

ARTICLES/ARTÍCULOS

Concentration and News Deserts: the Andalusian Information Map

Concentración y desiertos de noticias:
el mapa informativo andaluz

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ABSTRACT

Local journalism fulfils an essential role in the expression of a region: it expresses the information closest and most useful to the reader, and also provides an extremely relevant public service function. The appearance of new digital tools has led to the growth of local or hyper-local media (digital press) in locations previously unthinkable for a physical newspaper. The “Journalistic information and well-being: analysis of the social function of the Andalusian journalistic company (US 1380696)” project carried out an in-depth study into this situation, detecting the existence of 252 local digital media outlets in the autonomous community, which is an indicator of the health of the sector in Andalusia. One of the results of this research has been the creation of an interactive map providing the exact location of each of the media outlets, as well as areas where there are greater concentrations and information deserts. Knowledge of this situation allows us to draw interesting conclusions and also make proposals for the promotion of tools of this type in those places where they do not exist.

KEYWORDS: proximity information; local journalism; media company; information deserts; news deserts.

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RESUMEN

El periodismo local cumple una función fundamental para la articulación de los territorios, es la información más próxima al lector y de mayor utilidad y además tiene una función de servicio público muy relevante. La llegada de las nuevas herramientas digitales ha favorecido el crecimiento de medios de comunicación locales o hiperlocales (prensa digital) en ubicaciones impensables para un periódico en papel. El Proyecto «La información periodística y el bienestar: análisis de la función social de la empresa periodística andaluza (US 1380696)» ha realizado una investigación profunda sobre esta realidad detectando la existencia de 252 medios locales digitales en la comunidad autónoma, lo que en primera instancia denota la salud del sector en Andalucía. Uno de los resultados de esta investigación ha sido la elaboración de un mapa interactivo con el emplazamiento de cada uno de estos medios, esta herramienta da la ubicación exacta de los medios, también dónde se producen mayores concentraciones y los desiertos informativos. El conocimiento de esta realidad permite obtener conclusiones interesantes y también realizar propuestas para el fomento de herramientas de este tipo en aquellos lugares en los que no existen.

PALABRAS CLAVE: información de proximidad; periodismo local; empresa informativa; desiertos informativos; desiertos de noticias.

1. Introduction and background

1.1. The social function of local media

Academically, the local press and community journalism have always played a fundamental role in the creation of formed and informed societies, which entails the emergence of local and regional public opinion with a view on the essential issues affecting their daily lives (Camponez, 2002; Napoli *et al.*, 2019). This presence of media rooted in the territory, and whose scope of dissemination is limited, is doubly essential. On the one hand, society, the general public, needs knowledge of those issues that affect them in their everyday lives, what is happening in the places where they live and work, in order to make rational decisions. On the other hand, local governments, the managers of public affairs, need communication channels through which they can reach the citizens they govern. Thus, if the local media stands out in any specific aspect, in addition to its proximity, it is due to the high degree of accountability regarding the function of surveillance of power (Izquierdo-Labela, 2010).

Local media has demonstrated its ability to convey democratic processes on a local scale and, in addition, it is an articulator of communities, contributing to the development of a sense of belonging among the individuals within the group (Nielsen, 2015). Not only does local media set the agenda at the local level, but it can also bring national and international political issues into the local realm, reinterpreting them from the point of view and interests of citizens. It does this from a localised perspective that understands global problems from the vantage point of their impact on local and regional communities (Hess and Waller, 2017; Rivas-de-Roca, García-Gordillo and Caro-Gonzalez, 2020).

Local media has proven not only to play an essential role in defining the information agenda and therefore the issues that determine it, but it also stands out because in doing so it meets the needs of citizens (Weber and Mathews, 2022), thereby promoting the identity cohesion of geographical profiles linked to institutional demarcations, bringing cohesion to political activism, delimiting the agenda regarding important political, economic and cultural issues. The pages of local media publications, through advertisements, also mirror the commercial activity that adds character to the community. “The newspaper is an anchor: every day it reminds a community of its collective identity and the lessons of its history,” says Ron Heitz, a professor at Harvard University (Abernathy, 2018). Studies by the American think tank Pew Research Center (Miller, 2018) highlight that it is regular newspaper readers who show the strongest links with their community.

Can the media help create a more democratic society? Of course, the media can contribute to a more democratic society. The job of the press is to help produce a more informed electorate. A more informed citizenry can create a better and fuller democracy (Schudson, 1995).

Schudson's reflection, which synthesises the most transcendent role of the press, is particularly applicable in local terms, where proximity between administrators and the managed is close and where politics moves away from ideological abstractions, instead descending and focusing on the tangible and local.

Among the abundant signs of concern about the regression of local journalism, the content of *The Expanding News Desert* stands out, as does the work carried out by Penelope M. Abernathy (2018), professor at the Knight Foundation, on the loss of local news and readers and its significance for communities. It is based on the fact that newspapers act as watchdogs that hold civic institutions accountable and provide a check on the government that no constitution has been able to provide. The loss of local information results in less informed citizens who vote less and have fewer criteria. Proof of this was the 2016 US presidential elections. In rural areas without newspapers, Trump won 62% of the vote, compared to 46% of the country's overall result. One of the most respected testimonies before the Knight Commission on *Trust, Media and Democracy* stated that democracy is hindered when a large percentage of the population is not literate. Being literate is more than just understanding the meaning of words; it is having the ability to analyse arguments and facts.

In an interesting work on the changes in local media in Britain, and the possible repercussions on local democracies, Julie Firmstone (2016) states that the role of local news in the public sphere is particularly significant as it is considered vital for the proper functioning of local communities and citizen participation. It is understood that local media must perform four regulatory functions: 1) inform and educate citizens on local issues; 2) be a representative voice of those citizens; 3) hold government organisations and institutions accountable; and 4) become drivers of proactive campaigns on matters of public interest. Some concern is expressed regarding the devaluation of these functions. The British government

itself shared this sentiment when it voiced concerns about the deterioration of journalism in general and, more specifically, local journalism, to the point that it promoted a White Paper, which also focused on the aspect of plurality (Barnett, 2009). If the media fulfils an unquestionable social function, local media's public service function is even more delimited and focused; it is part of its DNA (Jenkins and Nielsen, 2020).

1.2. The current state of local media

Local press is experiencing even greater problems than the print media in general. The current crisis provides dramatic data: newspapers have lost between 40 and 50% of the readership; advertising has fallen between 60 and 70%; the staff of newsrooms has been reduced by the same proportion, with even more worrying qualitative data, as the cuts have meant the departure of the most veteran and experienced (Newman *et al.*, 2024). According to Miller (2018), in the United States, surely the country that has most appreciated the contribution of the press in public life, from 2008 to 2017 60% of press jobs disappeared; one in five local newspapers was lost and many of them retain the title, although they are "ghosts"-like.

The economic factor has been a major driver in this loss of titles, but not the only one. Social behaviour and uses have also changed in recent decades, at the same time as the economy and lifestyles have been transformed. These changes have swept away the media, which continue to be a mirror of society. Changes that in theory did not have to have a negative impact on the media ended up affecting them, such as urbanisation and the exodus from the countryside to the city. The intensification of mobility meant that thousands of people were displaced and uprooted from their places of origin, and so too were the references that linked them, among other things, to the newspaper of their city and territory. Leo Bogart (1985) saw the change of urban life in the 1960s as the first blow to the local media.

Another important blow, during the same period, was produced by television, partly due to its informative content, but above all because of its blanket coverage of leisure time like no other medium. As a source of entertainment, television has for decades been a major competitor of newspapers. The arrival of the 21st century has also brought the Internet, which can be used for all manner of content, including news, and the avalanche of screens in recent years represents the biggest offensive against traditional media, because all functions assigned to the latter, including informing, training and entertaining, have been impacted. However, for a range of reasons, neither one nor the other replaces newspapers, and their model continues to be a necessity in the public realm.

All this has led, as Miller (2018) points out, to a greater need for quality, objective and fact-based news. The local press crisis poses a great risk to civic engagement, government accountability and democracy. Along the same lines, Julia Cage (2015) reported that "information is everywhere, but the media has never been so weak".

In Britain, four large groups hold the titles comprising 72% of regional press: "A tragedy for our democracy, now moribund at the local level and in need of vigorous watchmen," denounces Steven Barnett (Cage, 2015), senior advisor to the House of Lords Communications and Digital Committee.

A local newspaper is much more than a means of communication, a pure container of news, a transmitter of current events. Although historically it has been assigned roles that differentiate it from a national newspaper, there is no academic literature that has delved into that difference. The vocation of the national newspaper is based on social class and political action; it represents the unity of the country to which it provides a common fund of information. However, the strength of local press lies in its ability to condense the feelings of the community, in linking and outlining a geographical area that gathers and inspires its people and distinguishes them from their neighbours (Bogart, 1985).

The exposure of the local newspaper as a unitary entity and not disintegrated or dispersed as manifested in the digital models (Cebrián, 2020) is justified by the critical situation and certain risk of disappearance that it is facing. The data on the economic, financial, professional and labour situation, and on the readership indices of Spanish local and regional newspapers, show in all their crudeness the need for a voice to sound the alarm and call for a search for possible solutions to the risk of disappearance.

1.3. Informational desertification

Despite the importance of journalism in the development of local communities (Anderson, 2013), the local news sector is experiencing a profound crisis (Nygren, 2019). The progressive disappearance of local media puts the coverage of issues at risk, and this creates real news deserts (Abernathy, 2020; Claussen, 2020). This absence of journalistic organisations in the vicinity has a notable impact on the civic engagement of the population, as evidenced by some early studies on the reduction of electoral participation in territories without local media (Magasic and Hess, 2021; Ramos, Torre and Jerónimo, 2023).

A review of the academic literature has described the crisis of local journalism in depth (Morais, Jerónimo and Correia, 2020), as well as the genesis of new hyper-local media thanks to digital technologies (López-García, Negreira-Rey and Rodríguez-Vázquez, 2016), but there are still no studies exploring how these media engage with their communities.

The concern in academia about information deserts is relatively new, although numerous studies can already be found in this regard (Ferrier, Sinha and Outrich, 2016; Ragnhild, Olsen and Birgit, 2023; Lenka, 2023; Ramos, Torre and Jerónimo, 2023; Usher, 2023; Lee and Butler, 2018) that analyse the phenomenon and study specific cases, as well as repercussions on the health of the local public sphere.

The Media Deserts Project (Ferrier, Sinha and Outrich, 2016) has enabled researchers to monitor the health of media ecosystems in the United States and provides a valuable tool in the use of policies and resources. This project builds on a geographic framework and uses geographic information systems technology to assess and track changes in the information health of communities across the United States. The team behind the project worked to create new mapping tools for researchers, policy-makers and local leaders to help them identify communities that lack access to local news and information, as well as to measure trends in access to critical news and information and where resources can be found to establish or restore news and information coverage. Usher (2023), critical of the concept, pointed out years later that, although information deserts are rhetorically powerful, the concept is very problematic due to its normative presumptions and descriptive vagueness. Concern over the loss of local journalism in the United States has come to the fore. There is a false nostalgia for the role of local newspapers in communities, and the focus should be on re-imagining what local news might be; that the availability of local news and information may play a minor role in overall political knowledge, social identity and cultural cohesion in a hybrid and deeply polarised democracy.

In their research, Ragnhild, Olsen and Birgit (2023), focusing primarily on the closure of local media in Norway, a country characterised by a rich infrastructure in this regard, address how news deserts cause democratic deficits. Based on qualitative interviews with editors and journalism students, this article explores the lack of local journalists trained at small local newspapers and exposes how economic, geographical and professional prestige factors contribute to job deficits. The research presents data on recruitment shortfalls in local journalism, which has received little attention in the academic literature. On the other hand, both editors and students highlighted how low wages, time pressure and unsatisfactory working conditions negatively impact the attractiveness of working in local journalism.

Another study, this time on the Czech Republic (Lenka, 2023), analyses the emergence of information deserts from the perspective of independent local newspapers (since there is a de-localised public publishing chain), particularly regarding structural changes that lead to a decrease in the number of media outlets providing local news in the country. The research, focusing on the journalists' perspective, led to the identification of several structural changes both in local newspapers and in the publishing industry in general. Local news is still published in newspapers, which rely on the traditional business model and are slow in their digital transition. Their survival is based on (non-)co-operation with ancillary organisations (print shops, distribution companies and points of sale) and other local newspapers. Newspapers are cornered by the demands of external actors; their economic stability depends on the self-sufficiency of their production.

On the other hand, Ramos, Torre and Jerónimo (2023) studied the phenomenon of information deserts in Brazil and Portugal and related them to the democratic health of the Portuguese-speaking world, where news deserts have emerged, sparking interest in mapping the phenomenon. The researchers note that territories without news could see an increase in social problems such as misinformation, populism and democratic crises, particularly due to electoral abstention. In order to analyse the relationship between news deserts and democracy, the authors focused on how news deserts correlate with abstention rates in Brazil and Portugal. Among the results of the research, although it was not possible to establish a correlation between abstention rates and the existence of news deserts, other variables that may be affecting voters' abstention behaviour were identified.

In Spain, the work carried out by Negreira-Rey, Vázquez-Herrero and López-García (2023) is noteworthy. Based on a map of 2,874 active digital media outlets (Negredo, Bruna and Martínez-Costa, 2021), they identified information deserts in the country by relating the population density of the municipalities and the municipal population data of 2021 with the tax domicile of the digital media companies and the coverage given on their websites. These authors warn of the risks of the advance of these barren news municipalities, since there are 11 million inhabitants who do not have access to local media and conclude that it is "necessary to study what happens in specific areas and communities, to understand in greater depth their media, the quality and frequency of the news, the sources of information used by citizens, as well as the possible risk factors" (Negreira-Rey, Vázquez-Herrero and López-García, 2023, p. 301).

Certainly, the concept of information desert is still in its genesis, and although tremendously graphic (Lee and Butler, 2019), there is still a long way to go towards establishing parameters to identify media desertification, based on economic, population or geographical indicators.

Our research has collected data from Andalusia, based on the premise that within a single territory there are social and economic gaps that affect the consumption of news (Napoli *et al.*, 2019). Andalusia is the most populous region in Spain, with more than 8 million inhabitants distributed throughout urban and rural areas, hence the interest in defining a journalistic measure of social commitment.

This research aims to identify information deserts in Andalusia. This will be based on the Andalusian digital local media map, the outcome of the research project "Journalistic information and well-being: analysis of the social function of the Andalusian journalistic company (US 1380696)", which has carried out in-depth research on the digital local media universe in the autonomous community.

2. Sample study and methodology

First, a database was developed containing a list of local Andalusian digital media companies. Information organisations with their own identity that offer a differentiated information service on the internet were selected, whose headquarters or registered office are located within Andalusia. Due to the type of research being carried out (requiring a textual analysis of the news), entities that appeared codified in the databases, such as television or radio outlets, were discarded. To do this, several data sources were cross-referenced and the media found was screened by the ten members of the research team, who verified that the companies were active and that they were media outlets with their own identity (December 2022). The databases used were: [Todalaprensa.com](https://www.todalaprensa.com), Agenda de la Comunicación de Andalucía (Regional Government of Andalusia), ROMDA (Registro Oficial de Medios Digitales de Andalucía, "Official Register of Digital Media Outlets in Andalusia") and Iberifier (Salaverría *et al.*, 2022). From the initial 272 media outlets, the sample was reduced to 213.

Those selected were placed on a map of Andalusia, with each outlet being linked to the main geographical area whose information interests it dealt with.

The media outlets were subjected to a content analysis, carried out between 22nd and 28th February 2023, which included variables that combined to create a social commitment indicator for the outlet (SCI). This process is described in detail in Caro-González *et al.* (2024) and the results and variables can be consulted at PERYBIAN, <https://grupo.us.es/comandsoc/explore-map>.

Subsequently, the Multiterritorial Information System of Andalusia (SIMA) was used, from which the following variables were extracted from the eight provinces of Andalusia in order to interpret the information from the perspective of the news deserts described in the theoretical framework:

- Population (2021).
- Number of settlements that make up the municipality.
- Municipalities with more than 10,000 inhabitants.
- Municipalities with more than 20,000 inhabitants.

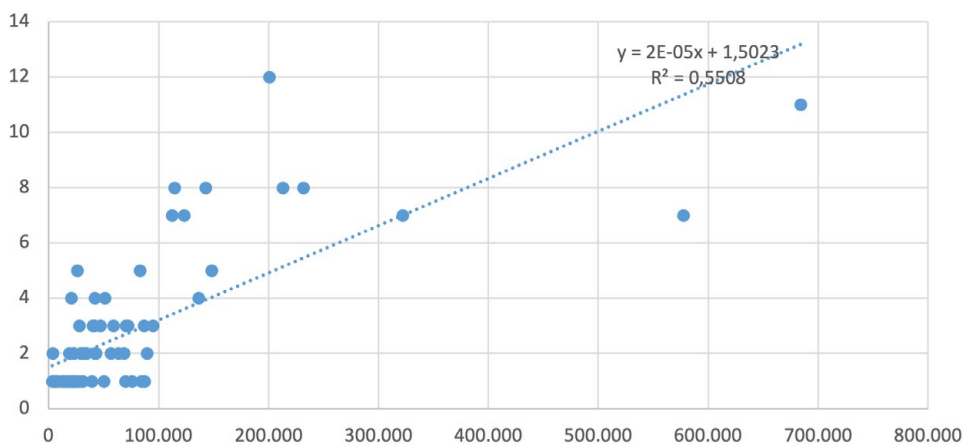
A descriptive and linear regression analysis was carried out for the population variables of the municipalities and the number of companies.

3. Results

The eight Andalusian provinces were analysed taking into account a set of variables that could help identify the news desert: number and size of municipalities in the province, the number of media outlets per municipality and the location of those outlets. First, a regression analysis of the different variables considered was carried out. The only statistically significant relationship ($R^2=0.5508$) was between the size of municipalities and the existence of media outlets (Figure 1).

Figure 1

Linear regression between the population of the municipalities variable and the number of media outlets



Source: own research.

There is, however, no relationship between the number of settlements in a municipality and the existence of media companies. Nor have we found a statistically significant relationship between the number of media outlets per municipality and the SCI.

Figure 1 shows in isolation the cases of Almería (with 12 media outlets located in the provincial capital) and Seville, which has triple the population yet only 11 outlets. This situation will be discussed in the detailed analysis of each province provided below.

3.1. Almería

Table 1

Data from the province of Almería on the number of media companies (SIMA and database, 2022)

	Almería	Average per province	Difference
Population	731,792	1,059,051	-
Percentage of total population of Andalusia	8.6	12.5	-
Municipalities	102	97.1	+
Municipalities with more than 20,000 inhabitants	6	10.4	-
Percentage of municipalities with more than 20,000 inhabitants	5.9	12.8	-
Municipalities with more than 10,000 inhabitants	13	19.1	-
Percentage of municipalities with more than 10,000 inhabitants	13	22	-
Media companies	13	26.6	-
Percentage of total companies in Andalusia	6.1	12.5	-
Municipalities with media outlet	2	10	-
Percentage of municipalities with media outlet	2	13	-
Average per 1000 inhabitants	0.01776461	0.02514044	-
Average SCI	3.84	4.12	-

Source: own research.

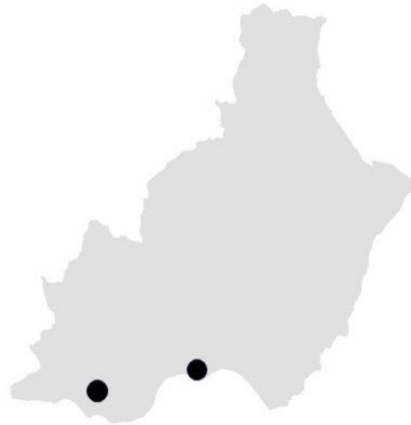
In Almería there is a significant concentration of media outlets in the provincial capital (11), with there only being one outside the capital, in El Ejido, which has a population of 84,500 inhabitants and is rich in economic resources due to its significant agricultural activity. The percentage of municipalities in Almería with over 20,000 inhabitants is the second lowest in Andalusia at just 6%. What's more, there are four towns that exceed the threshold of 20,000 inhabitants that don't have their own media outlet, and only 2% of municipalities do have one. This figure shows that local journalism coverage in the province is scarce, and here we can suggest that there is a news desert.

The number of media companies is 0.0178 per thousand inhabitants, the lowest in the entire autonomous community.

Visually, with just a quick glance at the map we can observe the scarce media coverage in the province.

Figure 2

Image showing the PERYBIAN map of the province of Almería with the location of municipalities with media outlets



Source: Database, own research.

If we look at the map, we can see that there is no local news coverage in much of the territory.

3.2. Cádiz

Table 2

Data from the province of Cádiz on the number of media companies (SIMA and databases, 2022)

	Cádiz	Average per province	Difference
Population	1,245,960	1,059,051	+
Percentage of total population of Andalusia	14.7	12.5	+
Municipalities	44	97.1	-
Municipalities with more than 20,000 inhabitants	15	10.4	+
Percentage of municipalities with more than 20,000 inhabitants	34.1	12.8	+
Municipalities with more than 10,000 inhabitants	21	19.1	+
Percentage of municipalities with more than 10,000 inhabitants	48	22	+
Media companies	51	26.6	+
Percentage of total companies in Andalusia	23.9	12.5	+
Municipalities with media outlet	18	10	+
Percentage of municipalities with media outlet	41	13	+
Average per 1000 inhabitants	0.0409	0.02514044	+
Average SCI	4.25	4.12	+

Source: own research.

The province of Cádiz is surprising due to the numerous local media outlets that are distributed throughout the territory. There are media outlets in: Algeciras, Arcos de la Frontera, Barbate, Barrios (Los), Benalup-Casas Viejas, Cádiz, Chiclana de la Frontera, Conil de la Frontera, Jerez de la Frontera, Línea de la Concepción (La), Puerto de Santa María (El), Puerto Real, Rota, San Fernando, Sanlúcar de Barrameda, Tarifa, Ubrique and Vejer de la Frontera.

Cádiz accounts for almost 24% of the Andalusian media companies analysed, despite making up just 14.6% of the total Andalusian population. Unique aspects of this province are that 34% of its municipalities have more than 20,000 inhabitants and 48% have more than 10,000. The percentages for Andalusia are 10.7% and 20%, respectively. All the municipalities in Cádiz with more than 20,000 inhabitants have their own local media, except San Roque. The rest of the media companies are located in municipalities with more than 10,000 inhabitants, with the sole exception being Benalup-Casas Viejas, which has 7,020. In the case of the province of Cádiz, we found that 41% of municipalities have a local newspaper, so the coverage of the territory is quite extensive, with companies both in the coastal region and in the mountains, although given the distribution of the population it is in the former where there is a greater concentration.

Figure 3

Image showing the PERYBIAN map of the province of Cádiz with the location of municipalities with media outlets



Source: Database, own research.

The significant media presence in the territory is linked not only to the size of its cities, but also to the journalistic tradition of the province. Two of the main Andalusian media groups emerged from there: Grupo Joly and Publicaciones del Sur, publisher of the Viva titles. It is also home to significant journalistic ventures, such as *La Voz del Sur* in Jerez de la Frontera. Given these data, we are able to state that there are no significant news deserts in the province of Cádiz.

3.3. Córdoba

Table 3

Data from the province of Córdoba on the number of media companies (SIMA and databases, 2022)

	Córdoba	Average per province	Difference
Population	776,789	1,059,051	-
Percentage of total population of Andalusia	9.2	12.5	-
Municipalities	76	97.1	-
Municipalities with more than 20,000 inhabitants	7	10.4	-
Percentage of municipalities with more than 20,000 inhabitants	9.2	12.8	-
Municipalities with more than 10,000 inhabitants	12	19.1	-
Percentage of municipalities with more than 10,000 inhabitants	16	22	-
Media companies	29	26.6	+
Percentage of total companies in Andalusia	13.6	12.5	+
Municipalities with media outlet	16	10	+
Percentage of municipalities with media outlet	21	13	+
Average per 1000 inhabitants	0.0373	0.02514044	+
Average SCI	3.88	4.12	-

Source: own research.

Córdoba accounts for 13.6% of the Andalusian media companies analysed, with 16% of its municipalities with more than 10,000 inhabitants having one. All municipalities with more than 20,000 inhabitants have local media. The municipalities with media outlets are: Aguilar de la Frontera, Baena, Benamejí, Córdoba, Cabra, Lucena, Montilla, Puente Genil, La Rambla, Porcuna, Palma del Río, Priego de Córdoba, Castro del Río, Santaella, Montemayor and Montalbán de Córdoba.

In the case of the province of Córdoba, we found that 21% of the municipalities have a local newspaper, more than twice the Andalusian average (10%). In some cases, such as the municipalities of Luque (2,945 inhabitants) and Montemayor (3,851 inhabitants), they have their own media outlets despite their very small populations.

Once again, in the case of Córdoba, there is a unique business aspect that must be considered, which is the Comunica | Innovación Social group. This is the entrepreneurial initiative of Juan Pablo Bellido, a journalist and businessman who, with a new low-cost scalable business model, expanded from Montilla to other parts of the province and later to nearby provinces such as Seville.

Figure 4

Image showing the PERYBIAN map of the province of Córdoba with the location of municipalities with media outlets



Source: Database, own research.

In the case of Córdoba, there are 0.0373 digital media outlets per thousand inhabitants, the second best figure after the province of Cádiz. Therefore, in this case we cannot speak of a news desert either.

3.4. Granada

Table 4

Data from the province of Granada on the number of media companies (SIMA and databases, 2022)

	Granada	Average per province	Difference
Population	921,338	1,059,051	-
Percentage of total population of Andalusia	10.9	12.5	-
Municipalities	173	97.1	+
Municipalities with more than 20,000 inhabitants	8	10.4	-
Percentage of municipalities with more than 20,000 inhabitants	4.6	12.8	-
Municipalities with more than 10,000 inhabitants	21	19.1	+
Percentage of municipalities with more than 10,000 inhabitants	12	22	-
Media companies	18	26.6	-
Percentage of total companies in Andalusia	8.5	12.5	-
Municipalities with media outlet	5	10	-
Percentage of municipalities with media outlet	3	13	-
Average per 1000 inhabitants	0.0195	0.02514044	-
Average SCI	4.03	4.12	-

Source: own research.

Granada, despite being the province with the most municipalities, only has eight with more than 20,000 inhabitants, and of these, only three have a media outlet: Granada, Motril and Almuñécar, the provincial capital and the two most important coastal towns, respectively. Apart from these, there are only two municipalities with media companies: Guadix (18,462 inhabitants) and Alhama de Granada (5,667 inhabitants). Therefore, 97% of municipalities lack their own media company. This province offers the second lowest average figure per thousand inhabitants, at 0.0195. In this case, one can speak of a news desert, as the province has large areas that are uncovered by media.

Figure 5

Image showing the PERYBIAN map of the province of Granada with the location of municipalities with media outlets



Source: Database, own research.

3.5. Huelva

Table 5

Data from the province of Huelva on the number of media companies (SIMA and databases, 2022)

	Huelva	Average per province	Difference
Population	525,835	1,059,051	-
Percentage of total population of Andalusia	6.2	12.5	-
Municipalities	79	97.1	+
Municipalities with more than 20,000 inhabitants	8	10.4	-
Percentage of municipalities with more than 20,000 inhabitants	10.1	12.8	-
Municipalities with more than 10,000 inhabitants	14	19.1	+
Percentage of municipalities with more than 10,000 inhabitants	18	22	-
Media companies	12	26.6	-
Percentage of total companies in Andalusia	5.6	12.5	-
Municipalities with media outlet	5	10	-
Percentage of municipalities with media outlet	6	13	-
Average per 1000 inhabitants	0.0228	0.02514044	-
Average SCI	5.24	4.12	-

Source: own research.

This province has eight municipalities with more than 20,000 inhabitants, but only three of them have their own media outlet; there are no media companies in Lepe, Moguer, Aljaraque or Ayamonte. In the case of Aljaraque and Moguer this may be due to their proximity to the provincial capital, which is home to eight. The other two towns, on the western part of the coast, are very close to Isla Cristina, which does have its own local publication. The other municipalities with media are Punta Umbría (coast), Bonares and El Rocío (halfway to Seville). There is a significant information desert throughout the Sierra de Huelva mountain range, where there is no local media, not even of a regional nature. Only 13% of municipalities have local media. The number of media outlets per thousand inhabitants is 0.0228, which is below the Andalusian average. A unique feature of this province is the quality of the social commitment of its media, which recorded the highest value out of the Andalusian provinces.

Figure 6

Image showing the PERYBIAN map of the province of Huelva with the location of municipalities with media outlets



Source: Database, own research.

3.6. Jaén

Table 6

Data from the province of Jaén on the number of media companies (SIMA and databases, 2022)

	Jaén	Average per province	Difference
Population	627,190	1,059,051	-
Percentage of total population of Andalusia	7.4	12.5	-
Municipalities	96	97.1	-
Municipalities with more than 20,000 inhabitants	6	10.4	-
Percentage of municipalities with more than 20,000 inhabitants	6.3	12.8	-
Municipalities with more than 10,000 inhabitants	15	19.1	-
Percentage of municipalities with more than 10,000 inhabitants	16	22	-
Media companies	15	26.6	-
Percentage of total companies in Andalusia	7.0	12.5	-
Municipalities with media outlet	7	10	-
Percentage of municipalities with media outlet	7	13	-
Average per 1000 inhabitants	0.0239	0.02514044	-
Average SCI	3.84	4.12	-

Source: own research.

Jaén, with 7.4% of the autonomous community's population, also has the same percentage with regards municipalities with local media (7%). It has six municipalities with more than 20,000 inhabitants, four of which have at least one outlet: Jaén, Linares, Úbeda and Alcalá la Real. Andújar and Martos do not have their own. The other towns with their own media coverage are Jódar, Porcuna and Lopera. Twelve percent of Jaén's municipalities have local media. A partial news desert can be seen in the area of the Sierra de Cazorla-Segura mountain range. The number of media outlets per thousand inhabitants is 0.0239, which is below the Andalusian average.

Figure 7

Image showing the PERYBIAN map of the province of Jaén with the location of municipalities with media outlets



Source: Database, own research.

3.7. Málaga

Table 7

Data from the province of Málaga on the number of media companies (SIMA and databases, 2022)

	Málaga	Average per province	Difference
Population	1,695,651	1,059,051	+
Percentage of total population of Andalusia	20.0	12.5	+
Municipalities	102	97.1	+
Municipalities with more than 20,000 inhabitants	16	10.4	+
Percentage of municipalities with more than 20,000 inhabitants	15.7	12.8	+
Municipalities with more than 10,000 inhabitants	19	19.1	-
Percentage of municipalities with more than 10,000 inhabitants	19	22	-
Media companies	36	26.6	+
Percentage of total companies in Andalusia	16.9	12.5	+
Municipalities with media outlet	12	10	+
Percentage of municipalities with media outlet	12	13	-
Average per 1000 inhabitants	0.0212	0.02514044	-
Average SCI	3.8	4.12	-

Source: own research.

Málaga is the second most populous province in Andalusia, home to 20% of Andalusians. Its weight in terms of the number of media companies is also considerable, with 17% of the Andalusian total found in the province. The 36 existing media outlets are located in 12 different municipalities (Málaga, Vélez-Málaga, Marbella, Estepona, Benalmádena, Antequera, Ronda, Torremolinos, Alhaurín de la Torre, Alhaurín el Grande, Mijas and Rincón de la Victoria), and thus 88% of municipalities are without specific coverage. Of the 16 municipalities with more than 20,000 inhabitants, there are four without their own media: Fuengirola, Cártama, Coín and Nerja. This is likely due to the proximity to other coastal cities that publish titles in the same area: five in Marbella, five in Vélez-Málaga and three each in Estepona and Benalmádena. Apart from two media outlets (located in Antequera and Ronda), they are all concentrated on the coast, or very close to it. The number of media outlets per thousand inhabitants is 0.0212. The SCI is 3.8, which is lower than the Andalusian average. Once again, a news desert is detected throughout the mountainous area of the province.

Figure 8

Image showing the PERYBIAN map of the province of Málaga with the location of municipalities with media outlets



Source: Database, own research.

3.8. Seville

Table 8

Data from the province of Seville on the number of media companies (SIMA and databases, 2022)

	Seville	Average per province	Difference
Population	1,947,852	1,059,051	+
Percentage of total population of Andalusia	23.0	12.5	+
Municipalities	105	97.1	+
Municipalities with more than 20,000 inhabitants	17	10.4	+
Percentage of municipalities with more than 20,000 inhabitants	16.2	12.8	+
Municipalities with more than 10,000 inhabitants	38	19.1	+
Percentage of municipalities with more than 10,000 inhabitants	36	22	+
Media companies	39	26.6	+
Percentage of total companies in Andalusia	18.3	12.5	+
Municipalities with media outlet	15	10	+
Percentage of municipalities with media outlet	14	13	+
Average per 1000 inhabitants	0.02	0.0251404	-
Average SCI	4.08	4.12	-

Source: own research.

The province of Seville has the largest population, double that of the average percentage for the eight provinces. It has 17 municipalities with more than 20,000 inhabitants and 38 with more than 10,000. The percentage of municipalities with a media outlet is 14%. There are five municipalities with more than 20,000 inhabitants that have local media: Los Palacios y Villafranca, Coria del Río, Camas, Bormujos and San Juan de Aznalfarache. All of them, except the first, are part of the metropolitan area of the capital, which has 11 media outlets and which, due to their geographical proximity, may be covered by said outlets. The remaining three municipalities with media companies have more than 10,000 inhabitants. The number of media outlets per thousand inhabitants is 0.02, which is below the Andalusian average, and its average SCI also presents values below the average for the autonomous community. As in the rest of the provinces, the mountainous Sierra Norte area has no media resources. The municipalities with media outlets in the province are: Alcalá de Guadaíra, Aljarafe, Carmona, Dos Hermanas, Écija, El Viso del Alcor, Estepa, Lebrija, Mairena del Alcor, Mairena del Aljarafe, Morón de la Frontera, Osuna, San José de la Rinconada, Seville, Tomares and Utrera.

Figure 9

Image showing the PERYBIAN map of the province of Seville with the location of municipalities with media outlets



Source: Database, own research.

3.9. Andalusia

Table 9 presents a summary of the most relevant data. The highest values in each column are highlighted.

Table 9

Summary of the eight Andalusian provinces (SIMA and databases, 2022)

	Almería	Cádiz	Córdoba	Granada	Huelva	Jaén	Málaga	Seville
% of total population of Andalusia	8.6	14.7	9.2	10.9	6.2	7.4	20.0	23.0
Municipalities	102	44	76	173	79	96	102	105
% of municipalities with media outlet	2	41	21	3	6	7	12	14
Average per 1000 inhabitants	0.0178	0.0409	0.0373	0.0195	0.0228	0.0239	0.0212	0.02
Average SCI	3.84	4.25	3.88	4.03	5.24	3.84	3.8	4.08

Source: own research.

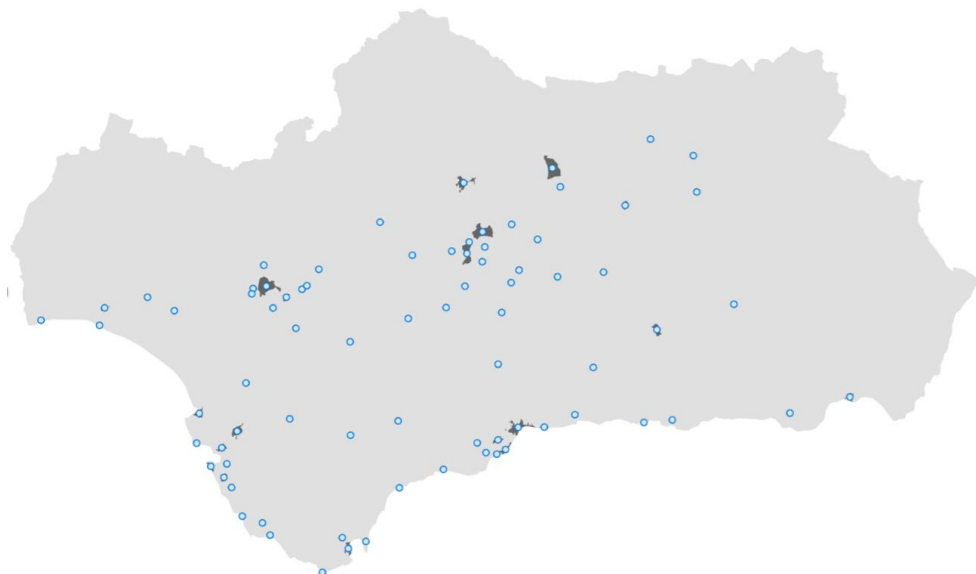
Inequalities can be observed within the same autonomous community, with situations as disparate as those seen in the provinces of Cádiz and Almería, aspects that we will discuss below.

4. Conclusions

Identifying news deserts is a complex task. The most appropriate way of doing so is by displaying a map in which the municipalities that have their own or regional media are located, as can be seen in some of the works cited in the theoretical review.

Figure 10

Image showing the PERYBIAN map of the Autonomous Community of Andalusia with the location of municipalities with media outlets



Source: Database, own research.

This research addresses the need to investigate smaller territories than those usually studied (at the national or community level), in order to use more contextual information in understanding the phenomenon of news deserts (Negreira-Rey, Vázquez-Herrero and López-García, 2023, p. 301). An analysis of Andalusian provinces has shown that there are very significant differences between each of them, and that at the same time they all share a common factor: an absence of media in mountainous areas. If we look at the map of the autonomous community, the northern area of each of the provinces is lacking in news coverage. This fact can be explained in at least two ways. Firstly, the population density is higher in capital cities and coastal areas and less so in mountainous areas, so it is normal that this is where the media outlets are concentrated. Secondly, the media culture and tradition that has existed in ports and commercial hubs, given their historical need for information since the emergence of the bourgeois merchant class, has provoked inertia, resulting in media outlets emerging in places where one already exists. The second relevant

and expected fact is the relationship between the size of cities and the existence of their own media outlets. The average size of a municipality with a media outlet is over 65,000 inhabitants. Over two-thirds (68.7%) of Andalusian municipalities with more than 10,000 inhabitants have at least one media outlet. If we look at those with more than 20,000, the percentage skyrockets to 87%.

Differences have also been detected in the number of media outlets per province, which justifies the need for more segmented studies on information deserts that complement those conducted at a higher territorial level. Along those lines, the province with the most resources is Cádiz, with almost 24% of outlets, despite only having 14.7% of the population and 5.7% of all Andalusian municipalities. It is followed by the province of Seville, which has 18% of media companies and 23% of the population. Another of the provinces that stands out is Córdoba—21% of its municipalities have a media outlet (the average across the eight provinces is 13%).

In the cases of Cádiz and Córdoba, the strong data they provide is a direct result of the presence of local business initiatives that have promoted a greater coverage in the province. This is due to the fact that the driving forces behind this obtain a boost as a result of jointly managing several titles or designing low-cost scalable business models. The case of Cádiz is unique: the Joly Group (originally from Cádiz) had three titles (*Diario de Cádiz*, *Diario de Jerez* and *Europa Sur*) before starting its expansion through the eight Andalusian provinces. Founded in 1867, *Diario de Cádiz* is one of the leading media outlets not only in Andalusia, but also in Spain. Its roots in the territory and the opening of other local newspapers has quite possibly spurred the development of this industry in the province.

On the other hand, the case of Almería is worth a mention, as neither its economic development nor its long coastline have enabled a strong local press to grow outside the provincial capital, beyond which there is only one media outlet.

From this Andalusian x-ray of the local digital press, it is possible to open several avenues of investigation that allow us to understand the causes of the phenomena detected and address them from other complementary perspectives. Does the existence of communication faculties in certain provinces affect the proliferation of local digital media? Is it profitable to have local media in towns with less than 10,000 inhabitants? In the case of local media outlets with a provincial dimension that provide information on several localities in the area, could it be considered that they satisfactorily cover the news requirements of those municipalities? The creation of the map showing the local digital press in Andalusia is a first step in the study of information and news deserts in the region, as well as their causes and possible solutions; answering these questions will, without doubt, provide an improved perspective.

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