Vulnerable groups and disinformation. An analysis of the Andalusian reality

Colectivos vulnerables y desinformación. Análisis de la realidad andaluza

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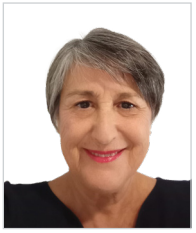

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Abstract:

This paper analyses vulnerability to disinformation in Andalusia, Spain, considering sociodemographic factors (sex, age, educational level, and income) and news consumption patterns, based on a survey conducted in 2023 (1,550 participants). The results highlight the influence of age, educational level, and income on the perception of disinformation. Young people (15-24 years old) admit to greater difficulty identifying it, while the over-75s show greater confidence. Women claim greater skill in detecting it than men do. Regarding news consumption, the young predominantly turn to social media (92%), while older people prefer television and, to a lesser degree, print media. Although social media are seen as the main generators of disinformation (80%), even by those who most consume them, traditional media are also seen as bearing responsibility (60%). The preference for television in Andalusia is significantly higher than the national average. The study highlights the importance of print versus digital media consumption in the fight against disinformation, emphasizing its ability to build trust and minimize the impact of information disorders. The study concludes that media literacy is essential to address these issues.

Keywords:

Disinformation; vulnerable groups; sociodemographic variables; Andalusia; media literacy.

Resumen:

Este artículo analiza la vulnerabilidad frente a la desinformación en Andalucía, atendiendo a factores sociodemográficos (sexo, edad, nivel educativo e ingresos) y patrones de consumo informativo, a partir de una encuesta realizada en 2023 (1.550 participantes). Los resultados destacan la influencia de edad, nivel educativo e ingresos en la percepción de desinformación. Los jóvenes (15-24 años) reconocen más dificultades para identificarla, mientras los mayores de 75 años muestran mayor confianza. Las mujeres manifiestan mayor habilidad en su detección que los hombres. En términos de consumo informativo, los jóvenes acuden mayoritariamente a redes sociales (92%), mientras que los mayores prefieren televisión y, en menor medida, prensa en papel. Aunque las redes sociales son vistas como principales generadoras de desinformación (80%), incluso por quienes más la consumen, los medios tradicionales también son señalados como responsables (60%). La preferencia de la televisión en Andalucía arroja un dato significativamente mayor que en España. El estudio resalta la importancia del consumo de prensa en papel frente a prensa digital en la lucha contra la desinformación, subrayando su capacidad para generar confianza y minimizar el impacto de los desórdenes informativos, y concluye en la necesidad de alfabetización mediática para hacer frente a los mismos.

Palabras clave:

Desinformación; colectivos vulnerables; variables sociodemográficas; Andalucía; alfabetización mediática.

1. Introduction

Disinformation is a complex and multifaceted phenomenon characterised by the intentional dissemination of false or misleading information, with the aim of causing harm or manipulating public opinion. Disinformation frequently finds itself a space in electoral contexts, health and economic crises, and geopolitical conflicts (Iosifidis, 2024; Kutuza & Telpis, 2023; Vaccari, Chadwick & Kaiser, 2022). Disinformation is not uniform but depends on country-specific factors (Humprecht et al., 2021).

Social media has helped amplify the reach and increase the swiftness of the dissemination of fake news (Corcoran et al., 2019; Serrano Puche, 2018), thus posing an immeasurable challenge.

It is crucial in countering the problems associated with disinformation to detect and prevent it by implementing Big Data and artificial intelligence systems in an ethical and coordinated manner (Moreno Espinosa et al., 2024). Moreover, it is imperative that citizens be educated, especially the most vulnerable communities, that media independence be promoted, and that regulatory frameworks be implemented (Iosifidis, 2024; Prasojo et al., 2024; Shah et al., 2023). Therefore, this study aims to take a closer look at those groups most vulnerable to information disorders in a specific setting: Andalusia, an Autonomous Region located in southern Spain.

This study follows Wardle and Derakhshan's (2017) conceptual framework of information disorders as it helps to understand the diverse, complex ways in which information can be distorted, intentionally or not, and, therefore, the need to address it from multiple combined perspectives, including the technological, educational and regulatory. Similarly to disinformation, the concept of a "vulnerable social group" is multifaceted and involves various aspects, with social, economic and political dimensions among them. Vulnerable groups often stand out for their greater exposure to risks and the need for special protection due to numerous factors, such as age, gender, economic situation, health or marginalisation (Panchenko, 2024). These groups often include socio-economically disadvantaged people, ethnic minorities, women, children, the elderly, people with low educational attainment, and people with disabilities or chronic illnesses (Havrylenko & Renov, 2023). Furthermore, the intersectionality of traits such as race, gender, and age exacerbates vulnerability, as these factors, when coinciding, aggravate the challenges faced by the members of these groups (Garrido, 2022).

The condition of social vulnerability encompasses both the potential for harm and a lack of resilience, and emphasizes the need to empower and recognise the strengths of those groups. Addressing the needs of disadvantaged communities requires taking the dynamic nature of vulnerability into account and the specific contexts in which these individuals coexist, ensuring that policies and protections are adapted to meet emerging risks and challenges (Havrylenko & Renov, 2023; Panchenko, 2024). The media plays a vital role in this context, as it can both amplify vulnerability by spreading disinformation and contribute to the empowerment of such communities by providing the necessary tools to confront the risks which information disorders pose.

1.1. Vulnerability factors in the presence of disinformation

Not among the groups vulnerable to disinformation, according to European statistical sources, are those with a better social position: men, the more highly-educated, executives, and the upper-middle class, profiles that are more confident in their ability to detect fake news (García Faroldi & Blanco Castilla, 2023). A study by Reuter et al. in Germany finds no significant differences by sex but does point to age and education. That study concludes that young and relatively highly-educated people are better informed and aware of fake news due to their more frequent and differentiated use of the internet (Reuter et al., 2019). Regarding interaction with fake news, Buchanan (2020) confirms that people with lower educational levels are more likely to share hoaxes, while people with higher academic qualifications only do so accidentally.

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A study carried out by Pan et al. (2021) on the determining factors in the acceptance of disinformation in the healthcare field concluded that educational attainment levels are related to belief in false information or hoaxes, with university-educated individuals being more confident of detecting them (Beauvais, 2022; Martínez-Costa et al., 2022). There is, therefore, a consensus that educational level is the most effective barrier against information disorders.

Similarly, a study analysing adolescents' critical thinking skills when faced with scientific information from social media showed that the level of perceived credibility decreases significantly as reading comprehension increases (Castells, 2022). Furthermore, higher argumentative quality was observed in students who opposed or did not believe fake news theses, compared to those who agreed with and accepted them. Those results underscore the need to strengthen media literacy in a digital environment increasingly permeated by disinformation.

The proliferation of fake news is not only a technological issue, but also a socio-cultural one. Vulnerable populations, including those living in poverty, are particularly susceptible to disinformation narratives due to limited opportunities to acquire media literacy skills (Arrieta-Castillo, 2023; Rubin, 2019). Gelado-Marcos et al. (2022), analysing the socio-economic profile of vulnerable groups in Spain, observe a steady increase in vulnerability to disinformation among lower income groups.

The results of a study by Arin et al. (2023) in the United Kingdom and Germany show that high-income and older respondents are better able to detect fake news in both countries. Furthermore, they conclude that older, higher-income, and politically left-of-centre men are better at detecting fake news.

Furthermore, research by Tyshchenko and Muzhanova (2022) points out that information disorders are deliberately created for economic or political gain, which can disproportionately affect vulnerable populations, including those living in poverty. Those groups may lack access to reliable sources of information, making them more susceptible to manipulation.

As Arrieta-Castillo (2023) asserts, the spread of disinformation can exacerbate existing inequalities by manipulating perceptions and reinforcing stereotypes against marginalized social groups. Therefore, in order to cushion the impact of fake news on impoverished communities, technological solutions are called for, along with implementation of educational action, and the putting in place of policies to empower those communities with the skills and resources necessary to navigate the complex information ecosystem (Broda & Strömbäck, 2024; Călin et al., 2024).

Regarding sex, in the context of research analysing perceptions of the effects of disinformation, both men and women perceive the difficulty of identifying fake news similarly. However, differences between the sexes are identified in relation to the subject matter of the disinformation received: a greater proportion of men receive fake news related to political issues, while women more frequently receive them about celebrities (Montiel, 2024). In the factorial binomial of sex and ideology, behaviour in the face of disinformation varies; men are more directly influenced by their partisan identification, while women are indirectly influenced by heterophily in a more restricted social network (Turel, 2023).

Some studies along similar lines agree that sex is a variable that marks subtle differences. It has been found that women are more cautious when transmitting content of doubtful veracity (Rodríguez-Virgili, Serrano-Puche & Fernández, 2021) and that they express greater concern about the social consequences of information disorders (Almenar et al., 2021).

1.2. The influence of age

Apart from academic background, income, and sex, age is another factor that influences vulnerability to disinformation. Studies such as that by Papapicco et al. (2022) suggest that many adolescents display a perception of "invulnerability to disinformation", an attitude that exacerbates the problem of disinformation facing that age group. Although they are aware of the existence of fake news, Spanish adolescents are not always able to recognize or remember it, which adds to their credulity toward such content (Herrero-Curiel & La Rosa, 2022). Herrero-Diz et al. (2020) confirm that young people are more likely to share content that connects with their interests, regardless of its veracity. Furthermore, they emphasize that the fact that a story is newsworthy increases the likelihood that it will be shared among young people, regardless of its veracity.

Reneses Botija, Riberas-Gutiérrez, and Bueno-Guerra (2024) state that young people, although recognizing the trustworthiness of traditional media, prefer to inform themselves through social media, thus increasing the risk of exposure to and dissemination of fake news, especially hate speech. However, as Galarza-Molina (2023) points out, although young university students prefer social media over traditional media, they are aware of the greater prevalence of disinformation in the former. Likewise, to reduce vulnerability to belief in fake news, Faragó et al. (2024) pointed out that cognitive factors, such as analytical thinking and parental education, are decisive in dealing with the phenomenon.

In the context of teens and their interaction with disinformation, various studies have offered complementary perspectives on how they approach and perceive it. A study by Selnes (2024) shows that, despite research suggesting that adolescents have a weak attachment to traditional media, Norwegian adolescents turn to mainstream media to verify and corroborate the news. That finding challenges the initial assumption that fake news has purely negative effects, since, according to this study, information of that type can foster constructive discussions about content found on social media. In fact, Selnes's work concludes that fake news can increase adolescents' interest in news produced by journalists, prompting them to move from social media to mainstream media to check facts, something beneficial for journalism.

According to the *1st Study on Disinformation in Spain*, carried out in 2022 by Uteca and the University of Navarra, another age group considered to be vulnerable in both social and media terms are older people. Older adults believe that the young are more likely to be deceived, while young people think the opposite: that it is older people who are most at risk (p. 9). Calvo et al. (2022) have observed that older audiences claim they are more aware of the risks associated with disinformation than younger people are, probably due to their longer exposure to the media and past historical contexts in which disinformation played an important role. Older people have greater difficulty detecting disinformation due to their lower level of digital literacy, a circumstance that makes them easy prey for manipulation and attacks by cybercriminals (Huguet et al., 2024).

Likewise, the overlapping of factors such as age and political ideology influences permeability to disinformation. Older adults and conservative thinkers, for example, are more likely to encounter and share disinformation, in part due to fake news bias and ideological congruence (Brashier, 2024; Sultan et al., 2024).

Studies indicate that older adults struggle to identify disinformation, but that they can improve their detection skills through targeted media literacy programs. Sádaba, Salaverría, and Bringué-Sala (2023) demonstrated the effectiveness of a training program via the social media platform WhatsApp in increasing their ability to detect fake news, highlighting the need to include the group in educational communication initiatives.

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Despite the common perception that older adults are especially vulnerable, research such as that by Vivion et al. (2024) shows that older adults are not passive when faced with disinformation. The older participants in the study employed active strategies to manage information overload and assess the trustworthiness of news. That result challenges narratives that portray older adults as victims of disinformation.

The context described above shows that it is essential to analyse disinformation at regional levels for an understanding of how social, economic, and demographic factors have an impact on communities' vulnerability to information disorders. In the case of Andalusia, the region considered in this research, several studies have highlighted the particularities of the phenomenon in the region. Research such as that conducted by Gualda et al. (2019) and Gómez-Calderón et al. (2020) offers insight into how conspiracy theories and fake news affect young Andalusians, identifying specific sociological factors that influence their exposure to and belief in such content. Similarly, the Andalusian Audiovisual Barometer (Andalusian Audiovisual Council, 2021) underlines the prevalence of fake news among the local population, as well as the lack of fact-checking habits. However, the vast majority claim not to generate or disseminate news they recognize as false, even though they may do so out of ignorance.

This regional overview brings to light the importance of studying those factors that make certain groups more vulnerable to disinformation, particularly in a context like Andalusia, where socio-economic diversity and disparities in education and digital literacy may exacerbate its effects. Therefore, the main objectives of this paper are to define those groups vulnerable to disinformation in Andalusia based on their socio-demographic variables and news consumption. It should be noted that, given the large and heterogeneous population of older adults, this study distinguishes between those aged 60 to 74 and those over that age, in order to analyse whether their levels of vulnerability differ. This approach aims to minimize discrimination by omission and recognize the intrinsic heterogeneity of older adults, thereby not overlooking key differences within the group.

The following research questions have been defined from the review:

1. What socio-demographic variables (age, education level, income, sex) are associated with greater vulnerability to disinformation in Andalusia?
2. What news consumption patterns are observed among the groups most vulnerable to disinformation?
3. Are there any differences in the perception of the role of traditional and social media in generating disinformation according to socio-demographic profiles or news consumption habits?
4. Are there any significant differences in the response to disinformation based on socio-demographic variables or news consumption habits?

2. Methodology

The primary data source of this study is the survey carried out within the project "Impact of disinformation in Andalusia: Cross-sectional analysis of audiences and journalistic routines and agendas (DesinfoAND)". The survey was conducted by a professional polling company, Cotesa, in December 2023, and is representative of the Andalusian population aged 15 years and over. 1,250 online surveys were conducted for the entire sample and 300 were conducted by telephone for the population aged 60 and over. The sample was stratified by household size, and sex and age quotas were established, using data from the

Municipal Register (2021) for age and sex groups, with the Population Census (2021) utilised for the size of the municipality. The sampling error for a 95.5% confidence level is ±2.55% for the entire sample, assuming simple random sampling.

The survey was designed using several questions previously validated in both international (European Commission Eurobarometer) and national (Centre for Sociological Research (CIS)) surveys. A pilot study was conducted with twenty individuals from diverse socio-demographic profiles to test its validity. The sample was drawn from a panel of over 9,000 people from the polling company, with 300 people aged 60-and-over contacted by telephone to reduce any bias occasioned by older adults' lower internet access.

The questions selected for the research can be divided into two blocks: the first relates to the type of media consumption and the second to disinformation.

The first block includes the question: *How often do you use the following channels for news*?

The five media formats with the highest frequency of valid responses were chosen from among those available, being: Television/Print Newspapers/Digital Newspapers/Radio/Social Media and Video Platforms.

The responses were originally coded into the categories: Every day, Once or more a week, A few times a month, Hardly ever, Never, Don't know.

In an effort to avoid dispersion and facilitate understanding of the results, the first five categories have been aggregated into two: Once a week or more (Every day + One or more a week) and Less than once a week (Sometimes a month + Hardly ever + Never).

The second block includes questions related to disinformation: degree of exposure to it, ability to detect it, and the role played by the traditional and social media in its generation.

Regarding the degree of exposure and ability to detect false information, the following questions were posed:

– *For each of the following statements, can you state your degree of agreement or disagreement?*

  You often find news or information that you believe distorts reality or is even false.

  You find it easy to identify news or information that you believe distorts reality or is even false.

To highlight the role of various actors in generating disinformation, the following question has been analysed:

– *Of the following actors, tell me if in your opinion each of them generates a lot, quite a lot, little or no disinformation.*

  Mainstream media

  Social media

These questions use a Likert scale to determine the level of agreement or disagreement with the categories: Strongly agree, Agree somewhat, Somewhat disagree, Strongly disagree, Don't know.

The following socio-demographic characteristics were selected as independent variables: Sex (male/female); Age (15 to 24 years/25 to 44 /45 to 59 /60 to 74 /75 and over); Educational level (grouped by general level: Primary + No education/Compul-

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sory secondary education/Non-compulsory secondary education/University education), Monthly income (grouped as: Less than €900 + No income /From €901 to €1800 /Over €1800).

Although the total sample is 1,550 cases, the monthly income variable presents 15% DK/NR responses; the tables and graphs display valid cases, discarding DK/NR responses for this variable.

A descriptive analysis has been performed, comparing the questions chosen as dependent variables with the socio-demographic variables, calculating their value and percentage. This analysis is presented in the form of contingency tables and graphs, depending on the issue addressed.

Table 1. Values and percentages by socio-demographic variables

Variables		**Values**	**%**
Total		1550	100
Sex	Man	758	48.9
	Woman	792	51.1
Age (years)	Total	1550	100
	15 to 24	197	12.7
	25 to 44	492	31.7
	45 to 59	425	27.4
	60 to 74	303	19.5
	75 and over	133	8.6
Level of education	Total	1550	100
	Primary +No studies	108	7.0
	Compulsory secondary education	208	13.4
	Non-compulsory secondary education	635	41.0
	University students	599	38.6

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Monthly income	Total	1550	100
	Less than €900 +No income	385	24.8
	From €901 to €1800	544	35.1
	More than €1800	384	24.8
	DK/NR	237	15.3

Source: Impact of disinformation in Andalusia (2023). Created by the authors

Since the variables are nominal, the chi-squared statistic was utilised to determine whether the categories are independent or not, that is, whether there is a statistically significant difference between the expected frequency and the observed frequency. Throughout this study, a significance level of 0.05 is used, i.e., a 5% risk of concluding that there is an association between the variables when no real association exists, except in Table 1, where the associations for each cross-reference are specified.

The Chi-squared test is calculated with both the disaggregated and aggregated variables in two sum categories: Agree= Strongly agree + Agree somewhat versus Disagree to contrast the dispersion of the responses.

3. Results

The presentation of results has adopted a deductive approach. Starting with a presentation of data related to news channels, before proceeding to analyse the way in which disinformation affects the population, the two aspects are finally compared.

3.1. News channels consumed

The table below shows the response percentages for each of the socio-demographic variables analysed that indicate consumption of the corresponding media "Once a week or more" (Table 2 & Graph 1).

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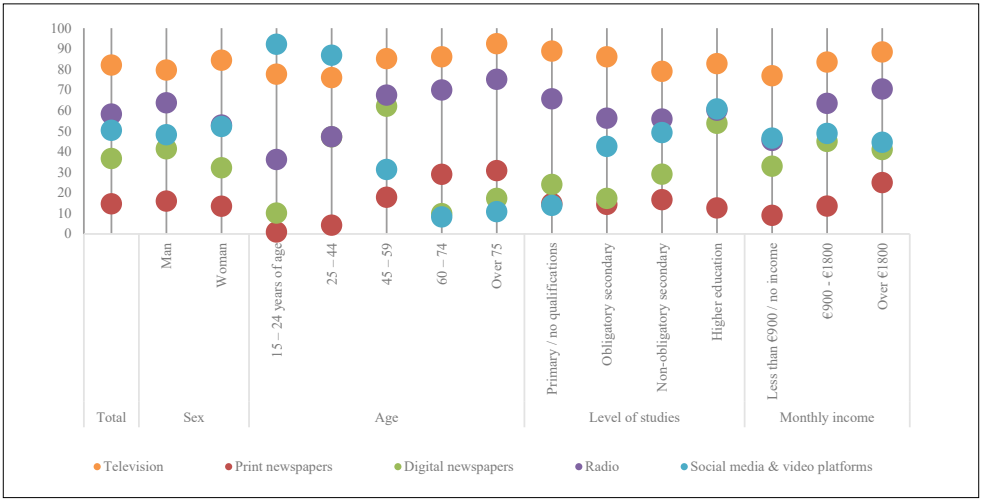
Table 2. Percentage of use "Once a week or more" by means of communication

Variables		Television	Print newspapers	Digital newspapers	Radio	Social media and video platforms
Total		82.1	14.7	36.7	58.3	50.4
Sex	Man	79.7	16.0	41.4	63.8	48.3
	Woman	84.5	13.5	32.2	53.0	52.3
Age	15 to 24 years old	77.7	1.0	10.2	36.2	92.2
	25 to 44 years old	76.0	4.3	47.2	47.3	86.9
	45 to 59 years old	85.2	17.9	62.1	67.5	31.4
	60 to 74	86.1	29.0	9.9	70.0	8.3
	75 and over	92.5	30.8	17.3	75.2	10.9
Level of education	Primary + No studies	88.9	14.8	24.1	65.7	13.9
	Compulsory secondary education	86.1	14.4	17.3	56.3	42.6
	Non-compulsory secondary education	79.1	16.7	29.1	55.9	49.3
	University students	82.8	12.7	53.8	60.2	60.8
Monthly income	Less than €900 + No income	76.9	9.1	33.0	45.5	46.6
	From €901 to €1800	83.6	13.6	45.0	63.5	48.9
	More than €1800	88.5	25.0	41.1	70.5	44.6

Source: Impact of disinformation in Andalusia (2023). Created by the authors

Graph 1. Percentage of use "Once a week or more" by media



Source: Impact of disinformation in Andalusia (2023). Created by the authors

It can be seen that television has held on to its leadership among media outlets as a channel for consuming news. It far surpasses social media, with 82.1% of Andalusians using it at least once a week for this purpose. There are no statistically significant differences by gender or education, though there are by age: the younger population (between 15 and 44 years of age) watches less television. Finally, there is a linear association between income level and the use of television as a news channel: the higher the purchasing power, the more people use TV.

Regarding print media, in contrast to television, it is the least frequently used media, with only one Andalusian in seven using it once a week or more. There are marked differences by age (from 1% among young people aged 15 to 24, to 30.8% among those aged 75 and over) and by income, with one in four people with a net income of over €1,800 reading that media compared to less than one in ten among those with no income or income below €900.

Use of the digital press is more widespread, with more than one in three Andalusians reading it at least weekly (36.7%). All variables show statistically significant differences: men read more than women (41.4% vs. 32.2%), the intermediate-aged population (25 to 59 years old, especially the 45 to 59 age group, with one in six people) read more than the youngest population and than those over 60. Those with university degrees (more than half do so) read it more than those who do not, and those with middle-range incomes are just a few percentage points ahead of those with high incomes.

Radio is the second most commonly-used media after television (58.3%). Women (53%), young people (36.2%), and people with incomes under 900 euros or no income (45.5%) are the least likely to use this media for news, with no significant differences based on educational level.

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Finally, the consolidation of social media as a relevant news source for the Andalusian population is evident, as 50.4% use it at least weekly. The younger population stands out as the most prolific users compared to the population over 60: more than nine out of ten people in the younger age group use social media for news, a figure that falls to approximately one in ten among the older population. Educational level shows a positive association with social media use: 60.8% of university graduates use them, compared to 13.9% of those with no education or only primary schooling.

An analysis of the older population, differentiating between those aged 60 to 74 and those aged 75 or older, reveals differences in consumption. On the one hand, the 60-to-74 age group consumes less television (86.1% vs. 92.5%), radio (70% vs. 75.2%), and digital press (9.9% vs. 17.3%) than the older group. No significant differences were found in the consumption of print newspapers or in the use of social media and video platforms for news.

3.2. Citizens versus disinformation

This second section presents findings related to exposure to false information, ability to detect it, and the role that traditional and social media play in the issue of disinformation.

Tables 3 and 4 show the percentages per row for each category; the degree of agreement refers to the sum of the responses "Strongly agree" and "Agree."

Table 3. Often identifies false information

Variables		Strongly agree	OK	Disagree	Strongly disagree	DK/NR
Total		42.9	45.0	11.4	0.3	0.4
Sex	Man	47.1	41.8	10.3	0.4	0.4
	Woman	38.9	48.1	12.4	0.3	0.4
Age	15 to 24 years old	42.1	50.3	7.1	0.5	0.0
	25 to 44 years old	40.7	47.2	11.6	0.4	0.2
	45 to 59 years old	45.2	41.2	13.4	0.0	0.2
	60 to 74	43.6	44.2	10.9	0.0	1.3
	75 and over	43.6	43.6	11.3	1.5	0.0

Level of education	Primary + No studies	55.6	35.2	8.3	0.9	0.0
	Compulsory secondary education	45.7	41.3	13.0	0.0	0.0
	Non-compulsory secondary education	38.1	46.3	14.3	0.5	0.8
	University students	44.7	46.7	8.2	0.2	0.2
Monthly income	Less than €900+No income	46.5	41.6	11.2	0.5	0.3
	From €901 to €1800	38.6	47.2	13.4	0.4	0.4
	More than €1800	50.5	39.6	9.4	0.0	0.5

Source: Impact of disinformation in Andalusia (2023). Created by the authors

There is a general consensus regarding the degree of agreement with the statement that fake news is frequently encountered: 87.9% of Andalusians confirm it (Table 3). Although the figures are very high in all categories, differences can be found in some groups: men agree slightly more than women (88.9% vs. 87%); people with greater and lesser incomes and with higher and lower educational levels perceive the presence of false information more often than those at intermediate levels. For example, 91.4% of those with university studies and 90.8% of those with primary education or less agree with the statement. That indicates that there is no linear relationship between education/ income and the perception of being exposed to false information. Finally, it is worth noting that age does not show statistically significant differences and that few people fail to answer the question (only people between 60 and 74 years old are over 1%).

The Chi-squared test values for the original disaggregated categories show statistically significant differences in all variables, while when looking at agreement and disagreement, both being aggregate variables, only the level of educational attainment produces statistically significant differences, since the differences are due to the intensity of agreement or disagreement.

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Table 4. You find it easy to identify false information

Variables		Strongly agree	OK	Disagree	Strongly disagree	DK/NR
Total		15.3	52.1	29.6	1.7	1.2
Sex	Man	18.5	47.6	31.8	1.6	0.5
	Woman	12.2	56.4	27.5	1.9	1.9
Age	15 to 24 years old	9.1	53.3	36.0	1.5	0.0
	25 to 44 years old	14.2	55.7	28.3	1.8	0.0
	45 to 59 years old	9.4	54.6	33.2	2.8	0.0
	60 to 74	18.5	48.8	28.1	0.7	4.0
	75 and over	39.8	36.8	17.3	0.8	5.3
Level of education	Primary + No studies	17.6	52.8	19.4	1.9	8.3
	Compulsory secondary education	11.5	49.5	36.5	1.4	1.0
	Non-compulsory secondary education	11.5	52.8	33.1	1.7	0.9
	University students	20.2	52.3	25.4	1.8	0.3
Monthly income	Less than €900+No income	14.8	51.7	27.5	2.1	3.9
	From €901 to €1800	14.5	53.3	29.6	1.8	0.7
	More than €1800	19.5	51.3	27.3	1.8	0.0

Source: Impact of disinformation in Andalusia (2023). Created by the authors

Concerning ease of identifying false information (Table 4), and considering the degree of agreement, all the variables are relevant. 67% of the total population consider it easy to identify fake news (although "agree" predominates over "strongly agree," indicating that only about one in six people fully trust their ability). Men are slightly less confident than women (66.1% versus 68.6%). Another relevant finding is that the young population, between 15 and 24 years of age, recognizes their vulnerability to disinformation (only 62.4% state that it is easy for them to detect it). This contrasts with the older age group, 75 and over, where more than three out of four believe it is easy to identify. It is particularly striking that 40% of this population strongly agree with the statement. Regarding educational attainment, again a non-linear association is found: 70.4% of those with primary educa-

tion or no education and 72.5% of those with university education claim that they can easily identify such falsehoods. Finally, a positive linear association is observed with income level: the higher one's economic capacity, the easier it is to identify this type of information (70.8% of those with incomes above €1,800 state this).

Table 5. Amount of disinformation generated by traditional media

Variables		A lot	Quite a lot	Little	None	DK/NR
Total		17.7	43.0	34.3	3.4	1.7
Sex	Man	22.6	39.3	39.9	3.7	0.5
	Woman	13.1	46.5	34.6	3.0	2.8
Age	15 to 24 years old	17,8	48,2	32.0	1.5	0.5
	25 to 44 years old	16.1	52.4	29.3	2.0	0.2
	45 to 59 years old	20.2	37.9	38.6	2.4	0.9
	60 to 74	16.8	37.4	38.3	6.3	4.0
	75 and over	18.0	35.3	33.1	5.3	6.0
Level of education	Primary + No studies	16.7	35.2	34.3	4.6	9.3
	Compulsory secondary education	18.8	42.3	31.3	5.3	2.4
	Non-compulsory secondary education	19.4	43.3	33.1	3.8	0.5
	University students	15.9	44,2	36.6	2.0	1.3
Monthly income	Less than €900+No income	17.1	44.7	32.5	2.9	2.9
	From €901 to €1800	19.5	42.5	33.6	4.0	0.4
	More than €1800	16.9	40.6	37.5	2.6	2.3

Source: Impact of disinformation in Andalusia (2023). Created by the authors

Regarding the role played by the media (Table 5), the results show that just over six of every ten Andalusians believe they generate a lot or quite a lot of disinformation. Men are more likely to pin a lot of responsibility on the media, while women tend to point to 'quite a lot', in both cases their combined opinion exceeds 60% (62.2% vs. 61.3%). People aged 45 and over have a less negative view of the media, which is probably related to the former's greater consumption of traditional media compared to

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those under 45. Finally, people with lower levels of educational attainment are more forgiving, but with a high percentage of uncertainty (more than 9% do not know or do not answer). Except for the level of educational attainment, all variables show statistically significant differences.

Table 6. Amount of disinformation generated by social media

Variables		A lot	Quite a lot	Little	None	DK/NR
Total		46.0	33.2	15.5	3.6	1.7
Sex	Man	47.9	30.6	15.3	4.6	1.6
	Woman	44.2	35.6	15.7	2.7	1.9
Age	15 to 24 years old	40.1	40.6	16.2	3.0	0.0
	25 to 44 years old	46.5	33.7	17.3	2.4	0.0
	45 to 59 years old	48.5	32.0	16.7	2.8	0.0
	60 to 74	44.9	33.0	11.2	5.9	5.0
	75 and over	47.4	24.1	13.5	6.0	9.0
Level of education	Primary + No studies	47.2	27.8	19.4	5.6	0.0
	Compulsory secondary education	37.0	33.7	22.1	6.3	1.0
	Non-compulsory secondary education	44.3	32.6	16.1	4.1	3.0
	University students	50.8	34.6	11.9	1.8	1.0
Monthly income	Less than €900+No income	44.4	35.3	14.0	3.9	2.3
	From €901 to €1800	43.9	31.8	20.4	3.9	0.0
	More than €1800	55.2	31.0	8.6	2.6	2.6

Source: Impact of disinformation in Andalusia (2023). Created by the authors

As regards the role of social media in generating disinformation (Table 6), there is consensus that they generate a lot or quite a lot (79.2 %). Except for sex, all variables show significant differences. Those with university studies are the most critical of social media (86.2% consider them to generate disinformation), as are those with higher incomes, since almost nine out of ten feel that social media generates disinformation. Both education and income show a non-linear association, with people with

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compulsory secondary education and those with average incomes having the most favourable opinion of social media. The cohorts of 60 years of age and older are those who most frequently either respond that they do not know or do not respond.

3.3. Relationship between news consumption and disinformation

This final section, after analysing how different socio-demographic profiles utilise the various news channels and how they perceive disinformation, will also consider whether there is a significant association between news consumption and exposure to disinformation, and the role of mainstream and social media in its dissemination.

Chart 1 provides a summary of all the cross-references performed comparing the five news channels for the four questions related to disinformation, showing which associations are not significant and which cells contain standardised residuals that differ from random expectation.

Chart 1. Association between types of news consumption and various aspects of disinformation

	You often find fake news	**You find it easy to identify false information**	**Generation of LCM disinformation**	**Generation of social media disinformation**
Television	Not significant	Not significant	(0.000) Those who consume news once a week or more are less likely to say that the media generates a lot of disinformation and more likely to say that it generates little.	Not significant
Print	Not significant	(0.020) Those who consume news once a week or more are more likely to say they agree somewhat and less likely to say they disagree somewhat.	(0.000) Those who access news once a week or more are more likely to say that the media does not generate any disinformation.	(0.015) Those who consume news once a week or more are more likely to say that social media generates a lot of disinformation and less likely to say that it generates little.
Digital press	(0.035) Those who consume news once a week or less are more likely to say they disagree.	Not significant	Not significant	Not significant

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Radio	(0.077)	(0.012) Same pattern as the printed press	(0.003) Those who consume news once a week or more are less likely to say that the media generates a lot of disinformation and more likely to say that it generates none.	(0.006) Those who consume news once a week or more are less likely to say that social media generates a lot of disinformation and more likely to say that it generates little.
Social media	(0.025) Those who access news once a week or more are more likely to say they agree somewhat, and those who use it less are more likely to say they strongly agree.	(0.067) Those who consume news once a week or more are less likely to say they strongly agree.	(0.000) Those who access news once a week or more are less likely to say the media generates a lot or no disinformation and more likely to say it generates a lot.	(0.000) Those who consume news once a week or more are less likely to say that social media generates a lot or no disinformation and more likely to say that it generates a lot.

Note: The significance of the Chi-squared of each of the cross-references showing statistically significant associations is indicated in parentheses
Source: Impact of disinformation in Andalusia (2023). Created by the authors

As can be seen, print media is the only media that shows significant differences in the four cases studied for obtaining news, while, on the contrary, the digital press is not significant in any case. Very different patterns are apparent for those who consume their news through print as opposed to digital media, with significant differences in three of the four questions for the former, and only one in the latter. Moreover, that one difference is also the only non-significant difference in the case of print media. Radio and social media both show three significant associations and a very weak association in one variable (values of between 0.05 and 0.1).

No significant differences were found by the type of television or print media consumption when participants state that fake news is frequently encountered. In contrast, those who least use digital media as a news channel are the most likely to say they somewhat disagree with the idea that they frequently encounter disinformation. However, those who use social media less than once a week for information are more likely to say they strongly agree with that statement, compared to those who use it more frequently, who tend to be more likely to agree.

Regarding the statement that it is easy for them to detect false information, those who get their news from either print or radio are more likely to indicate that they somewhat agree with their ability to detect disinformation and are less likely to indicate that they somewhat disagree, compared to those who use social media as a channel to get news, who are less likely to strongly agree with this statement.

On the contrary, the question that shows the most significant associations is the role of the media in generating disinformation, as news consumption from digital press is the only type that does not differ significantly. The observed pattern is that those who use traditional media for news have a more positive perception of them than those who use social media, ranging

from those who consume print and radio press (more likely to indicate they generate no disinformation) to television (who indicate they generate little), while those who use social media are more likely to believe they generate a lot.

A similar, but opposite, pattern emerges when asked how much disinformation social media generates. Those who regularly use social media for news are more likely to believe they generate a lot of disinformation and less likely to indicate that none is generated, although they are also less likely to say they generate a lot of disinformation. Conversely, those who get their news from print media are more likely to perceive that they generate a lot of disinformation, those who get their news from the radio believe they generate a lot, and both types of traditional media consumers are less likely to indicate that social media generates little disinformation.

4. Conclusions

The approach taken by this study has allowed identification of the dynamics of news consumption in Andalusia and the local population's perception of disinformation based on the different socio-demographic variables considered (sex, age, educational level, and income). A novel aspect is that within the older population, a distinction has been made between those aged 60 to 74 and those over that age. Throughout the study, the following research questions have been answered:

1. What socio-demographic variables are associated with greater vulnerability to disinformation in Andalusia?

Vulnerability to disinformation presents relevant patterns associated with age, educational level, and income. The results are in line with previous research (Reuter et al., 2019; Buchanan, 2020) in that they indicate that young people and those with lower educational levels show greater vulnerability to information disorders. Young people aged 15 to 24 are the most likely to recognize their difficulties in detecting false information, while those over 75 show greater confidence in their ability. Regarding sex, women feel more confident in identifying disinformation, which is a significant finding regarding their digital skills. It is especially interesting that our results on educational level are not linear; although those with university studies perceive detection as easier, so do people with lower educational levels. This could be related to overconfidence in their ability or a lower awareness of the complexities of the media and digital platform ecosystem, as suggested by Pan et al. (2021). It is significant that a higher level of income is related to a greater perceived ability to identify disinformation, results consistent with those obtained by Gelado-Marcos et al. (2022).

2. What news consumption patterns are observed among the groups most vulnerable to disinformation?

Young people, who admit their vulnerability to disinformation, stand out for their dependence on social media as their primary news source. In contrast, those over 75 years of age mainly turn to television and print media. This coincides with studies such as that by Reneses Botija, Riberas-Gutiérrez, and Bueno-Guerra (2024) which highlights the role of traditional media in the perception of disinformation. It is important to note that television continues to be the lead channel for news reporting in Andalusia, although viewership figures drop significantly among young people. To assess the data on television use in the region (82.1%), it should be compared with the Digital News Report 2024, which found that 56% of Spaniards prefer it as a source of information.

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3. Are there any differences in the perception of the role of traditional and social media in generating disinformation according to socio-demographic profiles or news consumption habits?

Nearly eight out of ten Andalusians believe that social media generates a lot or quite a lot of disinformation, a perception that is especially critical among those with university degrees and among higher-income individuals, that is, the least vulnerable groups. In contrast, six out of ten believe that traditional media also contribute to disinformation. Social media are seen as the main culprit, while traditional media are viewed more leniently, especially by their regular users.

As regards news consumption habits, those who access their news through traditional media have a more positive perception of them than those who use social media; conversely, those who consume mainstream media have a more negative opinion of social media as a source of disinformation than those who use those platforms regularly.

4. Are there any significant differences in the response to disinformation based on socio-demographic variables or news consumption habits?

Reactions to disinformation are influenced by news consumption habits. Consumers of print and radio news have a more positive perception of their ability to identify disinformation. Conversely, those who rely on social media are more likely to perceive them as generating disinformation and show less confidence in their ability to detect it.

The results show that traditional, long-established publications, which form the so-called mainstream press, play a better role in combating disinformation than the digital press, which coexists with pseudo-media outlets that fail to adhere to journalistic routines and practices. Those who obtain their news through print media are more confident in their ability to detect fake news. This group has a more positive opinion of the media's role and a more negative opinion of social media as a source of disinformation. However, it should be noted that only a minority of the population surveyed uses this channel for information at least once a week (about one in six people).

The greatest consumption of print media for information is concentrated in the over-60s, which is consistent with the findings that people over 75 are more confident about detecting false information, compared to the younger group, who consume less print media and, furthermore, are the least confident in their ability to detect such information.

The results of this study reveal important socio-educational implications. The findings lead to recommendations for implementing media literacy programs that take the socio-demographic differences and news consumption habits of the target audiences into account, and for assessing their effectiveness.

In view of the data, we can summarise the following results:

- Younger people and those with lower educational attainment levels are more vulnerable to disinformation.
- The over-75s feel more confident in their ability to identify false news.
- Women are more adept at identifying disinformation and feel more confident than men.
- Higher income levels are associated with a greater perceived ability to detect disinformation.
- People with lower and higher educational levels report greater ease in identifying disinformation, although the reasons for this could be different (overconfidence or lack of awareness about the complexities of the information ecosystem).

Although this study offers valuable insight into disinformation among socially vulnerable groups in Andalusia, the concentration of the sample in a specific geographic area suggests caution when extrapolating the results to other areas. It is therefore essential to conduct comparative studies that encompass other autonomous regions or countries to explore similarities and differences regarding vulnerability to disinformation. This study hopes to pave the way for future work using qualitative methodologies, such as interviews or focus groups, or experimental tests, to enrich and complete the picture drawn about the relationship between the most vulnerable social groups and disinformation.

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Methodology	María Francisca Montiel and Livia García-Faroldi
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7. Conflicts of interest

The authors declare that there is no conflict of interest contained in this article.

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