

Experts' request to the Spanish Government: move Spain towards complete lockdown

We would like to express our concern about the limited capacity of actions taken by the Spanish Government to successfully control the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) outbreak and end the exponential growth phase of new cases. The measures taken so far, consisting primarily of partial restriction mobility, are in the right direction, although some researchers have warned about the pressure placed on the building blocks of the health system.¹

Given that the actual extent of an epidemic can only be assessed retrospectively, governments and policy makers are forced to make decisions on the basis of mathematical models of other diseases and previous experiences by other countries taking different actions.² In Spain, various models simulating the spread of infection and using different assumptions converge in a landscape of a high number of new cases within the next few weeks. Simulations have been done using the URV and UNIZAR models to predict the progression of the number of patients who will require admission into hospital intensive care units because of coronavirus disease 2019 (COVID-19) in three scenarios (appendix): scenario 1, no mobility restrictions; scenario 2, partial restriction of mobility (ie, movement to the workplace allowed for 30% of people); and scenario 3, complete restriction of mobility (ie, no workplace mobility allowed except for essential services).

The model suggests that the actions taken to date, consistent with scenario 2, will be insufficient to prevent hospitals and intensive care units from being overwhelmed over the coming weeks. The foreseen collapse of the health system, along with the age distribution of the Spanish population

(ie, 18% of people aged ≥ 65 years), suggests a potentially high mortality rate associated with COVID-19 in the country. According to our models, the current state is associated with a very high risk of saturation of our health system, which is expected to last from March 26 to April 24, 2020 (appendix). Therefore, we urge the Spanish Government to implement, as swiftly as possible, more drastic measures to minimise the impact of the pandemic on the Spanish population.

As a reference framework (to be adjusted, if applicable), we suggest the following measures. Establish regional categories according to the number of cases per 100 000 population and implement a package of multiple interventions that fit each category (appendix). For example, type A areas (≥ 100 cases per 10^5 inhabitants in the past 7 days) implement a complete shutdown of the region and citizen lockdown, except for essential services (eg, hospitals, health care, and research centres) for a minimum period of 15–21 days. This category includes, as of March 26, 2020, the Autonomous Communities of La Rioja (166 cases per 10^5 inhabitants), Madrid (155), Navarra (142), Basque Country (124), Castilla-La Mancha (127), Catalonia (115), and Castilla y León (109).

Type B areas (< 100 cases per 10^5 inhabitants), which include all areas that are not considered type A, apply partial confinement (30% of work activity and 25% of internal movement allowed) and close monitoring of the growth rate of new infections. If the number of cases in a type B area increases sharply, it becomes a type A area. All non-essential inter-regional land, sea, and air transport must be totally interrupted for at least 15 days.

To implement combined non-pharmacological interventions for several weeks, including complete restriction of movement, work interruption, and social distancing, banning all travel and all non-basic economic activities, together with the intensified use of diagnostic tests in suspected

cases has proven to yield good results.³ Also, there is an urgent need to establish a purchasing and supply channel for personal protective equipment, which is currently insufficient for health personnel who are highly exposed to and prone to contagion. The recent finding on the spreading capacity of SARS-CoV-2 by contamination of eyelashes and hair reinforces this need.⁴

The proposed suppression policies will not mean the end of COVID-19 in Spain in the initial 3–4 weeks; therefore, the development of strategies to sustain the gains is critical. A key lesson from the Asian experience is the need to create a robust surveillance system capable of collecting and reporting epidemiological data down to the individual or household level.⁵ There are two pillars for the development of such a system: (1) the development and implementation of a universal mobile application for self-reporting of suspected COVID-19 symptoms as well as apps to support contact tracing efforts (eg, TraceTogether mobile app; Singapore); and (2) increased diagnostic capacity to test all individuals with symptoms for early isolation. The identification of an increase in the number of cases in an area would trigger quick remedial measures like the implementation of early and targeted suppression actions.

Importantly, we beg the Spanish Government to facilitate the access of the scientific community to outbreak data, thus providing artificial intelligence support in simulation and modelling, and to create core support groups that coordinate a comprehensive, objective, and transparent scientific response.

We declare no competing interests.

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Racism and discrimination in COVID-19 responses

Outbreaks create fear, and fear is a key ingredient for racism and xenophobia to thrive. The coronavirus disease 2019 (COVID-19) pandemic has uncovered social and political fractures within communities, with racialised and discriminatory responses to fear, disproportionately affecting marginalised groups.

Throughout history, infectious diseases have been associated with othering.¹ Following the spread of COVID-19 from Wuhan, China, discrimination towards Chinese people has increased. This includes individual acts of microaggression or violence, to collective forms, for example Chinese people being barred from

establishments.² Rather than being an equaliser, given its ability to affect anyone, COVID-19 policy responses have disproportionately affected people of colour and migrants—people who are over-represented in lower socioeconomic groups, have limited health-care access, or work in precarious jobs. This is especially so in resource-poor settings that lack forms of social protection. Self-isolation is often not possible, leading to higher risk of viral spread. Ethnic minority groups are also at greater risk because of comorbidities—for example, high rates of hypertension in Black populations³ and diabetes in south Asians.⁴ Furthermore, migrants, particularly those without documents, avoid hospitals for fear of identification and reporting, ultimately presenting late with potentially more advanced disease.

Acts of discrimination occur within social, political, and historical contexts. Political leaders have misappropriated the COVID-19 crisis to reinforce racial discrimination, doubling down, for example, on border policies and conflating public health restrictions with antimigrant rhetoric. Matteo Salvini, former Deputy Prime Minister of Italy, wrongly linked COVID-19 to African asylum seekers, calling for border closures.⁵ Similarly, President Donald Trump has referred to severe acute respiratory syndrome coronavirus 2 as the Chinese virus,⁶ linking the health threat to foreign policy and trade negotiations.

Current emergency powers need to be carefully considered for longer-term consequences. Policies necessary to control populations (eg, restriction of movement, or surveillance) might be misappropriated, and marginalised groups have been traditionally targeted. Systems must be put in place to prevent adverse health outcomes from such policies.

The strength of a health system is inseparable from broader social systems that surround it. Epidemics place increased demands on scarce resources and enormous stress on

social and economic systems. Health protection relies not only on a well functioning health system with universal coverage, but also on social inclusion, justice, and solidarity. In the absence of these factors, inequalities are magnified and scapegoating persists, with discrimination remaining long after. Division and fear of others will lead to worse outcomes for all.

We declare no competing interests.

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Department of Error

Mitjà O, Arenas A, Rodó X, Tobias A, Brew J, Benlloch JM. Experts' request to the Spanish Government: move Spain towards complete lockdown. *Lancet* 2020; **395**: 1193–94—The appendix of this Correspondence has been corrected as of March 30, 2020.

Cluver L, Lachman JM, Sherr L, et al. Parenting in a time of COVID-19. *Lancet* 2020; **395**: e64—In this Correspondence, Gretchen Bachman's affiliation should have been "Department of Orphans and Vulnerable Children, United States Agency for International Development, Washington, DC, USA". This correction has been made to the online version as of April 9, 2020.

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Supplementary appendix

This appendix formed part of the original submission. We post it as supplied by the authors.

This online publication has been corrected. The corrected version first appeared at thelancet.com on March 30, 2020.

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Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their correspondence.

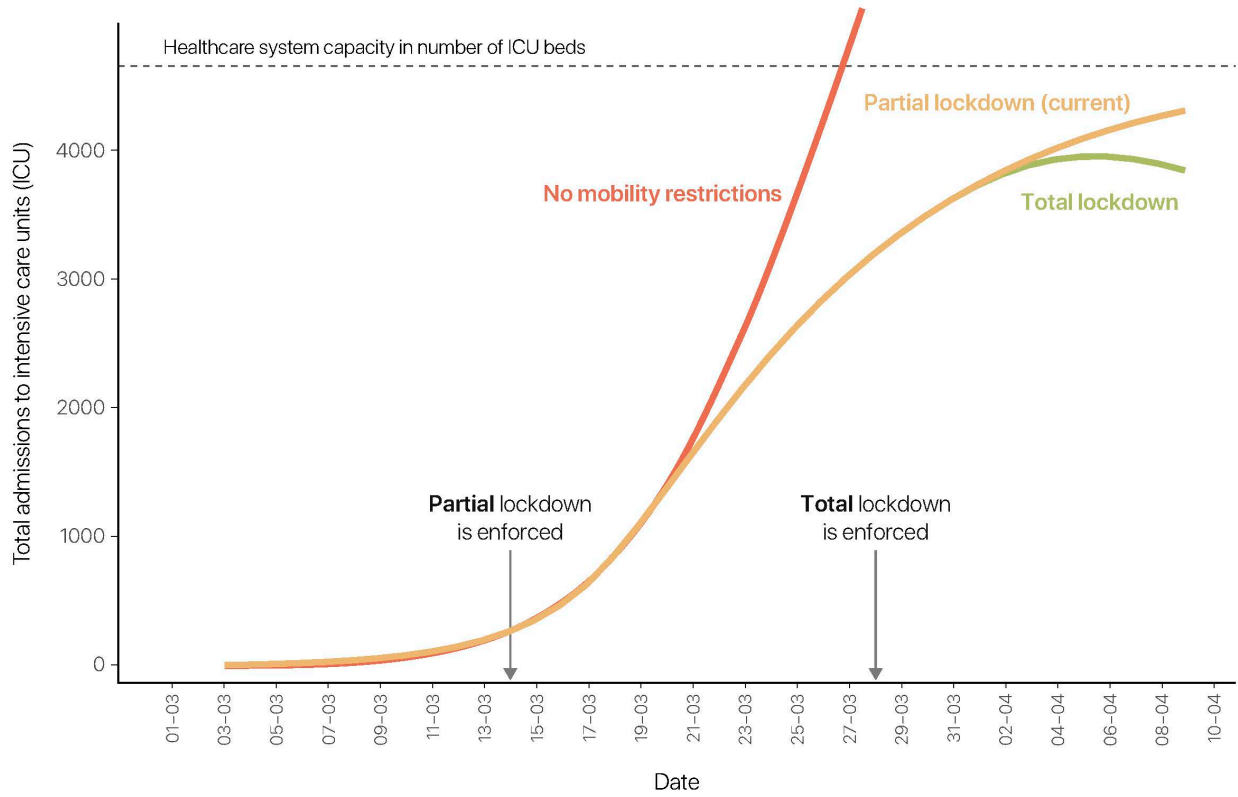
Supplement to: Mitjà O, Arenas A, Rodó X, Tobias A, Brew J, Benlloch JM. Spain needs to move towards complete lockdown. Experts' request to the Spanish Government. Lancet.

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Supplementary material – Figures

Figure 1 – Progression of the number of patients who will require hospitalization in intensive care units (3 scenarios)



Credit – Clara Granell

Figure 2. A) Accumulative number of cases by Autonomous Community since start of the epidemic.

Number of confirmed cases
Data as of 2020-03-25

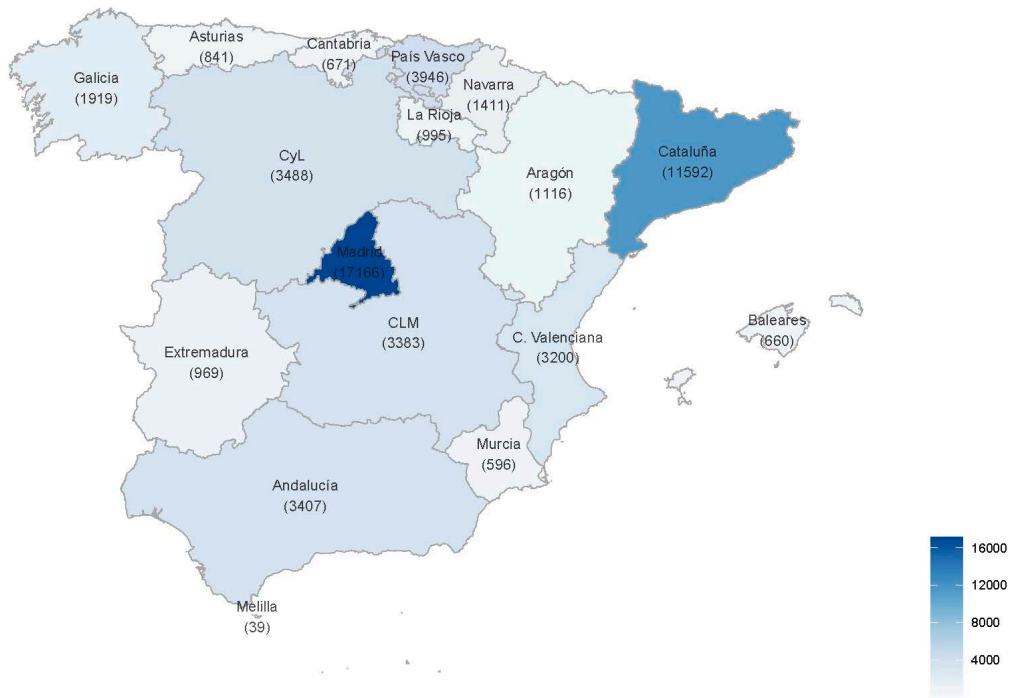
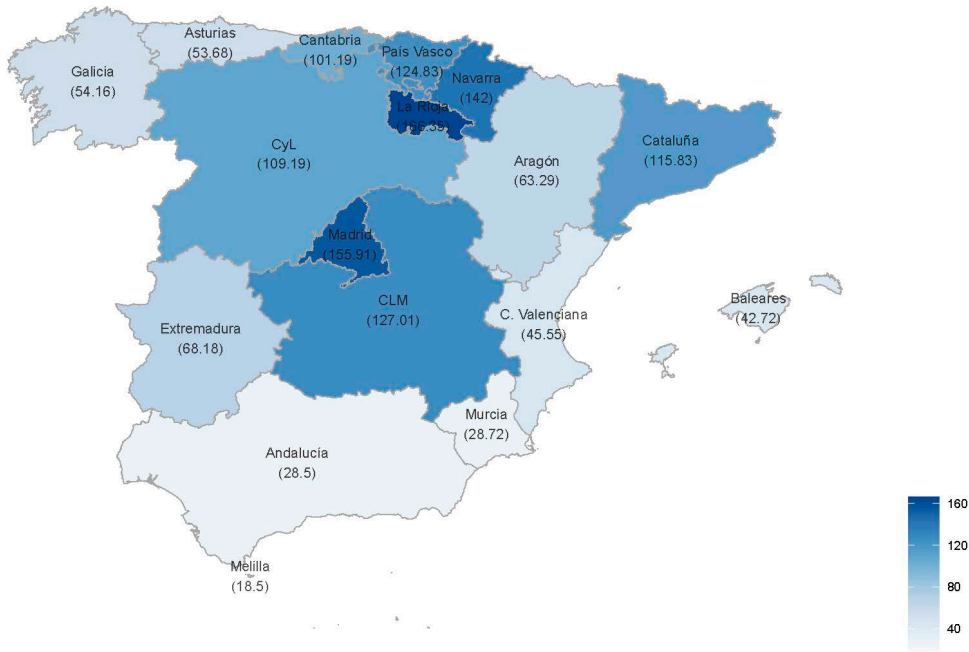


Figure 2. B) Number of cases (7 most recent days) adjusted by population: polygons

Number of confirmed cases per 100,000
Data as of 2020-03-25



Cumulative incidence over the week from 2020-03-19 through 2020-03-25

Credit – Joe Brew

Supplementary material – Mathematical model

The simulation was conducted using the last version of a family of discrete-time epidemiological models,¹ specifically tailored to describe the transmission dynamics of SARS-COV-2, the etiological agent of COVID-19. The model aims to estimate the risk rate for each Spanish municipality, considering the following parameters: (1) the transmission dynamics of SARS-COV-2, (2) the usual movement patterns of the Spanish population, and (3) the demographics of the Spanish population.

Transmission dynamics

Virus transmission was described using a compartmental model that groups the population according to the infection status into the following categories:

- **Susceptible:** individuals without COVID-19, but still at risk.
- **Exposed:** infected individuals within the incubation phase and no transmission capacity.
- **Asymptomatic:** infected individuals without clinically relevant symptoms but transmission capacity.
- **Infected:** individuals with symptoms that are likely to be attributed to COVID-19.
- **Hospitalized:** infected individuals who have been identified and admitted to a hospital, thus blocking the transmission capacity.
- **Recovered:** individuals who have been infected but cannot transmit the disease because they have either died or recovered and developed immunity.

Movement patterns of the Spanish population

Transitions between the infection states drive the probabilities of transmission, recovery, etc., obtained from COVID-19 studies published to date. Regarding movements, we have included data from the National Institute of Statistics (NIS) on travel to the workplace between and within towns.² The NIS record includes all movements between Spanish municipalities greater than 100 inhabitants and reporting more than 10 trips. The inclusion of individual movements into the model is essential to understand how the virus spreads across the country and allows simulating the outcome of movement restrictions both globally and locally.

Spanish demographics

The Spanish population has been divided into three age groups:

- Young (from 0 to 25 years old).
- Adult (from 26 to 65 years old).
- Older (more than 65 years old).

The rationale for age grouping has been based on the recent evidence on COVID-19 that shows a different effect of the infection in each age group.⁴ In our model, the following differences between age groups have been considered:

- Young and older are less likely to move across the territory than adults.
- Young are more likely to experience an asymptomatic disease (or with mild symptoms) and are, therefore, more challenging to identify.
- Older people are more likely to require hospitalization than young and adults.

Limitations

- The model does not predict or consider international inputs of infected individuals.
- The model has been based on epidemiologic parameters reported to date; however, these parameters may change in the near future.
- The model assumes the movement data reported by the NIE, which may vary in case of mobility restrictions.

Strengths

- The model allows modifying the epidemiologic parameters as new reports come up.

- The model allows for investigating the influence of the asymptomatic period and associated infectivity.
- Based on the current parameters, we can build risk maps of new cases and foresee infection spread by asymptomatic subjects.
- General mobility restrictions can be quickly introduced into the model to yield new predictions with these assumptions. This feature is of particular interest for policymakers and health authorities, which will be able to explore the foreseen impact of the previewed restrictions on infection spread.

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