453.
- Gutsche, R. E., and M. Shumow. 2019. "When Local is National: An Analysis of Interacting Journalistic Communities in the Coverage of Sea Rise." *Journalism Studies* 20 (3): 442–462. doi:10.1080/1461670X.2017.1364141.
- Hallinan, B., J. R. Brubaker, and C. Fiesler. 2020. "Unexpected Expectations: Public Reaction to the Facebook Emotional Contagion Study." *New Media & Society* 22 (6): 1076–1094. doi:10.1177/1461444819876944.
- Hayes, D., and J. L. Lawless. 2015. "As Local News Goes, So Goes Citizen Engagement: Media, Knowledge, and Participation in US House Elections." *The Journal of Politics* 77 (2): 447–462. doi:10.1086/679749.
- Index. 2017. *The News Media: What Everyone Needs to Know*®. New York, NY: Oxford University Press. Accessed July 13 2022. <https://whateveryoneneedstoknow.com/view/10.1093wentk/9780190206192.001.0001/isbn-9780190206192-index-1>.
- Jenkins, J., and P. Jerónimo. 2021. "Changing the Beat? Local Online News Making in Finland, France, Germany, Portugal, and the U.K." *Journalism Practice* 15 (9): 1222–1239. doi:10.1080/17512786.2021.1913626.
- Jenkins, J., and R. K. Nielsen. 2018. *The Digital Transition of Local News*. In Reuters Institute for the Study of Journalism. Reuters Institute for the Study of Journalism. <http://www.digitalnewsreport.org/publications/2018/digital-transition-local-news/>.
- Jerónimo, P., J. C. Correia, and A. Gradim. 2022. "Are We Close Enough? Digital Challenges to Local Journalists." *Journalism Practice* 16 (5): 813–827. doi:10.1080/17512786.2020.1818607.
- Joseph, K., B. D. Horne, J. Green, and J. P. Wihbey. 2022. "Local News Online and COVID in the U.S.: Relationships among Coverage, Cases, Deaths, and Audience." *Proceedings of the International AAAI Conference on Web and Social Media* 16 (1): 441–452. doi:10.1609/icwsm.v16i1.19305.
- Kim, E., M. E. Shepherd, and J. D. Clinton. 2020. "The Effect of Big-City News on Rural America During the COVID-19 Pandemic." *Proceedings of the National Academy of Sciences* 117 (36): 22009–22014. doi:10.1073/pnas.2009384117.
- Larsson, A. O. 2017. "In it for the Long Run?" *Journalism Practice* 11 (4): 438–457. doi:10.1080/17512786.2015.1121787.
- Le Quéré, M. A., T.-W. Chiang, and M. Naaman. 2022. "Understanding Local News Social Coverage and Engagement at Scale During the COVID-19 Pandemic." *Proceedings of the International AAAI Conference on Web and Social Media* 16 (1): 560–572. doi:10.1609/icwsm.v16i1.19315.
- Martin, G., and J. McCrain. 2019. "Local News and National Politics." *American Political Science Review* 113 (2): 372–384. doi:10.1017/S0003055418000965.

- Masullo, G. M., J. Jennings, and N. J. Stroud. 2021. "Crisis Coverage Gap: The Divide Between Public Interest and Local News' Facebook Posts About COVID-19 in the United States." *Digital Journalism*, doi:10.1080/21670811.2021.1965488.
- McDonald, J. H. 2009. *Handbook of Biological Statistics*. 2 vols, 6–59. Baltimore, MD: sparky house publishing.
- Nagel, T. W. S. 2020. "Northwest Passages: Framing by Local, National and Public Media in Canada's Arctic." *Journalism Practice* 14 (10): 1244–1263. doi:10.1080/17512786.2019.1693280.
- Napoli, P. M., S. Stonbely, K. McCollough, and B. Renninger. 2017. "Local Journalism and the Information Needs of Local Communities." *Journalism Practice* 11 (4): 373–395. doi:10.1080/17512786.2016.1146625.
- Negreira-Rey, M., X. López-García, and J. Vázquez-Herrero. 2020. "Map and Characteristics of Local and Hyperlocal Digital Media in Spain." *Revista de Comunicación* 19 (2): 193–214. doi:10.26441/RC19.2-2020-A11.
- Newman, N., R. Fletcher, C. Robertson, K. Eddy, and R. Nielsen. 2022. *Reuters Institute Digital News Report 2022*. Reuters Institute for the Study of Journalism.
- Noar, S. M., and L. Austin. 2020. "(Mis)Communicating About COVID-19: Insights from Health and Crisis Communication." *Health Communication* 35 (14): 1735–1739. doi:10.1080/10410236.2020.1838093.
- Olsen, R. K. 2021. "The Value of Local News in the Digital Realm – Introducing the Integrated Value Creation Model." *Digital Journalism* 9 (6): 810–834. doi:10.1080/21670811.2021.1912623.
- Olsen, R. K., V. Pickard, and O. Westlund. 2020. "Communal News Work: COVID-19 Calls for Collective Funding of Journalism." *Digital Journalism* 8 (5): 673–680. doi:10.1080/21670811.2020.1763186.
- Park, C. S., and B. K. Kaye. 2021. "Applying News Values Theory to Liking, Commenting and Sharing Mainstream News Articles on Facebook." *Journalism* 3: 1–21.
- Pearman, O., M. Boykoff, J. Osborne-Gowey, M. Aoyagi, A. G. Ballantyne, P. Chandler, M. Daly, et al. 2021. "COVID-19 Media Coverage Decreasing Despite Deepening Crisis." *Lancet Planetary Health* 5: e6–e7. doi:10.1016/S2542-5196(20)30303-X.
- Pérez-Escoda, A., C. Jiménez-Narros, M. Perlado-Lamo-de-Espinosa, and L. M. Pedrero-Esteban. 2020. "Social Networks' Engagement During the COVID-19 Pandemic in Spain: Health Media vs. Healthcare Professionals." *International Journal of Environmental Research and Public Health* 17 (14): 5261. doi:10.3390/ijerph17145261.
- Pérez-Vega, R., K. Waite, and K. O'Gorman. 2016. "Social Impact Theory: An Examination of how Immediacy Operates as an Influence upon Social Media Interaction in Facebook fan Pages." *The Marketing Review* 16 (3): 299–321. doi:10.1362/146934716X14636478977791.
- Quandt, T., S. Boberg, T. Schatto-Eckrodt, and L. Frischlich. 2020. *Pandemic News: Facebook Pages of Mainstream News Media and the Coronavirus Crisis – A Computational Content Analysis*. doi:10.48550/arXiv.2005.13290.
- Salaverriá, A. R., P. M. P. Martínez-Costa, and J. Breiner. 2018. "Map of Digital News Media at Spain in 2018: Quantitative Analysis." *Revista Latina de Comunicación Social* 73: 1034–1053. doi:10.4185/RLCS-2018-1295-54en.
- Santos-Gonçalves, T., and S. Napp. 2022. "Trends in the Interest in COVID-19 News of the Local Media and Their Readers: The Case of Spain." *Journalism*. doi:10.1177/14648849221114736.
- Schober, P., C. Boer, and L. A. Schwarte. 2018. "Correlation Coefficients: Appropriate Use and Interpretation." *Anesthesia & Analgesia* 126 (5): 1763–1768. doi:10.1213/ANE.0000000000002864.
- Schulz, A. 2021. *Local News Unbundled: Where Audience Value Still Lies*, Reuters Institute Digital News Report 2021, pp. 43–47.
- Shearer, E. 2020. *Local News Is Playing an Important Role for Americans during COVID-19 Outbreak*, Pew Research Center. <https://www.pewresearch.org/fact-tank/2020/07/02/local-news-is-playing-an-important-role-for-americans-during-covid-19-outbreak/>.
- The Social Media Family. 2022. "VIII informe sobre el uso de redes sociales en España". <https://www.franquiadores.com/wp-content/uploads/2022/04/VIII-Informe-redes-sociales-the-smf-digital.pdf>.
- Thorson, E., W. Chen, and S. Lacy. 2020b. "National and Local News Consumption and Indices of Community Participation in an American Civic-Journalism News Environment." *Journalism Studies* 21 (4): 443–458. doi:10.1080/1461670X.2019.1672576.

- Thorson, K., M. Medeiros, K. Cotter, Y. Chen, K. Rodgers, A. Bae, and S. Baykaldi. 2020a. "Platform Civics: Facebook in the Local Information Infrastructure." *Digital Journalism* 8 (10): 1231–1257. doi:[10.1080/21670811.2020.1842776](https://doi.org/10.1080/21670811.2020.1842776).
- Toff, B., and N. Mathews. 2021. "Is Social Media Killing Local News? An Examination of Engagement and Ownership Patterns in U.S. Community News on Facebook." *Digital Journalism*. doi:[10.1080/21670811.2021.1977668](https://doi.org/10.1080/21670811.2021.1977668).
- Van Aelst, P., F. Toth, L. Castro, V. Štětka, C. D. Vreese, T. Aalberg, A. S. Cardenal, et al. 2021. "Does a Crisis Change News Habits? A Comparative Study of the Effects of COVID-19 on News Media Use in 17 European Countries." *Digital Journalism* 9 (9): 1208–1238. doi:[10.1080/21670811.2021.1943481](https://doi.org/10.1080/21670811.2021.1943481).
- Villena-Alarcón, E., and L. Caballero-Galeote. 2021. "COVID-19 Media Coverage on Spanish Public TV." *Tripodos* 2 (47): 103–126. doi:[10.51698/tripodos.2020.47p103-126](https://doi.org/10.51698/tripodos.2020.47p103-126).
- Weber, M., P. Andringa, and P. Napoli. 2019. "Local News on Facebook: Assessing the Critical Information Needs Served through Facebook's Today-in Feature." NewsMeasuresResearchProject. <https://hsjmc.umn.edu/sites/hsjmc.umn.edu/files/2019-09/Facebook%20Critical%20Information%20Needs%20Report.pdf>.