

# Monograph – *The COVID-19 pandemic in Spain*

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**Abstract:** The Department of Thematic Mapping and National Atlas at the National Geographic Institute of Spain (IGN) has published a monograph on the first wave of the COVID-19 pandemic. The time studied is limited to the first half of 2020 which is the period for which official data are now available. However, for the first time, provisional –non definitive– data have been used. This publication begins with an overview of the impact of this crisis on the world in general and on the European Union in particular. It then focuses on the effects that the pandemic has had on demography and on the National Health Service in Spain. It ends with the consequences that the pandemic has had on the Spanish economy, society and environment. This work has been carried out together with an *ad-hoc* scientific network. It is the first publication of the Department that has been written both in Spanish and in English with the aim of providing the rest of the world with a geographic-cartographic vision on what has happened in Spain within the frame of the European Union during the first semester of 2020.

**Keywords:** National Atlas, thematic mapping, statistical maps, cartography, COVID-19 pandemic

## 1. Introduction

At the end of 2019, news reached Europe that a new virus had emerged in China. At the end of January 2020, the first cases of this coronavirus called SARS-CoV-2 were detected in some States within the European Union. By mid-March 2020, almost the entire population of the European Union was on lockdown. By early April 2020, tens of thousands of deaths were being recorded in our territory every week due to a pandemic called COVID-19. Europe lived a health emergency during the first semester of 2020 not seen since the First World War, with consequences on society and economy that will take long time to overcome.

In the specific case of Spain, a state of alarm came into effect via a Decree of the Cabinet on 14 March 2020. It was applied to the whole national territory and was renewed several times every two weeks by the Lower Chamber of the Parliament until 20 June 2020. The entire population was strictly confined to their homes. Schools and universities were closed. All non-essential economic activities stopped. The whole country came to a standstill as never before since the Civil War of 1936-1939.

The National Geographic Institute of Spain (IGN) was at the service of the rest of the Administration during the months of March, April, May and early June 2020 to assist managing the pandemic. For example, the Ministry of Transport asked the National Geographic Institute for maps on road, rail, air and sea traffic to help monitor the extent to which the population was complying with the strict measures of lockdown and travel restrictions imposed by the state of alarm. Therefore, the Department of Thematic Mapping and National Atlas spent several weeks providing other state agencies with thematic maps. The power of cartography and geography in crisis management was clearly shown once again during this period.

Once the worst weeks of the first wave of COVID-19 were left behind, the Department of Thematic Mapping and National Atlas reflected on what had happened and on the importance of continuing to be useful to society. Thus, we considered in June 2020 that the best way to do so was to provide a geographic-cartographic vision of the extraordinary situation that Spain within the frame of the European Union had lived during the first semester of 2020. Of course, many other state agencies would be responsible for providing other views of the same aspect; for example, the Bank of Spain would provide with conclusions from an economic and financial point of view; the National Statistics Institute would offer data on many demographic, economic and social aspects; the different Ministries would contribute with various reports in terms of their powers... But the National Geographic Institute was to offer the territorial, geographic and cartographic perspective of this situation.

## 2. Monograph

The National Geographic Institute of Spain contacted the scientific network it usually works with. In general, the technical direction and the coordination of the National Atlas is kept at the IGN. This includes gathering texts, drawing maps, editing, quality-controls, printing, publishing, disseminating and giving a legal support to the National Atlas. On the other hand, arranging a thematic structure and developing the scientific contents is usually led by a scientific network that includes 140 researchers and professors who work at almost 40 scientific organisations and universities from all over the country.

On this occasion, however, as this is a monograph on a specific topic, the aim was also to complement the contribution of the network's regular collaborators with that of other organisations linked to the Association on Spanish Geography and other specialists –especially those

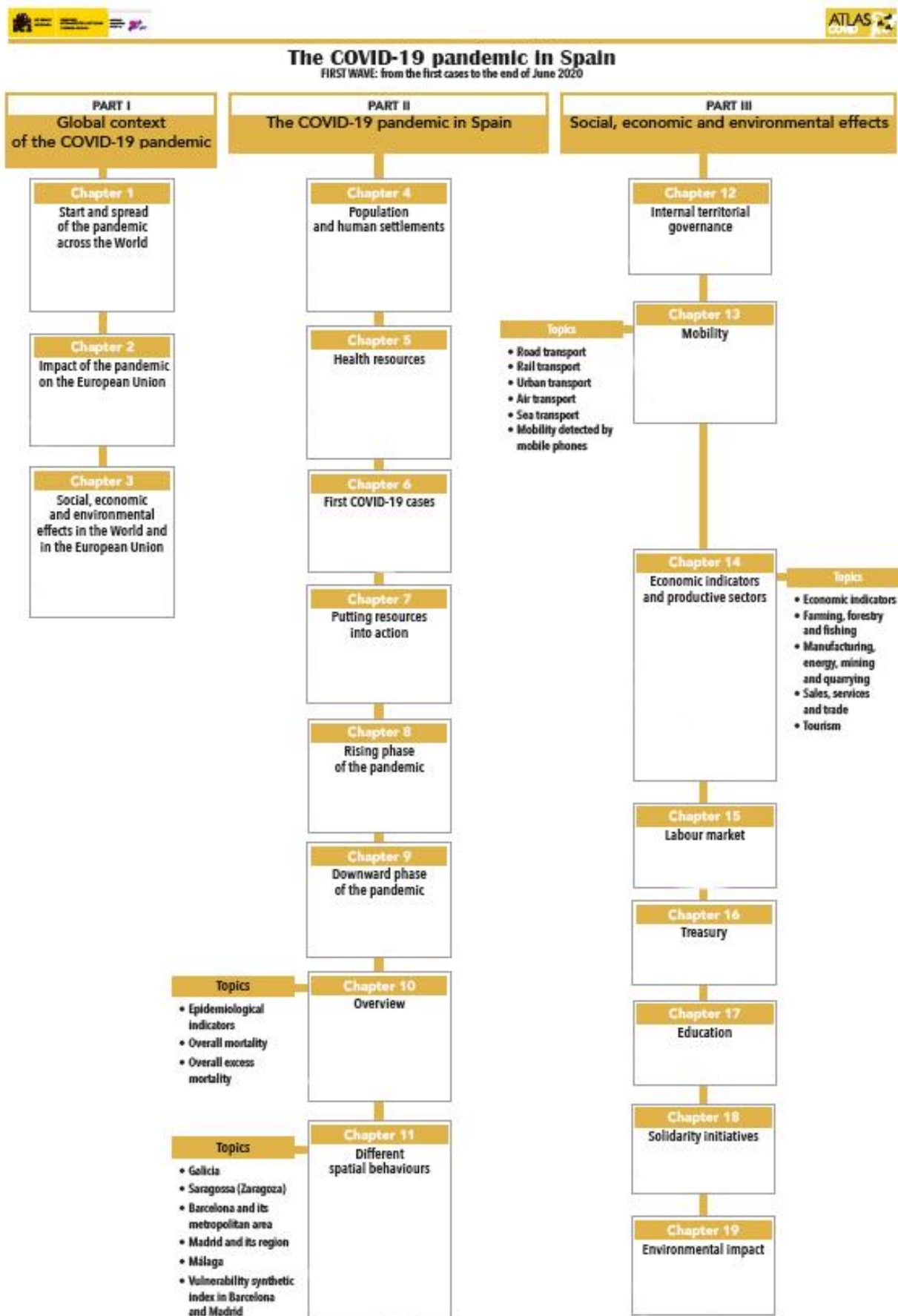


Figure 1. Thematic structure.

linked to medicine— who were already working on these subjects. Therefore, an *ad-hoc* scientific network was to be set up. This *ad-hoc* scientific network and the National Geographic Institute jointly carried out the project design, i.e. a thematic structure was defined and the general guidelines of the publication were set during July 2020.

First, we decided to change the paradigm that had guided so far all the works published by our Department. Up to summer 2020, the National Atlas of Spain had three main types of publications, i.e. the General series, which gave an encyclopaedic and global view on all geographical aspects in Spain; the Compendium series, which

synthesised the most relevant issues of various sections of the General series; and the Monograph series, which examined in depth one specific aspect of the national geography. In all cases, however, these documents were published with official and definitive data. In this case, however, a different perspective was needed. We were now to face a topical publication that required the use of provisional data. And this aspect has been critical throughout the progress of the work as the National Geographic Institute depends on other state agencies and ministries in terms of data collection and processing, what meant that maps could not be drawn and published until other agencies provided the IGN with such data.

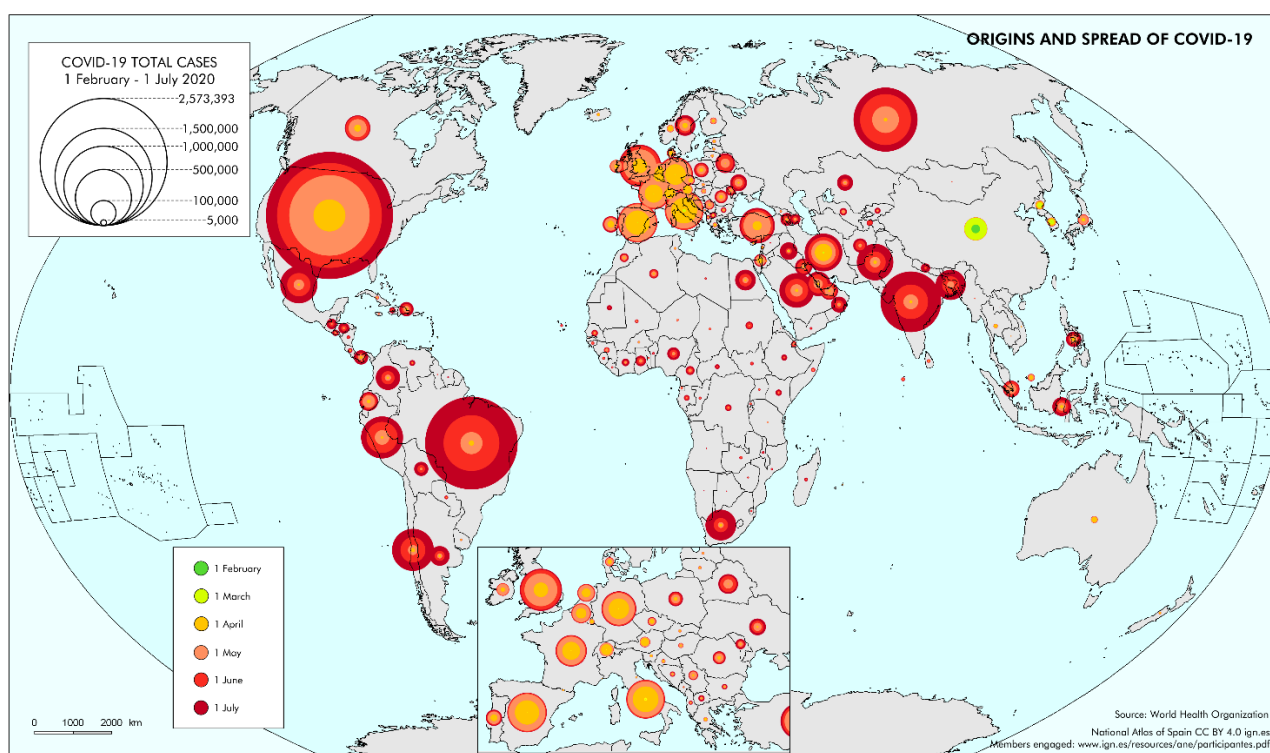


Figure 2. Part 1 – Chapter 1 – Start and spread of the pandemic across the World. Origins and spread of COVID-19.

Second, the time frame to be analysed also had to be limited. The pandemic was still ongoing when this publication was designed and developed. But we did not want to wait until the end of the pandemic to publish this geographic-cartographic perspective of the situation. Therefore, we decided to limit the period of analysis to the first half of 2020 which is equivalent to the first wave of the pandemic in Europe. The work was planned to be published in summer/autumn 2021, i.e. only one year after the event. This posed a challenge for the National Geographic Institute; on the one hand, because of its dependence on other agencies for data collection and processing; on the other hand, because of the speed with which the data had to be integrated into the IGN's own databases once they were sent to us; and furthermore, they had to be filtered, processed, analysed, mapped, provided with cartographic design and editing and passed all quality controls; the accompanying texts had to be written and

corrected; the entire work was to be translated into English; and the whole publication had to be laid out, edited, published and made available to the public both on digital and paper formats and in two volumes, one in Spanish and the other in English. It is the publication of the Department of Thematic Mapping and National Atlas for which the time lapse between the event and the publication has been most reduced.

Moreover, the aim was to give a Spanish view of a European and global issue. For this reason, it was essential that the work be published both in Spanish –because it is the main official language in the country and because of the importance of our language in the world– and in English –so that the rest of the world may clearly understand what has happened in Spain–. Bilingualism may enable observing both Spain's own specific features and also the analogies between the Spanish situation and that of other States in the European Union. This is the first

time that the National Geographic Institute of Spain has published a work in Spanish and English, what is a major

commitment to the future of this scientific-technical-research organisation of the National Administration.

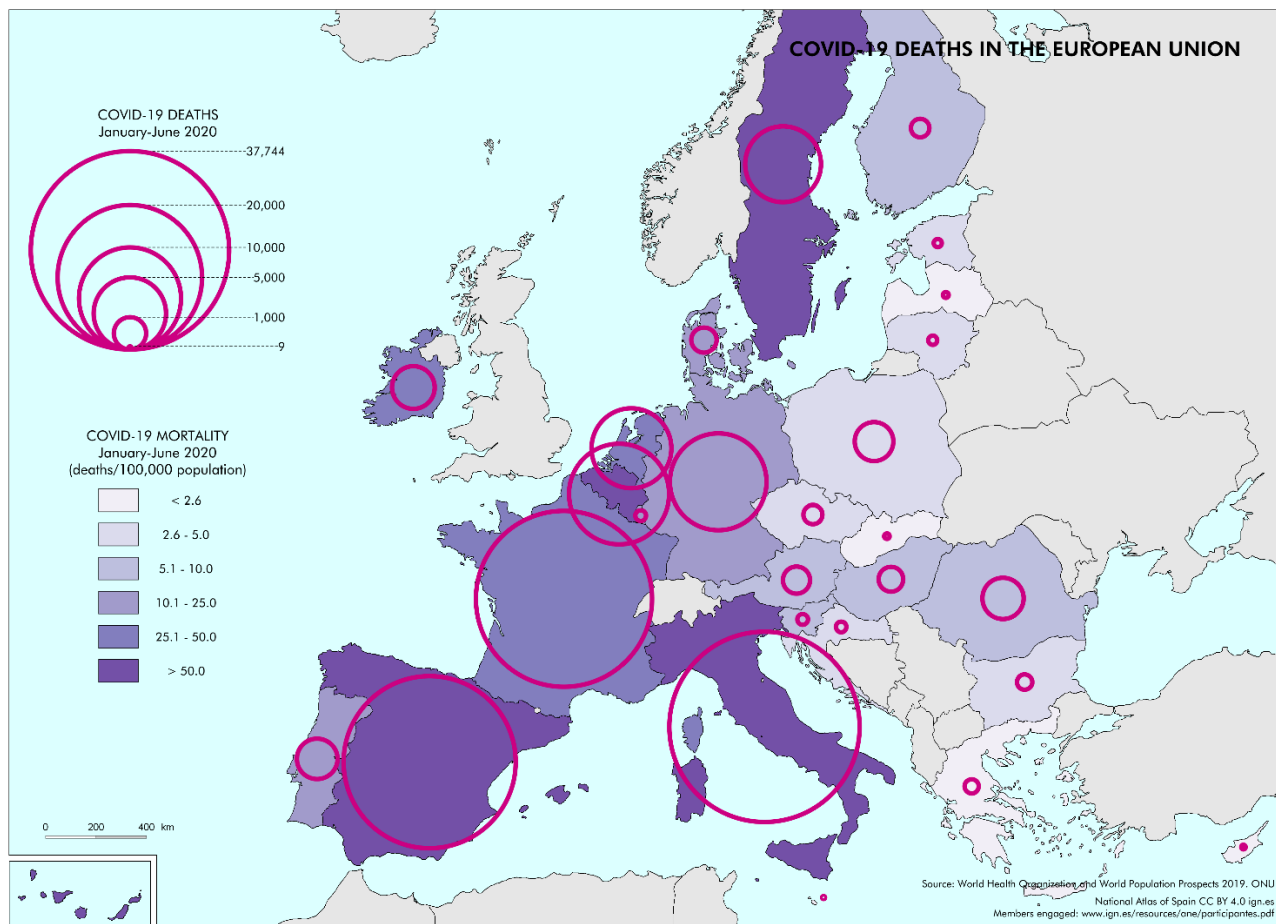


Figure 3. Part 1 – Chapter 2 – Impact of the pandemic on the European Union. COVID-19 deaths in the European Union.

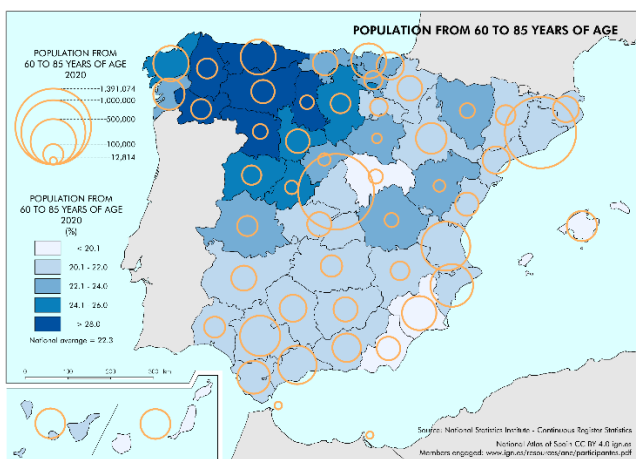


Figure 4. Part 2 – Chapter 4 – Population and human settlements. Population from 60 to 85 years of age by province.

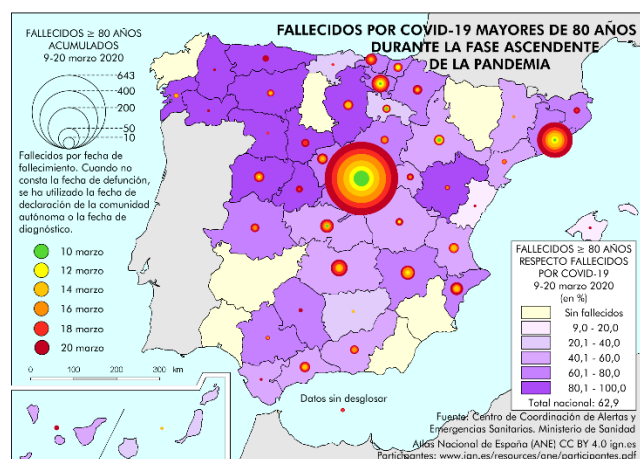


Figure 5. Part 2 – Chapter 8 – Rising phase of the pandemic. COVID-19 deaths during the rising phase of the pandemic by province – only population over 80 years of age.



Nearly 200 maps and 100 statistical graphs have been included along its 132 pages. Data have been provided by tens of national and international official organisations, primarily by the different departments, agencies and public bodies of the National Administration in Spain. The thematic structure is divided into three parts that include nineteen chapters in total.

The first part, devoted to the global context, consists of three chapters. The first one shows the spread of the pandemic around the world. The second focuses on the pandemic in the European Union. The third deals with the socio-economic and environmental effects in the world, in general, and in the European Union, in particular.

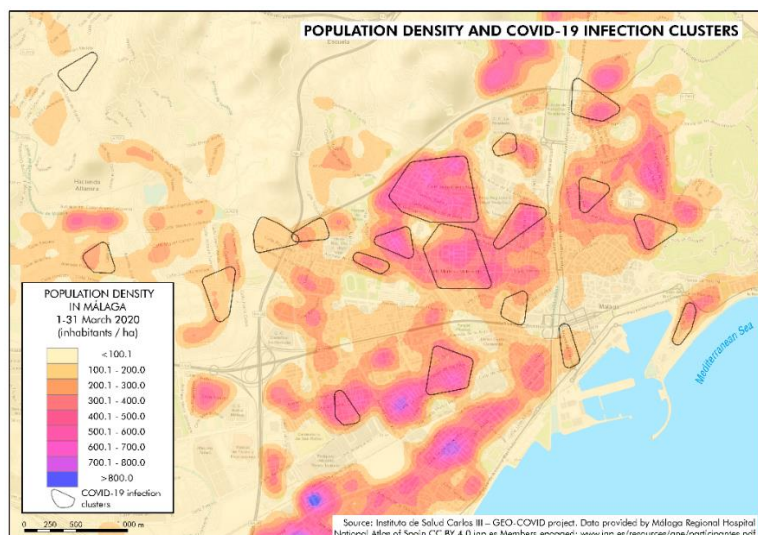


Figure 6. Part 2 – Chapter 11 – Different spatial behaviours – Study case Málaga. Population density and COVID-19 infection clusters.

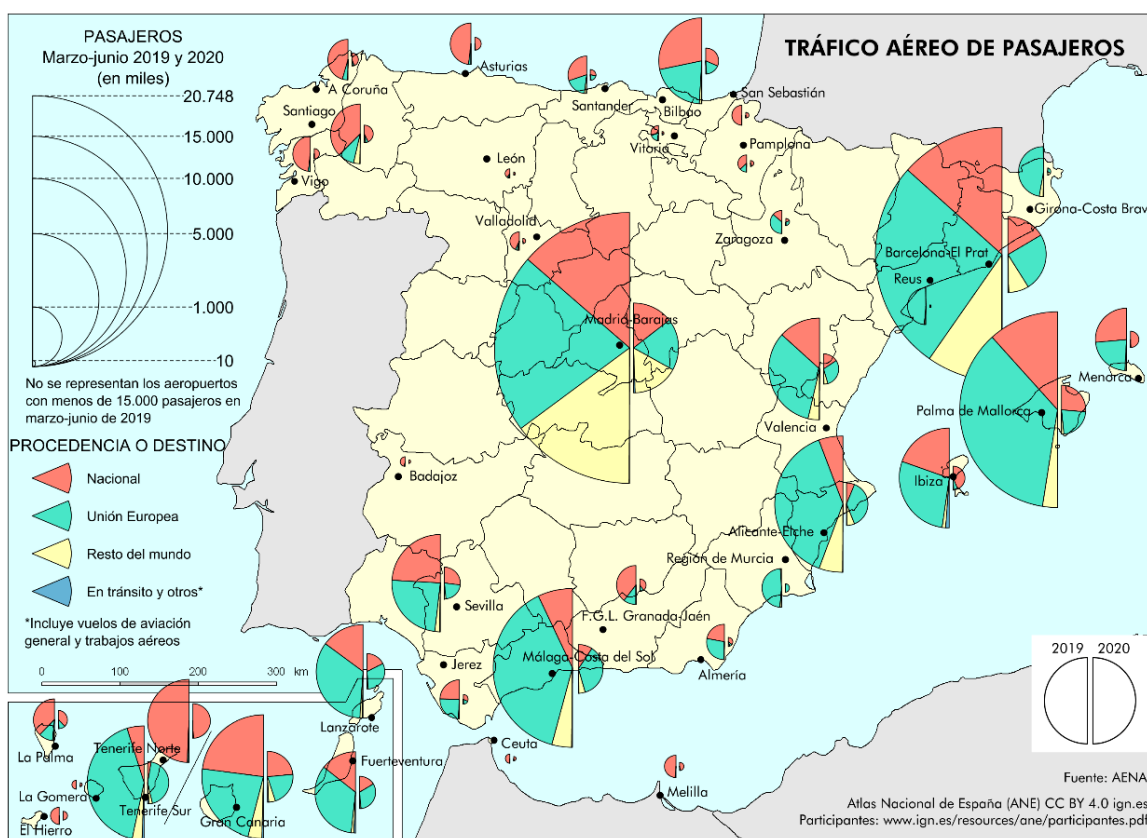


Figure 7. Part 3 – Chapter 13 – Mobility. Drop in the number of air passengers during the period March-June 2020 compared to the same period of 2019 by airport.

The second and third parts focus specifically on Spain.

The second part deals with the health and demographic aspects of the pandemic and includes eight chapters in total. This part begins with the initial situation in Spain in terms of demography and health. It then moves on to analysing chronologically how the pandemic arrived, how cases increased, how new health resources were put in

place, how the peak was reached, how the number of cases fell again and how the end of lockdown was reached on 20 June 2020. A national overview is also presented at the end, as well as some specific examples from various urban areas, i.e. Madrid, Barcelona, Málaga, Saragossa and some towns in Galicia.

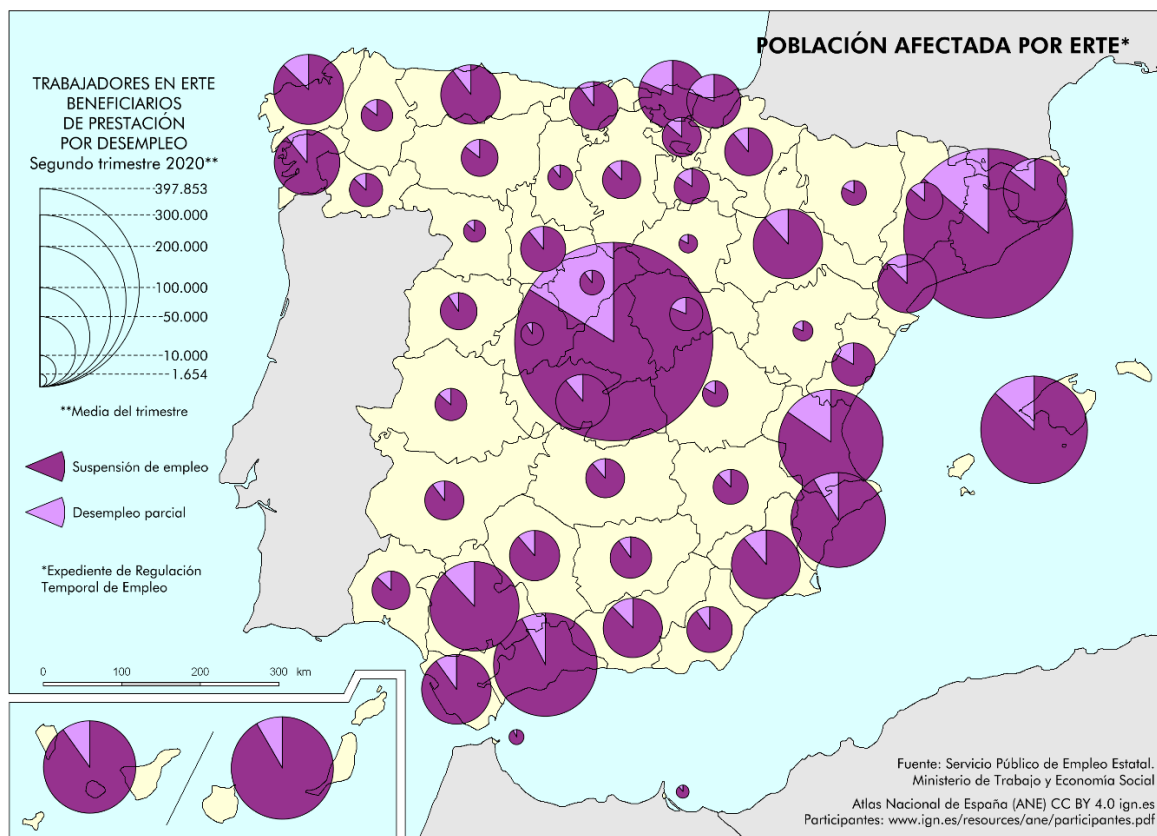


Figure 8. Part 3 – Chapter 15 – Labour market. Population on temporary lay-offs by province.

The third part of the publication includes eight chapters and addresses the effects of the pandemic on the national economy, society and environment. First, it focuses on governance and looks at the decline in mobility during lockdown. It then analyses the national economy during the first half of 2020, divided by economic sectors. It then moves on to the labour market, with a special attention to the rising unemployment, temporary lay-offs and home office. It then studies the public accounts to look at the increase in expenditure and the fall in revenue for the National Treasury as a result of lockdown and the fall in activity. It then analyses the consequences on education and the shift from face-to-face to online study that the whole country was suddenly forced to make in all levels of education. It also studies some solidarity initiatives by civil societies trying to mitigate the consequences of the pandemic. Finally, this publication is completed with the effects of the pandemic on the environment.

This publication comprises different types of graphic contents, i.e. thematic maps considering various aspects of life and nature, maps showing how those aspects have changed over time, maps presenting various geographic areas, i.e. the World, the European Union and Spain, and maps showing data for manifold administrative units within Spain, i.e. regions, provinces, municipalities and boroughs within major towns.

This work has been published in paper in two volumes, i.e. one in Spanish, the other in English. Its digital bilingual version may be accessed via the geoportal of the National Atlas of Spain to be found at [atlasnacional.ign.es/wane](https://atlasnacional.ign.es/wane). The interactive version of the maps may be reached by clicking on each digital map on the geoportal.

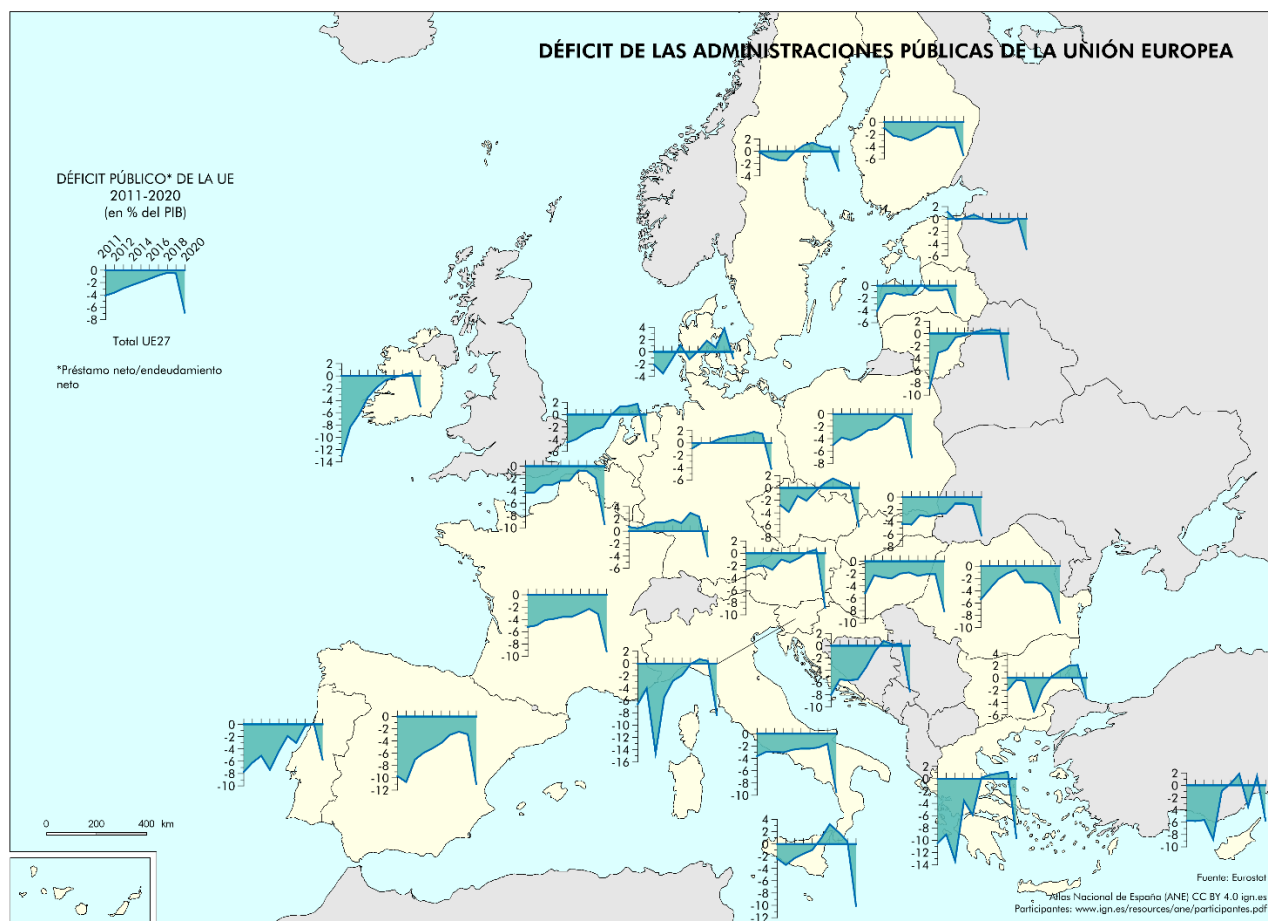


Figure 9. Part 3 – Chapter 16 – Treasury. General government deficit in the European Union.

### 3. Forthcoming targets

Once this monograph on the first wave of the COVID-19 pandemic has been completed, the Department of Thematic Mapping and National Atlas at the National Geographic Institute of Spain resumes now the work that was halted when the pandemic arrived in March 2020 and proceeds to update the General series of the Atlas with the intention of publishing it in spring 2023. All the waves of the pandemic that have affected Europe during the years 2020 and 2021 will be reflected on this General series of the Atlas, as well as the effects that this situation has had on society, economy and environment.

### 4. Conclusions

The Department of Thematic Mapping and National Atlas at the National Geographic Institute of Spain has published a monograph on the first wave of the COVID-19 pandemic. The time studied is limited to the first half of 2020 which is the period for which official data are now available. However, for the first time, provisional –non definitive– data have been used. This publication begins with an overview of the impact of this crisis on the world in general and on the European Union in particular. It then focuses on the effects that the pandemic has had on

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### 5. Notes

At the time of writing this paper, 20 August 2021, the publication is approximately 80% completed in Spanish and 30% in English. Therefore, the work still needs to be finalised and the quality controls applied, what is planned for September-October 2021. Thus, the maps included in the paper may have mistakes, both those in Spanish and those in English. However, they have been included so that the reader may have an idea of what the final publication will look like. By the time this article is presented orally at the International Cartographic Conference to be held in Florence (Italy) in December 2021, the work is expected to be finished and published in both Spanish and English.

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