

Geographic research and the teaching of geography: an example regarding the initial phase of the Covid-19 crisis in Spain

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This article presents research framed in the initial phase of the coronavirus crisis in Spain, a work that began to be developed at the time when the Government of Spain decreed the state of alarm and the Spanish population was confined to their homes. Undoubtedly, the incidence of SARS-CoV-2 will mark a before and after point in the present and future of Spanish healthcare, but on this still uncertain path, many questions and doubts revolve around the management and strength of public health in Spain. In this line of research, the paper takes the opportunity to analyse where the Spanish health system is placed, both in comparison to elsewhere in Europe and in the rest of the world, and to critique internal differences within the country itself through a comparative analysis between autonomous regions. The methodology used in this research opts to review prestigious national and international reports and statistical databases and select and represent cartographically the most relevant indicators in the geography of health. The second part of the study puts forward a didactic proposal to teach reflective and critical geography based on the interpretation and assessment of some of the political speeches collected in the national mainstream media because of the coronavirus crisis. The results of contrasting these speeches with the previously consulted and analysed indicators on public healthcare in Spain revealed the intentionality and bias of the information published in the media, hence the need to promote critical literacy among students through geography teaching.

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¹ In memoriam.

Introduction: geographical and didactic research in geography

Apart from the potential development in the classroom of research proposals designed for students to carry out themselves, teachers should themselves be competent enough to conduct research independently outside of the classroom, which implies that teachers should be able to search for and select relevant information, analyse it and draw conclusions for future possible integration into geography education classes. In other words, teachers should be researchers in geography with the ability to design new and/or complementary geographical content aiming to overcome the didactic shortcomings or barriers currently represented by both the curriculum and the textbook. To achieve this goal, teachers would benefit from all the advantages offered by information and communications technology (ICT) in general and the internet in particular, such as accessing historical and recent statistical data, locating specific publications, downloading photographs and satellite images, accessing plans and maps and exchanging relevant information through participation in specialised discussion forums (Souto 2009, López Domech 2005, Jerez–Sánchez 2003, Lázaro 2003, Marrón 2000).

The didactic possibilities offered by actively conducting research are numerous, but it is also true that the difficulties in conducting this research are significant. Initially, it requires commitment, effort and solidarity on the part of the teaching staff for it to be carried out successfully. The teacher's commitment to the subject and the didactics they impart are crucial, being aware of the deficiencies offered by imposed and borrowed tools, namely, the curriculum and textbook. However, this is not sufficient; beyond this, the teacher will feel the need to address the content, objectives, methodologies and competencies that do not currently aim to train critical citizens, and the teacher will strive to achieve this. There lies a difference between committed teachers compared to those who merely teach out of inertia, following or imitating the teaching they before received as students (Marshall–Smith 1997, Mazur 2009). Also, effort is necessary; researching a specific topic requires a great deal of work, dedication and strong personal discipline to avoid abandoning any work done after a certain period. Finally, regarding solidarity, synergies and cooperative work between teachers and researchers, starting with the joint review and/or development of common programmes of interest, are advisable. However, the reality points to a more than evident separation of educational research produced in universities and the didactic innovation processes developed in basic and compulsory education, among other reasons, because corporate publications often do not reach teachers (Souto 2013, Santana et al. 2014). This situation undoubtedly requires urgent planning to 'establish communication between the university sector, which generally pays more attention to research, and the non-university sector which has a greater social impact through the students it teaches, creating communication links and promoting the renewal of geographical science through didactic and epistemological research'

(Ramiro 1998: 29). This planning is also advocated by García de la Vega (2019) when urging the creation of a link between research centres (universities and research centres) and educational institutions (primary, secondary and high schools).

The success of each research project will be conditioned by variables as significant as the level of difficulty, the involvement of both researchers and teachers, the time required for completion and the budget allocated in the case of funded research. However, on the other side of these initial constraints, in each research process, teachers will always be rewarded for the search and handling of sources and tools of interest as they progress in each project, resources that the curriculum does not currently provide and that will be of great help when introduced later in the classroom.

For example, Decree 105/2014, when referring to the treatment of the landscape in primary education, only mentions resources of interest such as books, photos, images from websites and geographic information systems. It makes no further references, not to Google Earth, Google Maps, or Street View, which had been included in Decree 130/2007, nor to fieldwork, educational outings, guided tours and urban itineraries, which are undoubtedly optimal solutions for exploring, disseminating, understanding and valuing space (Lee–García 2020, Macía et al. 2019, Gómez et al. 2017, Crespo et al. 2016, Morales et al. 2013, Armas 2012, Busquets 2010, Tonda 2009, Castillo–Souto 2007, Sánchez Figueroa 2005, Benejam 2003, Comes 1998, Zárata 1996). By comparison, Decree 86/2015 for secondary education recommends resources for teaching landscape such as maps, images, various types of statistics, the internet, bibliography, social media and Google Earth. In essence, both decrees indicate few sources and resources; some significant ones are missing, and there is a lack of precision in the recommendations. For example, advising the use of various types of statistics, books, bibliographies or the internet has little impact on teaching because they are very general suggestions. However, as mentioned previously, research will enable teachers to overcome this situation and reflect on the opportunity to use other sources or resources discovered during the development of any research.

Given the complex challenges that contemporary societies are confronting, the school must become a space capable of providing students with the necessary tools to question, interpret and analyse current problems and to make decisions based on respect for human rights and the promotion of equality and peaceful coexistence. In this regard, in addition to focusing on the didactic use of diverse cartographic resources, teachers need to incorporate a discussion of relevant social issues into their classes. This approach originated in the first half of the twentieth century from the works of Dewey (1916, 1933). He advocated teaching based on real societal problems to construct knowledge through experience and interaction with the environment, thereby fostering reflective thinking and democratic participation.

Various authors at the international level have advocated a problem-based approach in the teaching of social studies and geography in particular. In the Francophone context, ‘problem situations’ (Le Roux 2002, De Vecchi et al. 2002, Dalongeville 2003) were proposed as initial situations from which students must then follow an inquiry process to find solutions. Similarly, in Italy, a didactic organisation was proposed based on laboratories where social problems are addressed. In the field of geography teaching, laboratories were proposed to tackle interdisciplinary projects of environmental intervention (de Vecchi–Staluppi 1997).

In addition to the implementation of this methodology, critical theory has advocated a social studies curriculum structured around uncomfortable, controversial or taboo topics within societies. This led to the emergence of ‘issues-centred education’ (Evans 1989, Evans–Saxe 1996, Chilcoat–Ligon 2000, Castellví et al. 2023, Vamvalis 2023), the approach of ‘Questions Socialement Vives (QSV)’ (Legardez–Simonneaux 2011, Fabre 2021) or ‘problemas socialmente relevantes’ (Benejam 1997; Santisteban 2019, 2022). According to Legardez (2003), these should be ‘live issues’ for society, which question social practices and provoke debates, disputes or conflicts from media coverage. Additionally, they should be ‘live issues’ for the relevant science, eliciting debates or controversies among specialists in the disciplines or among experts in professional fields. Moreover, they should be ‘live issues’ for school knowledge, challenging the content and proposals of school programmes and textbooks, thus creating controversy.

In the Spanish context, there has been a focus on working with ‘QSV’ to develop critical thinking and democratic participation through topics such as migration, dictatorships, borders and walls around the world, refugees, information manipulation, invisible people and groups (Santisteban 2019), the housing problem and the city, the organisation of territory and the formation of territorial power (Souto 2018). The aim of addressing these issues is to educate citizens who fight for justice (Westheimer–Kahne 2004). This means an education that promotes critical-democratic citizenship (Veugelers 2007, Leenders et al. 2008) or citizenship focused on recognising diversity, establishing dialogue between different cultures, overcoming conflict and fighting for social justice (González–Santisteban 2016). To achieve this, teachers need to develop critical literacy in students. This is understood as the ability to question the status quo, recognising that identity and ideology shape discourses; to examine and interrogate multiple perspectives by contrasting different sources of information; to understand those systems of domination and oppression that shape current society; and to promote participation and social transformation (Lewison et al. 2002, Ciardiello 2004).

Lastly, it cannot be assumed that teachers can organise an alternative and independently developed programme overnight. Instead, it is part of a process that requires work, time, perseverance and funding. One must also consider the academic year calendar and timing. Teachers are bound by an official schedule that they must

adhere to, an extensive schedule that significantly limits their ability to cover all the content outlined in the curriculum. Therefore, the ideal scenario would be for teachers to select the most interesting and relevant content in the process of developing social and civic competencies in each evaluation, discarding the rest simply for the practical reason of time management in the classroom (Zárate 1996).

Context and research objectives

The Covid-19 pandemic caused significant impacts at the healthcare, economic, political, media and social levels worldwide, particularly in Spain. For this reason, the authors decided to investigate the Spanish healthcare system during the most critical moments of the pandemic in Spain, and the role of the media. The assumption is that this example constitutes a relevant case study for research in the field of health geography with practical applications for teaching critical geography.

This paper should be understood as a historical-geographical study. Rather than providing a view of the whole pandemic, it is about how the media and politicians manipulated citizens during a historical-geographical moment of health crisis that Spain experienced as a country. The idea is to go back in time and study it in the very beginning, in March 2020, when Spaniards underwent the lockdown. That is why the data are presented in a historical-geographical context corresponding to this date or earlier as statistical data were used to contrast the information that emerged from the media and the political field during that moment. Thus, data correspond to the period between 2015 and 2020, depending on the last year available in each source, and because in one case an evolutionary analysis over the previous years was necessary.

The objective of this study is to compare official data about the Spanish health system with news and speeches from the media and the political field launched in the initial phase of the pandemic in Spain. Also, the paper analyses where the Spanish health system was placed at that time, both in comparison to other countries in Europe and the rest of the world, and to critique internal differences within the country itself through a comparative analysis of autonomous regions. The results represent a didactic opportunity to implement an exercise in reflective and critical geography in secondary education classrooms.

Methodology

This research is framed within a case study, which has been widely used in research in the field of social sciences and educational research (Yin 2003). The study of the initial stage of the Covid-19 pandemic health crisis in Spain allows us to demonstrate the role that geographical research can play in the teaching and learning processes of critical geography, especially in the section related to working with social and civic competencies.

This is a case study with a descriptive approach that uses a documentary and content analysis as a research method. A quantitative analysis was carried out based on statistical sources such as the National Institute of Statistics of Spain (INE) or the Eurostat Database. Data from the Government of Spain or international organisations such as the Organisation for Economic Co-operation and Development (OECD), the World Health Organisation (WHO), the World Bank, and the World Economic Forum (WEF) were also consulted. Additionally, cartographic representation was elaborated to visualise the most relevant indicators in the geography of health. In addition, a qualitative content analysis was conducted on news related to Covid-19 published in two Spanish newspapers, *Redacción Médica* and *El Plural* in February and March 2020.

The methodology is followed by the presentation of the case study: the coronavirus crisis and its impacts in Spain during the initial stage of the pandemic. The next section compiles the information collected to analyse the structure and management of the Spanish healthcare system not only compared to other European countries at that time but also worldwide by making use of data from international organisations. Following that the territorial differences within the Spanish healthcare system, primarily focused on the budget regions allocated to public health spending are showed. Before the conclusions, in the final section newspaper reports about the Spanish healthcare system and that of the Autonomous Community of Madrid are contrasted with the information presented in the earlier sections. The objective was to highlight the inconsistencies and falsehoods to which citizens are constantly exposed, thus demonstrating the need for a geography education designed to foster critical literacy in students.

The Covid-19 crisis and its impacts in Spain

The SARS-CoV-2 virus, commonly known as the coronavirus, is part of an extensive family of viruses that can cause diseases in both animals and humans. In the case of humans, medicine has discovered that various types of coronaviruses cause respiratory infections ranging from common colds to more severe illnesses such as Middle East respiratory syndrome and severe acute respiratory syndrome (SARS).

While the majority of people, over 80%, recover from the disease without undergoing special treatment, around 16% of infected patients develop a severe clinical condition, with older individuals and those with underlying medical conditions such as hypertension, heart problems or diabetes facing more difficulties in overcoming the disease (WHO 2020a).

The origin and spread of the coronavirus were initially reported in late 2019 in the city of Wuhan. We do not know the specific date on which the problem emerged, but we do know that the Chinese government officially declared, on 31 December 2019, the existence of several cases of pneumonia of unknown aetiology related to a seafood

market in the city of Wuhan (Government of Spain 2020a). From that moment until the date within which this paper is framed 31 March 2020, the virus epidemic had spread to more than 170 countries and infected nearly 420,000 people, of whom almost 20,000 lost their lives. In Spain, the number of infected individuals was approaching 60,000 at that time, and the number of victims, second only to Italy, exceeded 4,000. Nationally, when reviewing the autonomous regions (Table 1), Madrid was the most affected territory with 17,166 confirmed cases and 2,090 deaths. Following at a considerable distance were Catalonia (11,592 cases and 672 deaths), the Basque Country (3,946 cases and 180 deaths), Castile and Leon (3,488 cases and 206 deaths) and Andalusia, Castile-La Mancha and the Valencian Community with figures exceeding 3,200 cases per community. Galicia, alternatively, reported 1,915 patients affected by the virus and 32 deaths (Government of Spain 2020b).

Table 1

**Figures of confirmed cases, intensive care admissions and deaths
by autonomous community**

Autonomous community	Confirmed cases	Intensive care admissions	Fatalities
Spain	56,188	3,679	4,089
Madrid	17,166	1,221	2,090
Catalonia	11,592	1,021	672
Basque Country	3,946	137	180
Castile and Leon	3,488	202	206
Andalusia	3,406	134	134
Castile-La Mancha	3,383	243	316
Valencian Community	3,200	230	167
Galicia	1,915	86	32
Navarre	1,411	54	49
Aragon	1,116	93	48
The Rioja	995	36	43
Extremadura	969	34	58
Asturias	841	34	27
Canary Islands	784	45	24
Cantabria	671	26	17
Balearic Islands	660	43	17
Murcia	596	36	8
Melilla	39	2	1
Ceuta	10	2	0

Source: Government of Spain (2020b); Ministry of Health (26 March 2020).

The rapid growth in the number of infections in the population and the uncontrolled spatial spread of the virus at that time led to the official recognition by the WHO of constituting a pandemic, as stated by its director-general on 11 March

2020. In the words of Tedros Adhanom Ghebreyesus, the WHO was ‘deeply concerned both by the alarming levels of spread and severity and by the alarming levels of inaction. Therefore, we have assessed that Covid-19 can be characterised as a pandemic’ (WHO 2020b). The Government of Spain, in turn, declared a state of alarm throughout the country due to the health crisis caused by Covid-19, as stated in Royal Decree 463/2020 of 14 March, 2020, precisely 3 days after the WHO declared the pandemic (Government of Spain 2020c).

The incidence of Covid-19 pandemic in Spain was simply brutal (National Geographic Institute 2021). The statistical information provided by the Ministry of Health consistently reflected the growth and constant spread of the epidemic throughout the national territory. The current figures were undoubtedly very concerning, surpassing the Chinese record in the number of infections per 10,000 inhabitants, and indeed approaching the numbers reported by countries with the highest number of coronavirus infections (Table 2).

Table 2

**Countries with the highest number of infected patients and fatalities
in the Covid-19 crisis until 25 March 2020**

Country	Infections		Fatalities	
	number	per 10,000 inhabitants ^{a)}	number	per 10,000 inhabitants ^{a)}
China	81,960	5.8	3,293	0.23
Italy	74,386	124.5	7,503	12.56
Spain	56,188	119.2	4,089	0.01
United States	54,453	16.6	737	0.22
Germany	31,554	38.0	149	0.18
Iran	27,017	31.2	2,077	2.40
France	25,233	37.4	1,331	1.98
Switzerland	9,765	113.9	103	1.20
United Kingdom	9,529	14.3	422	0.63
South Korea	9,241	17.9	131	0.25

a) Figures calculated according to the World Bank Database (2024) for total population in 2019.

Source: Government of Spain (2020b); Ministry of Health (25 March 2020).

An added challenge for Spain was the increase in the number of infections and deaths due to the coronavirus as the days passed. In Table 3, it can be seen that between 16 and 25 March 2020, the epidemic consistently followed an upwards trend. The relative growth between 24 and 25 March was 18% and 19.1% for new infections and fatalities, respectively. This highly negative scenario led to the approval by Congress of an extension of the state of alarm for an additional 2 weeks, specifically until 11 April 2020 (Government of Spain 2020d).

Table 3

**Evolution in Spain of the number of infected patients and fatalities
in the Covid-19 crisis until 25 March 2020**

Date	Infections		Fatalities	
	number	per 10,000 inhabitants ^{a)}	number	per 10,000 inhabitants ^{a)}
16/03/2020	11,178	23.7	491	1.04
17/03/2020	13,716	29.1	598	1.27
18/03/2020	17,147	36.4	767	1.63
19/03/2020	19,980	42.4	1,002	2.13
20/03/2020	24,926	52.9	1,326	2.81
21/03/2020	28,572	60.6	1,720	3.65
22/03/2020	33,089	70.2	2,182	4.63
23/03/2020	39,673	84.2	2,696	5.72
24/03/2020	47,610	101.0	3,434	7.29
25/03/2020	56,188	119.2	4,089	8.68

a) Figures calculated according to the World Bank Database (2024) for total population in 2019.
Source: Government of Spain (2020b): Ministry of Health (25 March 2020).

Furthermore, in Spain, the correlation between infected individuals and fatalities did not seem clear considering the global virus fatality rate. First, experts, including scientists specialising in the field of medicine, epidemiologists and virologists suggested in the media that the Covid-19 fatality rate affected 2.3% of infected patients (Infobae 2020). However, the Director-General of the WHO, in an exclusive interview with CNBC on 3 March 2020, stated that the virus's fatality rate was at 3.4%, fluctuating within a variable range that could range from 0.7% to 4% depending on the quality of the healthcare system in each affected country. Beyond this date, the fatality rate recorded on 25 March 2020 was 4.8% globally and 7.3% at the national level (Government of Spain 2020b). This implies, in terms of statistical extrapolation, that the simple application of the global fatality rate based on virus-infected individuals in the Spanish territory would reduce the number of deaths in our country significantly, from 4,089 (Government of Spain 2020b) to 2,697. These data, certainly, do not portray public healthcare in Spain in a favourable light, but it is also true that certain factors in the Spanish context could be of influence, such as the fact that our population is one of the oldest but with one of the highest life expectancies in the world, and the coronavirus proving particularly lethal to the octogenarian population (Government of Spain 2020b).

The health of the Spanish healthcare system

At this point in the paper, it makes sense to enquire about the structure and management of public healthcare in Spain at the formative stage of the pandemic.

The data presented in the previous section demand an explanation or at least an interpretative approach to the problem. It is necessary, for example, not only to be acquainted with the official statistics related to the development of public healthcare in our country in terms of the number of doctors, nurses and available beds but also to understand the government's actual expenditure on healthcare, as well as the evolution of the sector over recent years. This need arises not only from our right as citizens of a free and democratic state to be informed but also as a combative response to a communicative stage characterised, on many occasions, by biased and/or slanted information, not to mention the daily flood of fake news on social media and messaging platforms, especially through apps like X (formerly Twitter) and WhatsApp. Regarding the latter, while it is true that the advent of information and communication technologies makes us part of the information society, it is equally true that through this, we are immersed in a process of massive information reception (potentially information overload) that could lead us towards absolute misinformation.

However, the health crisis prompted the daily publication of news with a strong political footprint, where accusations, reproaches and half-truths or partisan truths, which are the worst form of lies, found a place. It was regrettable to observe how communication and ethics were increasingly diverging from each other in a perilous journey that had been ongoing for some time and seemed endless. The reality is undeniable; the media is more politicised than ever, although it has always hidden behind a supposed editorial stance, and the only way for citizens in many cases to inform themselves is by accessing contrasting news, checking documents and resorting to official statistical sources.

The headlines offered by politicians through various communication channels, be it print, radio or television, from the beginning of the health crisis, could be confusing or contradictory for citizens. We faced two opposing positions daily, pitting those who defended the effective management of public healthcare in recent years against those who referred to a total disaster of the national healthcare system due to the progressive cuts by the People's Party over the years. Meanwhile, a significant percentage of the population was caught between the two positions, immersed in a kind of chronic litany that did not adequately respond to the pleas of citizens advocating for the right to be well-informed.

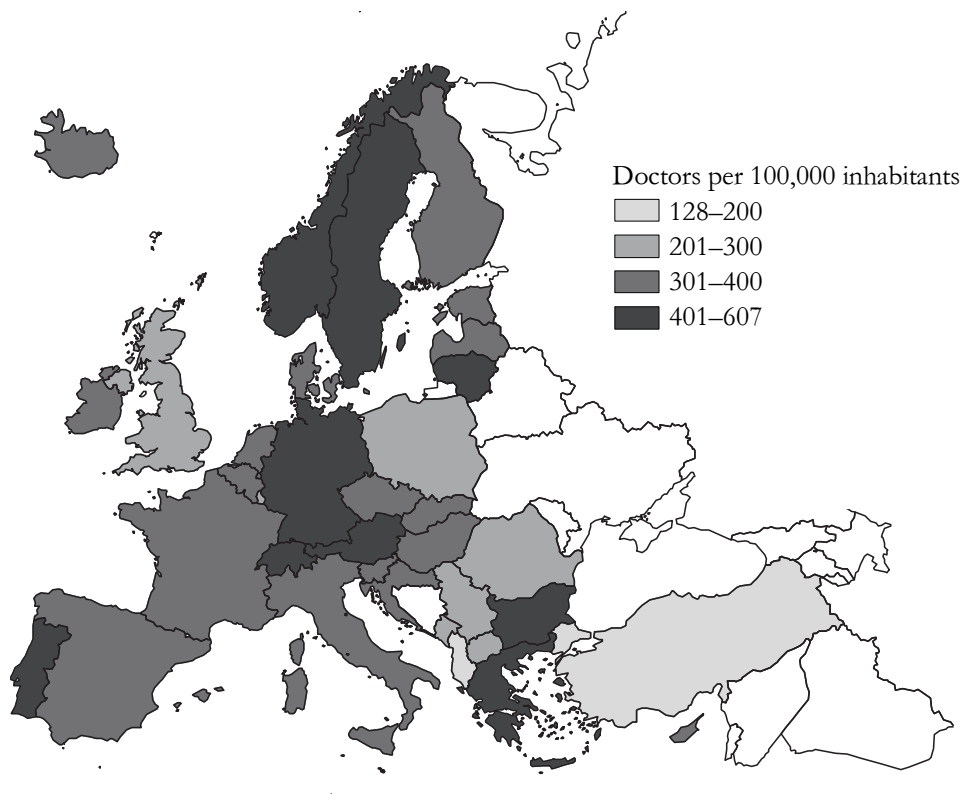
At this point, it was interesting to consult sources such as Eurostat, the statistical portal of the European Union (hereafter EU), to avoid the false or half-truths often offered by politicians and some media outlets. Needless to say, relying on the first WhatsApp message that arrived on our mobile would be unwise.

A crucial initial data point provided by Eurostat (2017a) for starting the analysis is the number of healthcare professionals, both doctors and nurses, employed by the public administration under the index of the number of doctors (Figure 1) or nurses (Figure 2) per 100,000 inhabitants. The first indicator highlights that Spain does not

fare poorly in a comparative analysis of the number of doctors employed by the public healthcare system of each country. Indeed, Spain is above the EU average of 375 with 387 doctors, but it is also true that it is far below countries like Austria (518) or Norway (465). In any case, it is important to emphasise that Spain surpasses some of the ‘heavyweights of the continent’, such as the United Kingdom (281), France (336) and the Netherlands (358); and is not far from other countries such as Italy (399) and Germany (424).

Figure 1

Physicians in public healthcare, 2017



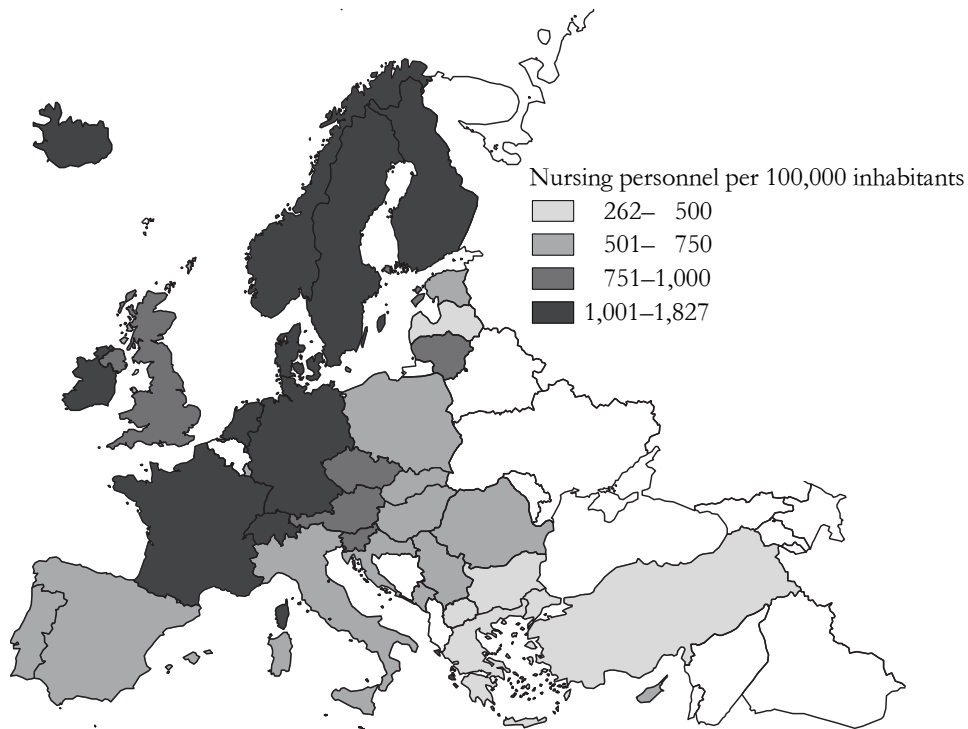
Source: Eurostat (2017a).

In contrast, a comparative analysis of the number of employed nurses and midwives in the public healthcare system reveals a concerning situation for Spain, which has only 528 professionals per 100,000 inhabitants (Eurostat 2017b). This figure is remarkably low when compared to countries such as Switzerland (1,826), Norway (1,790), Denmark (1,702), Ireland (1,420) and Germany (1,362). However, the perspective may be even bleaker when contrasting the national reality with our direct neighbours (France, 1,055; Portugal, 673) or with some Eastern European

countries (Czech Republic, 841; Romania, 657). Drawing conclusions at this point may be premature; nevertheless, with these figures, the assertion made by many Spanish politicians extolling the excellence of the Spanish healthcare system and portraying it as one of the best in the world, comes under suspicion.

Figure 2

Nursing in public healthcare, 2016



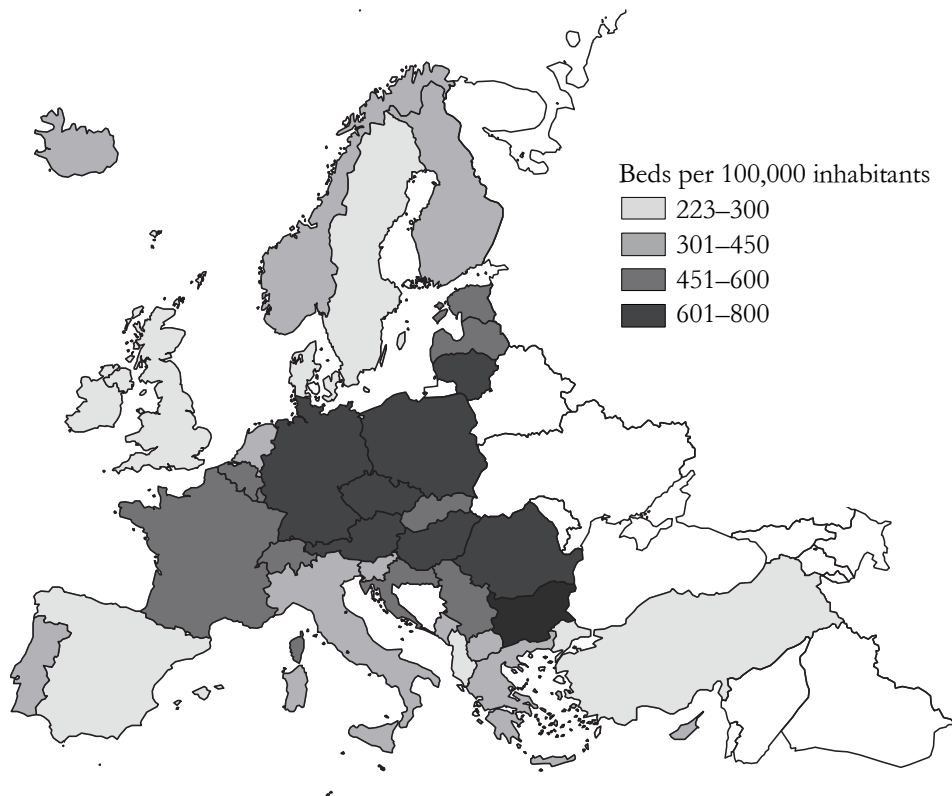
Source: Eurostat (2016).

Another interesting indicator refers to the number of beds in public healthcare (Figure 3), a crucial metric considering the events that unfolded in Spain at that time, with the rapid adaptation of sports pavilions or exhibition halls into field hospitals. Reviewing the data provided by Eurostat (2017a), it can be asserted, without euphemism, that Spain's data are negative and worrisome. The country's healthcare infrastructures deploys 297 beds per 100,000 inhabitants, a figure significantly below countries such as Germany (800) and France (598). However, it is also necessary to note that the figures presented by Eurostat are striking. Thus, looking at the data from the Nordic countries, it is surprising to find situations that are slightly above, or even below, the Spanish reality (Norway, 360; Finland, 328; Denmark, 260; Sweden, 222). It is even more astonishing to discover that a significant majority of Eastern European countries present very high values (Bulgaria, 745; Hungary, 701; Romania, 689; Czech

Republic, 663; Poland, 662; Lithuania, 655). In any case, the reality we were experiencing highlighted that the Spanish healthcare system just did not have enough beds to meet all the population's needs. It is also true that we were going through an unprecedented health crisis. To find something similar, we would have to go back to the influenza epidemic of 1918, commonly known as the Spanish flu, although its origin was likely foreign. Still, this does not negate the fact that the number of beds in Spain's public healthcare system was much lower than in most other European countries.

Figure 3

Beds in public healthcare, 2017



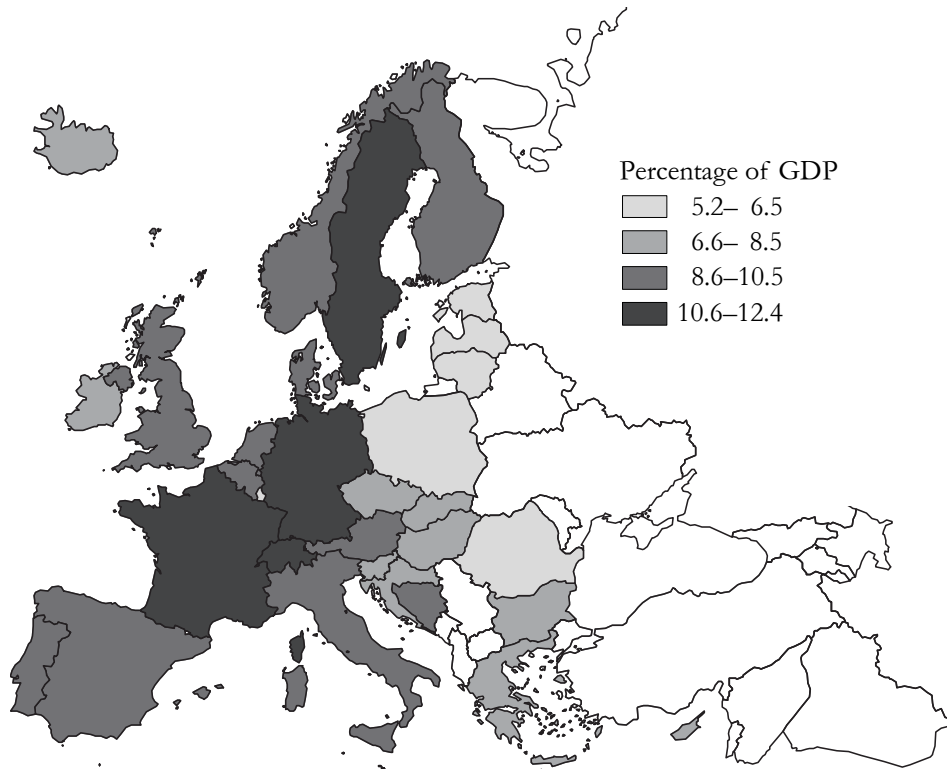
Source: Eurostat (2017a).

However, what was the healthcare expenditure per capita in Spain, and how much did the government spend on healthcare at that time? (Figure 4). Undoubtedly, understanding these figures will provide a much broader perspective on the effort our country is making in the healthcare sector. In 2017 the Spanish government allocated 8.9% of its GDP to healthcare, a significant percentage that positions our country in an intermediate situation within the continental context. It is below the Nordic and Central European countries but, at the same time, above the Eastern European

countries. Thus, Switzerland is the country that allocated the most money to this category (12.4%), followed by Germany and France (both with an investment of 11.3% of GDP), Sweden (11%), Norway (10.5%), Austria (10.4%), Belgium (10.3%), Denmark and the Netherlands (both with 10.1%). The governments that invested the least in public healthcare were Romania (5.2%), a surprising Luxembourg (5.5%) and a no less striking Liechtenstein (5.9%), Latvia (6%), Estonia (6.4%), Poland and Lithuania (both with 6.5%), Cyprus and Slovakia (both with 6.7%), Croatia (6.8%) and Hungary (6.9%), while countries such as the United Kingdom (9.6%), Portugal (9%) and Italy (8.8%) operated within percentages close to the Spanish case (Eurostat 2017a; Figure 4).

Figure 4

Government expenditure on healthcare, 2017



Source: Eurostat (2017a).

Finally, to conclude with the statistics provided by Eurostat, we present data on healthcare expenditure per capita, an indicator that warrants two initial considerations. On the one hand, this expenditure refers to the goods and services consumed by patients in public healthcare, excluding capital investments, such as the construction of hospital infrastructure and the purchase of medical equipment. On

the other hand, it is also crucial to note that, to establish fair comparisons with this indicator, we would need to know the exact cost of each medical treatment in each country. The cost of a simple appendicitis operation in Spain, for example, may not be the same as in Romania or Switzerland. In any case, this information is not available in Eurostat and would likely be challenging to obtain, but strictly related to the data, in 2017, the Spanish healthcare system recorded a per capita expenditure on healthcare of 2,221 euros. It is necessary to point out that within the continental context, the differences are substantial; some countries spent barely 400 euros per capita (Bosnia and Herzegovina), while others approached 9,000 euros (Liechtenstein and Switzerland). These differences persisted elsewhere within the European Union, where the Swedish healthcare system stood out, multiplying the expenditure per capita in Romania by 10 (Eurostat 2017a; Table 4 and Figure 5).

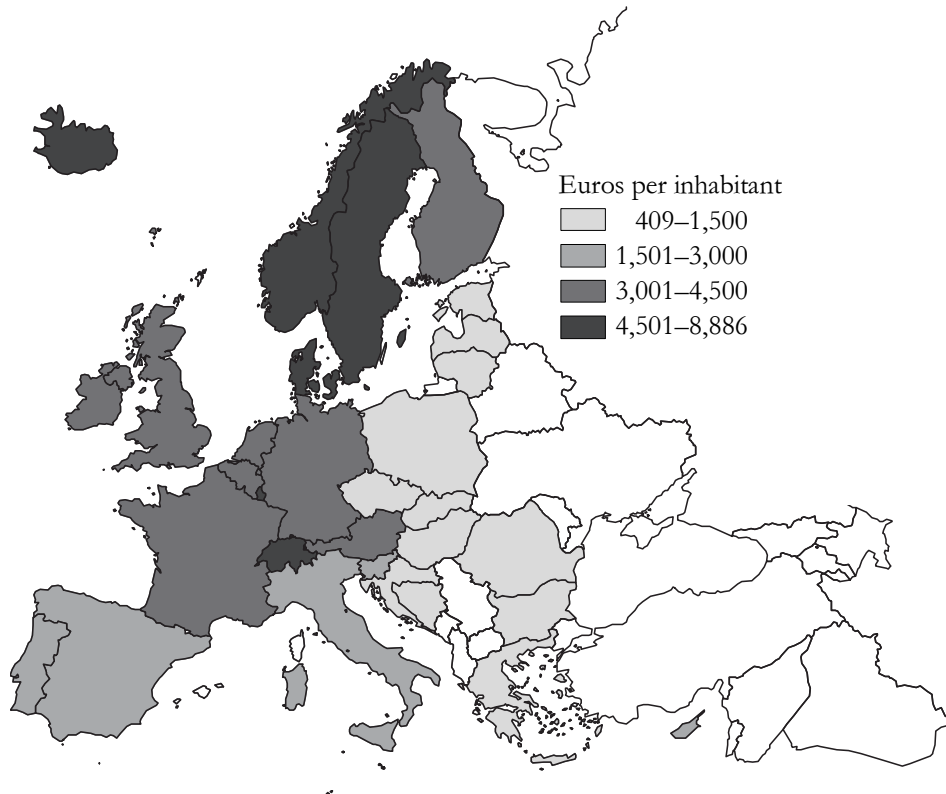
Table 4

Expenditure per patient on healthcare in Europe

Country	Euros	Country	Euros	Country	Euros
Azerbaijan	–	Spain	2,221.10	Monaco	–
Albania	–	Estonia	1,152.50	Montenegro	–
Germany	4,459.40	Finland	3,742.30	Norway	7,013.50
Andorra	–	France	3,883	Netherlands	4,345.70
Armenia	–	Greece	1,347.50	Poland	731
Austria	4,371.30	Hungary	872	Portugal	1,694.80
Belgium	3,991.60	Ireland	4,395.40	United Kingdom	3,408.90
Belarus	–	Iceland	4,538.80	Czech Republic	1,308.60
Bosnia Herzegovina	408.60	Italy	2,522.50	Romania	493.80
Bulgaria	591.10	Kosovo	–	Russia	–
Kazakhstan	–	Latvia	828	San Marino	–
Cyprus	1,527.70	Liechtenstein	8,885.90	Serbia	–
Vatican City	–	Lithuania	963.30	Sweden	5,206.30
Croatia	805.30	Luxembourg	5,082.80	Switzerland	8,785.10
Denmark	5,134	North Macedonia	–	Turkey	–
Slovakia	1,051.80	Malta	2,249.50	Ukraine	–
Slovenia	1,703.70	Moldova	–	Georgia	–

Source: Eurostat (2017a).

Figure 5

Expenditure per patient on healthcare in Europe, 2017

Source: Eurostat (2017a).

Beyond this initial investigation of European statistics, there are specific organisations that analyse the current state and evolution of healthcare globally. One such organisation, affiliated with the WHO, is the Global Health Observatory (WHO 2020c), an observation centre that compiles and publishes statistical information related to key health indicators through its annual publication, *World Health Statistics*. The 2019 edition contained tables with various indicators related, for example, to life expectancy at birth, healthy life expectancy, healthcare expenditure per capita, government spending on healthcare, infant mortality, sick or infected populations considering various references (HIV/AIDS, tuberculosis, malaria, hepatitis, etc.), suicide rates, road traffic mortality and the number of healthcare professionals (physicians, nurses, dentists and pharmacists) per 10,000 inhabitants. The statistics showed figures for Spain close to those previously found in Eurostat. They included 407 doctors and 553 nurses and midwives per 100,000 inhabitants, a government public health expenditure amounting to 9% of the GDP and an approximate

expenditure of 2,390 US dollars per patient on healthcare (WHO 2019a). Incidentally, these statistics align with those provided in the specific health database of the OECD (2019).

A particularly intriguing indicator from the Global Health Observatory is healthy life expectancy at birth. This indicator considers only the years that an average person can expect to live in full health, excluding, unlike the life expectancy indicator, the years of ill health due to illness or injury. Consequently, as one would expect, healthy life expectancy will always be greater than overall life expectancy. In this specific indicator, with a healthy life expectancy of 73.8 years, Spain ranked third globally, trailing only Singapore (76.2) and Japan (74.8). Switzerland (73.5) and France (73.4) closely followed Spain, in a global landscape where Europe stood out positively (WHO 2016). Nevertheless, it is crucial not to mistake the indicator measuring healthy life expectancy with the one strictly addressing the efficiency of a healthcare system. Concerning the latter indicator, the WHO referred to Universal Health Coverage (UHC) and established a country ranking that positioned Spain as seventh globally, behind France, Italy, San Marino, Andorra, Malta and Singapore, and ahead of Oman, Austria and Japan, completing the top ten of purportedly the world's best healthcare systems (WHO 2019b).

The World Bank (2020), in alignment with the WHO (2019b), also emphasised the concept of UHC. Indeed, both institutions collaborated on a report titled 'Tracking Universal Health Coverage: 2017 Global Monitoring Report' (WHO–World Bank 2017), which specifically detailed all the indicators behind the calculation of the universal health coverage index (Table 5). It is undeniable that Spain holds a notably favourable position. However, beyond the assessment of a healthcare system (infrastructure, personnel, technology and research), we must interpret the index as an indicator of the population's access to a public, free and reasonably high-quality healthcare system. In light of the statistical information provided by Eurostat, it is not feasible, by any stretch of the imagination, for Spain to have a better public healthcare system than that of Switzerland or Germany. Nevertheless, as demonstrated by data compiled by the WHO and the World Bank, it is plausible that the Spanish healthcare system is one of the fairest and most socially oriented globally. Universal coverage signifies that all individuals, without distinction, receive the healthcare treatment they need, regardless of their financial situation.

Table 5

Indicators to measure the universal health coverage index

Reproductive, maternal, neonatal and child health	Non-communicable diseases
<ol style="list-style-type: none"> 1. Family planning 2. Prenatal care (minimum 4 visits) 3. Childhood vaccination 4. Health alert for pneumonia 	<ol style="list-style-type: none"> 1. Prevention and treatment of arterial hypertension 2. Prevention and treatment of hyperglycaemia 3. Cervical cancer detection 4. Anti-smoking campaigns
Control of infectious diseases	Service provision and access
<ol style="list-style-type: none"> 1. Tuberculosis treatment 2. HIV infection treatment 3. Insecticide-treated netting to prevent malaria 4. Adequate sanitation 	<ol style="list-style-type: none"> 1. Access to basic hospital services (beds) 2. Health personnel density 3. Access to essential medications 4. Health security in compliance with International Health Regulations

Source: WHO and World Bank (2017).

Another notable reference that could provide interesting data about healthcare worldwide is the WEF, also known as the Davos Forum. This foundation periodically publishes a report on global competitiveness that includes multiple variables related to the functioning of markets, financial system response, infrastructure expansion, efforts in innovation and training, environmental protection and health. However, in the Global Competitiveness Report 2019, only one variable related to the health chapter was included, referring specifically to life expectancy. This places Spain once again among the top positions in an international ranking that analyses health, placing it third in the world in life expectancy, only behind Singapore and Japan (WEF 2019).

To conclude this section, the Bloomberg healthiest country index, drawing on statistical data provided by the WHO and the World Bank, deemed Spain the healthiest country in the world. It surpassed Italy, Iceland, Japan and Switzerland, which occupied the top five positions in a ranking that included 169 countries (only excluding countries with fewer than 300,000 inhabitants). Countries such as France, the United Kingdom, Germany, the United States and China fell in the ranking to positions 12, 19, 23, 46 and 52, respectively (Bloomberg 2019). To construct this index, Bloomberg classified nations based on a set of variables that include neonatal mortality, access to minimum vaccine coverage, child malnutrition, control of obesity, reduction of unhealthy habits (smoking and alcoholism), promotion of physical activity, the prevalence of certain diseases in the population (hypertension, diabetes, cholesterol), mental health, life expectancy and environmental quality (clean air, safe drinking water and good sanitation). In essence, it is a much more extensive and rigorous index than the one presented by the WEF, but it should not be confused with an assessment of the strength of different healthcare systems worldwide. On the one hand, we have the capacity to cure, demonstrated by a country and a public

healthcare system, and on the other hand, the willingness of that same country and system to promote healthy lifestyle habits among its population.

Territorial divergence processes in the Spanish healthcare system

In Spain, there is a specific Ministry of Health; however, the autonomous governments manage the healthcare systems of each region. This, in principle, implies that public healthcare in Spain is not uniform for everyone but will instead be influenced by the specific circumstances of each autonomous region. Thus, for instance, we encounter an initial inequality determined by the budget that each autonomous region allocates to public health spending. In this line of research, a simple review of the reports made available by the Ministry of Finance will help us understand that not all communities invest equally in public health and will also allow us to highlight the alleged cuts in healthcare that have been occurring in recent years.

We can initiate the analysis by reviewing the document *Presupuestos Generales de las Comunidades Autónomas 2020* (General Budgets of the Autonomous Regions 2020 [Government of Spain 2020e]), an official text published on 31 March 2020, by the Ministry of Finance, which coincided with the health crisis and population lockdown in Spain. This will provide us with an initial idea of the spending each community makes on healthcare, education, security and social protection, public debt and other public functions or policies (Table 6). We can observe that all communities, except Navarra and the Balearic Islands, spend more on healthcare than on any other ministry, but there are also significant differences among them. The average of all communities in terms of healthcare spending represents 31.92% of the general budget; however, Navarra (25.33%), Catalonia and the Valencian Community (both with spending of 28.91% of the general budgets), the Balearic Islands (11.55%) and La Rioja (29.45%) are far from the national average and do not even reach 30%. In contrast, Asturias (38.73%) and Castile and Leon (36.45%) are more than 10 percentage points above Navarra, a substantial difference. Madrid (35%), Galicia (34.77%) and Aragon (34.28%) complete the top five Spanish communities that spend the most on healthcare.

Table 6

General budgets of Spain 2020 by autonomous regions

(in percentage of total budget)

Community	Healthcare	Education	Security and social protection	Public debt	Remaining functions and policies
Andalusia	31.61	22.75	7.17	16.07	22.40
Aragon	34.28	19.67	7.27	17.44	21.34
Asturias	38.73	17.97	10.00	12.14	21.16
Balearic Islands	11.55	67.28	1.24	10.64	9.30
Canary Islands	32.62	19.01	5.51	16.16	26.70
Cantabria	31.95	20.09	8.47	14.95	24.54
Castile and Leon	36.45	20.81	8.38	14.35	20.02
Castile–La Mancha	30.94	18.52	8.09	26.95	15.50
Catalonia	28.91	18.74	7.02	19.62	25.71
Valencian Community	28.91	21.77	6.99	27.28	15.05
Extremadura	32.24	20.29	9.06	10.86	27.55
Galicia	34.77	20.72	6.89	13.90	23.72
Madrid	35.00	21.07	7.99	15.65	20.30
Murcia	33.09	24.78	6.47	21.20	14.46
Navarra	25.33	16.61	10.32	7.75	39.99
Basque Country	33.68	24.98	5.47	7.87	28.00
La Rioja	29.45	19.19	8.67	15.92	26.78
Total all communities	31.92	20.78	7.21	17.77	22.32

Source: Government of Spain (2020e).

Once the money spent by each community on healthcare has been verified, it is interesting to establish a correlation between these expenditures and the population of each region. This approach would result in an approximation of public healthcare spending per capita (Table 7). The differences revealed by this index, in line with the results presented by the *Federation of Associations for the Defence of Public Health* (FADSP 2019), allow us to assert that healthcare in Spain is by no means equal for everyone, given the significant variations between communities. The Basque Country, with a healthcare spending per capita of 1,823.3 euros, prioritises the public health of its citizens significantly. Asturias (1,781.9) and Navarra (1,775.5) follow, with Asturias achieving this position due to its government's effort, allocating almost 39% of the community's expenditure to healthcare, as observed in the previous paragraph. Conversely, Catalonia and the Community of Madrid, with a public healthcare spending of 1,160.6 and 1,221.5 euros respectively, are far from the position of the Basque Country and rank lowest among the Spanish communities in terms of healthcare provision (Government of Spain 2020e, INE 2019). It is interesting, at the very least, to note that these same regions are the most severely affected by the coronavirus crisis in Spain. We have here, therefore, an illustration of how the

geography of health can help us better understand why some territories suffer more than others from the consequences of a health crisis.

Table 7

Per capita healthcare spending by autonomous regions, 2020

Community	Population	Total healthcare expenditure	Per capita healthcare expenditure
Andalusia	8,446,561	10,824,520.00	1,281.50
Aragon	1,324,397	2,061,798.94	1,556.80
Asturias	1,019,993	1,817,523.38	1,781.90
Balearic Islands	1,198,576	1,724,941.02	1,439.20
Canary Islands	2,220,270	3,132,985.65	1,411.10
Cantabria	581,949	922,064.24	1,584.40
Castile and Leon	2,402,877	3,534,049.05	1,470.80
Castile–La Mancha	2,038,440	2,990,642.88	1,467.10
Catalunya	7,609,499	8,831,919.70	1,160.60
Valencia	4,998,711	6,753,056.64	1,350.90
Extremadura	1,062,797	1,742,520.49	1,639.60
Galicia	2,698,764	4,107,323.84	1,521.90
Madrid	6,685,471	8,165,992.26	1,221.50
Murcia	1,494,442	1,919,164.23	1,284.20
Navarra	652,526	1,158,559.00	1,775.50
Basque Country	2,181,919	3,978,398.39	1,823.30
La Rioja	314,487	459,646.97	1,461.60

Methodological note: Per capita healthcare spending is the result of applying the ratio between total healthcare spending and the population of each autonomous region. The data related to total healthcare spending correspond to the General Budgets of Spain 2020 by autonomous regions and are expressed in thousands of euros. Population data are updated as of 1 July 2019, by the National Institute of Statistics of Spain.

Source: Government of Spain (2020e), INE (2019).

In all of this, one thing is strikingly noticeable. Public healthcare spending per capita in Spain is 1,456.9 euros, a figure that has little resemblance to the 2,221.1 euros reported by Eurostat (Table 4). We are unaware of how the EU statistical portal arrived at the latter figure, but we can explain how we arrived at the 1,456.9 euros. In our case, we first consider the total healthcare spending for the year 2020, which is obtained by summing the budgets of the autonomous regions (64,125 million euros) and the specific allocation for the Ministry of Health (4,251 million euros), which is public information available to everyone in the *General Budgets of the Autonomous Regions 2020* (Government of Spain, 2020e) and the *Consolidated General State Budgets 2020* (Government of Spain 2020f). To obtain the final result, we apply a division to healthcare spending, with the divisor being the 46,931,679 inhabitants that make up the Spanish population (INE 2020).

However, it is also true that the Eurostat data are for the year 2017, and we might think that the data itself are correct, and the issue lies in the progressive reduction of public healthcare spending in the past 3 years in Spain. With this proviso, we decided to review a new official document, specifically, the *Estadística de Gasto Sanitario Público 2017: Principales resultados* (Public Health Spending Statistics 2017: Main Results

[Government of Spain 2017a]), published by the *Subdirectorate General of Services Portfolio of the National Health System and Funds of Compensation of the National Health System and Funds of Compensation* under the Ministry of Finance's oversight. We can confirm that this report is consistent with our data because it reports healthcare spending per capita for the year 2017 as 1,472 euros, a figure that degrades Eurostat's credibility. We also note that for the same year, it recorded a total investment in healthcare of 68,483 million euros, a figure equivalent to 5.9% of the national GDP. The second of these data points is also inconsistent with the information provided by Europe about Spain, which places our country's healthcare spending at 8.9% of GDP (Eurostat 2017a).

Now that we have an approximation of the budget available to each region for healthcare, we can examine how this indicator has evolved over the years. To do this, we turn to the general budgets of the autonomous regions between 2015 and 2020, cross-referencing the corresponding reports published by the Ministry of Finance (Government of Spain 2020e, 2019, 2018, 2017b, 2016, 2015). A detailed analysis of this data allowed us to verify that between 2015 and 2020, only six communities reduced their healthcare budgets from one year to the next. This occurred in Catalonia on three occasions (from 2015 to 2016, 2017 to 2018 and 2018 to 2019), in Asturias and Castile and Leon on two occasions (in the first case from 2015 to 2016 and 2017 to 2018; and in the second case from 2018 to 2019 and 2019 to 2020) and also in Extremadura, Murcia and La Rioja on one occasion (between 2016 to 2017, 2019 to 2020 and 2018 to 2019, respectively). The rest of the communities either maintained their budgets or increased them. From a global perspective, considering only the years 2015 and 2020, all communities without exception increased their budgets, but the differences between them remain significant. Some, like the Balearic Islands (33.5%), Aragon (29.8%) and Andalusia (28.7%), experienced very notable growth, close to or above 30%. Others, such as Catalonia (6.2%), Castile and Leon (8.7%) and Madrid (12%), also increased their budgets but at a much slower pace. We cannot strictly speak of cuts in healthcare, but there is a clear process of divergence between regions that leads to territorial inequalities in national public health.

The Spanish healthcare system and the endless history of praise and criticism. Implications for the teaching of geography

Until now, data on the structure and management of public healthcare in Spain at the initial stage of the pandemic have been shown and compared with other European countries or worldwide. The research provides a set of freely accessible data sources at the Spanish, European and international levels, which are very useful for citizens to have verified information that helps them understand social, ecological, economic and political issues of today's society. How, then, does this reality manifest in the media when referring to the speeches delivered by politicians? And what are its didactic implications in the teaching of geography? Precisely in this section, two news

articles published during the initial phase of the coronavirus crisis in Spain were selected, and their lack of veracity will be evidenced based on some data presented in the previous sections.

Undoubtedly, different media outlets adhere to unchanging editorial lines that hinder providing insightful contributions to the public. The discourse presents biased, if not manipulated information, and all of this can be asserted thanks to the prior research that every teacher should know how to confront before bringing an interesting and/or current topic to geography classrooms. For example, the two images presented below clearly denounce this situation (Figures 6 and 7).

Figure 6

**News coinciding with the onset of the pandemic.
The World Economic Forum awards Spain the title of
the best healthcare system in the world**



Note: This is a translation of the figure text: “The World Economic Forum grants Spain the title of the best healthcare system in the world. Additionally, it ranks as the third country with the highest healthy life expectancy, only behind Singapore and Japan. In general terms, Spain is the 23rd most competitive country in the world. Spain is the country with the best healthcare system in the world, a privilege it shares with Singapore, Hong Kong and Japan. This is evident from the competitiveness index compiled by the World Economic Forum for the year 2019, which awards the maximum possible score to these four states: 100.0”.

Source: Redacción Médica (February 2020).

The statistical and cartographic languages constructed from the information provided by Eurostat allow us to question the headline offered by the magazine Redacción Médica (Figure 6). We could even go further and discover on what data the WEF bases its placement of the Spanish healthcare system in such a favourable position. The WEF publishes a report annually on global competitiveness that includes multiple variables related to market functioning, the financial system, infrastructure expansion, efforts in innovation and education, environmental protection and health. However, the health chapter only includes a variable related to life expectancy. This causes Spain to rank among the top three healthcare systems in

the world, only behind Singapore and Japan. However, the WEF has no intention at any point of measuring or assessing the quality of healthcare systems worldwide.

We can conclude that the headline offered by Redacción Médica, a magazine that specialises in the healthcare sector, is somewhat deceptive or, at the very least, highly inaccurate with information. Additionally, according to the information provided by the WEF, Spain would not have the best healthcare system in the world but rather, the third best, behind Japan and Singapore. We are witnessing a litany of manipulated and biased information that can only be identified as poor professional practice. It serves, therefore, as a very interesting example to work with students.

Figure 7

News coinciding with the beginning of the pandemic. The coronavirus crisis according to the newspaper El Plural



Note: This is a translation of the figure text: ‘el Plural.com, Progressive Digital Newspaper. The president of the People’s Party (PP), Pablo Casado, in a press conference. After the crisis caused by the coronavirus in Spain, when the Community of Madrid was one of the most affected, the effects and consequences of the cuts and privatisation implemented for years by the governments of the PP in the Madrid region have come to light. The policy of austerity and privatisation by successive governments in the Community of Madrid has become more visible with the coronavirus crisis. According to the national hospital catalogue, Madrid has 33 public hospitals and 50 private ones, and one of the most devastating policies in the healthcare sector has been the privatisation that has been ongoing since 2010. Following the same script, out of these 33 public hospitals, five of them are managed privately, making their treatments up to 6 times more expensive for public finances’.

Source: El Plural (March 2020).

Something similar happens with the news article depicted in Figure 7, where the Autonomous Community of Madrid is accused of implementing cuts in healthcare. However, the detailed analysis allowed us to verify that between 2015 and 2020, only six regions in Spain reduced their healthcare budgets from one year to the next. It occurred in Catalonia (2016, 2018 and 2019), Asturias (2016 and 2018), Extremadura (2017), Murcia (2000) and La Rioja (2019). These are public data from the Ministry

of Finance accessible to the public on the internet, and anyone can access them easily. How, then, is the news published by the El Plural newspaper in March 2020 to be understood? What are the priorities of this newspaper? Is it objective information and the right of any citizen to be informed, or is it the interest in maintaining an editorial line that corresponds to the preferences of the media's users?

Critical teaching of geography plays a fundamental role in enabling students to develop skills for searching, selecting, contrasting and interpreting diverse information sources. In current society, they must develop critical literacy (Lewison et al. 2002, Ciardiello 2004), which also means understanding that identities and ideologies determine discourses, to therefore comprehend systems of domination and oppression, and prepare for participation and social transformation.

Conclusions

Nowadays, in the face of political speeches and the flood of media information from various ideological positions, citizens need tools to have verified information. Geographical research can make a significant contribution to the teaching of critical geography by using cartography, statistics and documentary, among other sources. The case study of the Covid-19 health crisis during its initial phase demonstrated how news does not necessarily reflect the facts or data. For instance, the indicators consulted to analyse the Spanish public healthcare system showed strengths such as the number of physicians or the accessibility and quality of services compared to other countries. Also, the high life expectancy of the Spanish population is highlighted worldwide. However, these indicators are not sufficient to label Spanish public healthcare as the best in the world, as claimed by one of the news headlines analysed. Indeed, indicators were also found that could be improved, such as the low number of nurses or hospital beds. This example also highlights the importance of contrasting different sources and investigating to uncover potential inconsistencies among them.

Ultimately, the example we provide, the context of the evolution of the coronavirus in its initial stage, allows us to highlight the role that geographical research can play in the teaching and learning processes of geography, especially in the area related to working with social and civic competencies. A second step would be to fit this research proposal, or any other, into the form of a didactic unit (researched by the teaching staff) or project-based learning (researched by students in cooperative workgroups with the assistance of teachers). Finally, it seems evident that didactic innovation processes in geography involve overcoming descriptive teaching. The ultimate goal of geographical content is to educate informed citizens, competent in obtaining information, reflective, critical and capable of proposing and/or adopting practical solutions with respect, commitment, empathy and solidarity. In this process of democratic education, social and civic competencies will take centre stage.

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