

# UNIVERSIDAD DE VERANO DE MASPALOMAS

Maspalomas vuelve a ilusionar

## CURSO IMPACTO SOCIAL Y ECONÓMICO EN CANARIAS DEL COVID-19

Más de un año  
de crisis sanitaria, turística,  
económica y social.  
¿Cuáles han sido sus efectos  
sobre nuestra población?

Julio 2021  
Del LUNES 12 al VIERNES 16  
en el Centro Cultural Maspalomas  
SAN BARTOLOMÉ DE TIRAJANA

ULPGC  
Universidad de  
Las Palmas de  
Gran Canaria

www.universidadveranomaspalomas.com



## ¿Economía de la Salud vs Salud de la Economía?

Beatriz Gonzalez Lopez-Valcarcel  
ULPGC  
[beatriz.lopezvalcarcel@ulpgc.es](mailto:beatriz.lopezvalcarcel@ulpgc.es)

14 Julio 2021

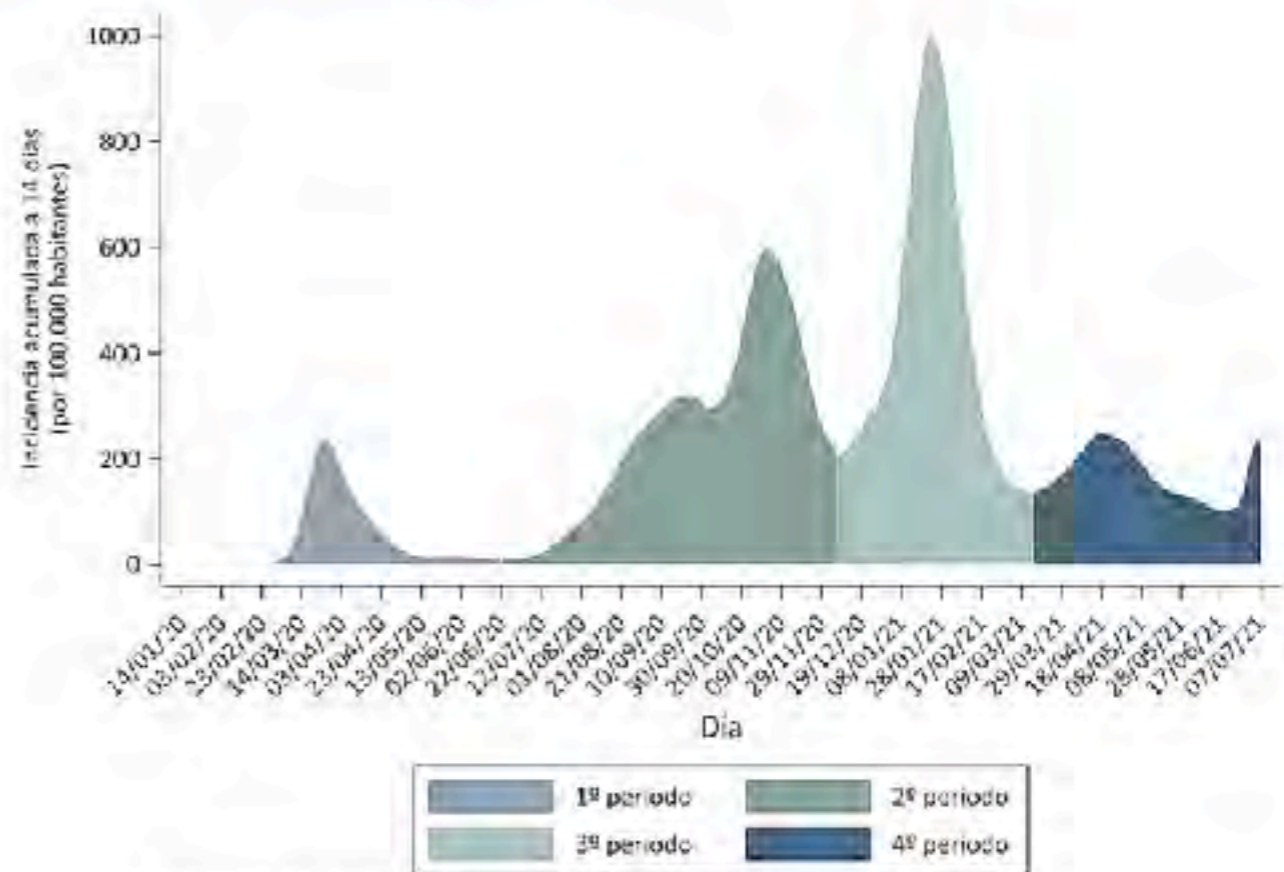
Un **año** muy **largo**

El mundo **ya no será el que era**

**Ni Europa (UES, NextG**  
estrategia de vacunas)

Ni el sistema sanitario

Figura 1. Periodos epidémicos de COVID-19 en España



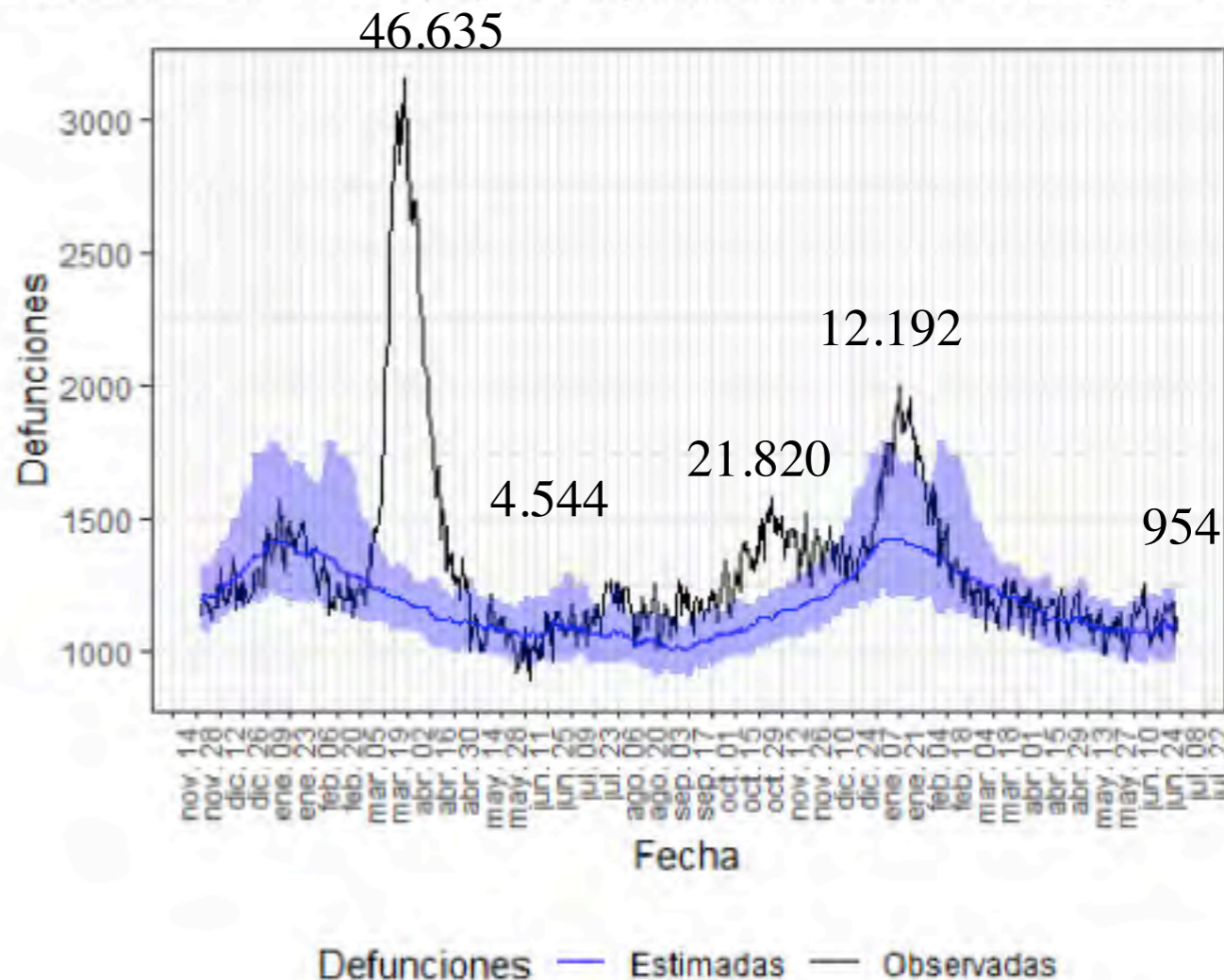
Fuente: CNE, ISCIII, Red Nacional de Vigilancia Epidemiológica.

Fuente: **ISCIII**

La COVID pudo haber matado a 10 millones de personas en el mundo(1)

En España, **excesos de mortalidad** (MoMo)(2): hasta 20/05/2021 **86.145**

Figura 1. Mortalidad por todas las causas observada y esperada. España, diciembre 2019 hasta 06 de julio de 2021



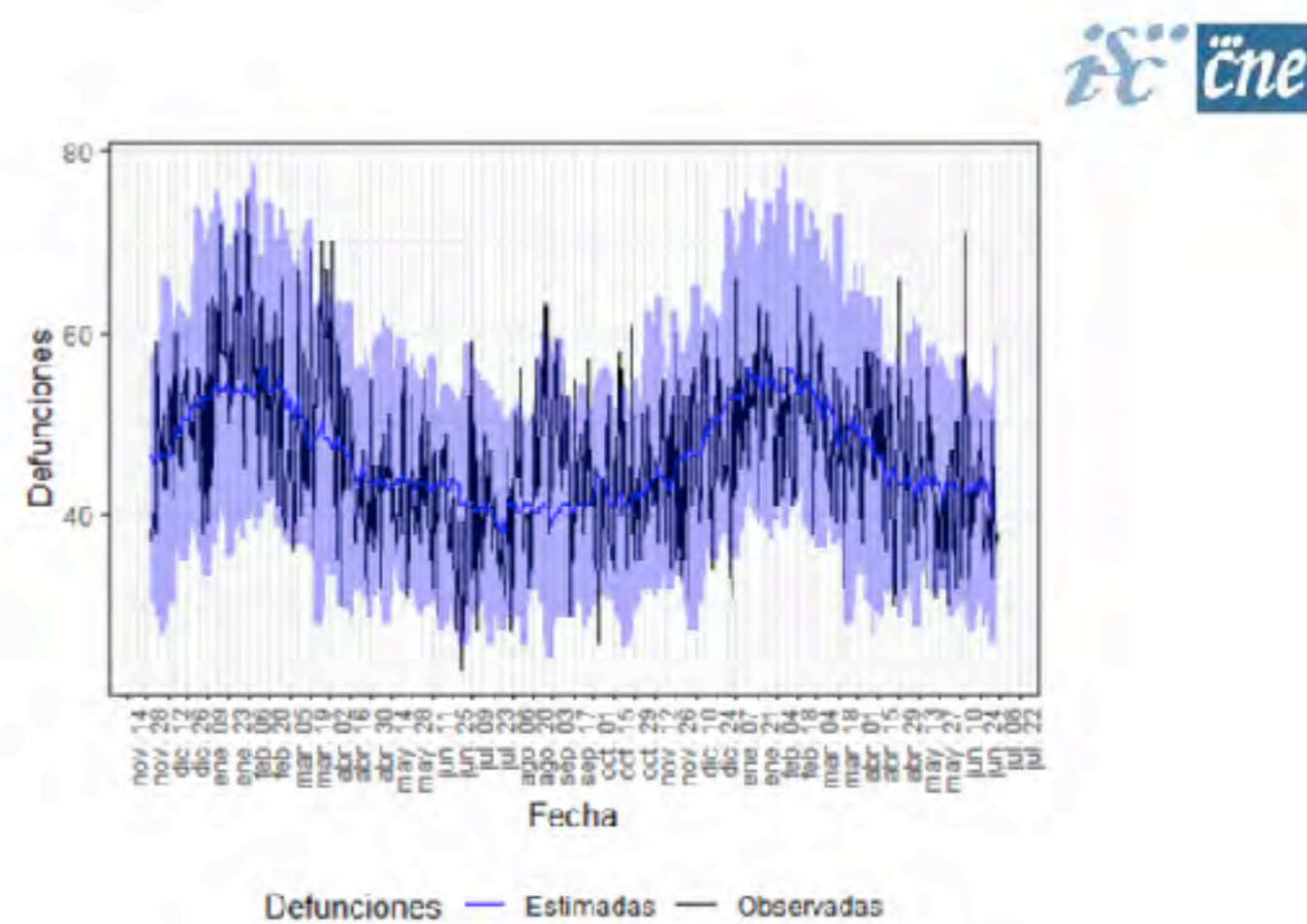
(1) The Economist “Ten million reasons to vaccinate the world (15 mayor 2021)

(2) [https://www.isciii.es/QueHacemos/Servicios/VigilanciaSaludPublicaRENAVE/EnfermedadesTransmisibles/MoMo/Documents/informesMoMo2021/MoMo\\_Situacion%20a%206%20de%20julio\\_CNE.pdf](https://www.isciii.es/QueHacemos/Servicios/VigilanciaSaludPublicaRENAVE/EnfermedadesTransmisibles/MoMo/Documents/informesMoMo2021/MoMo_Situacion%20a%206%20de%20julio_CNE.pdf)

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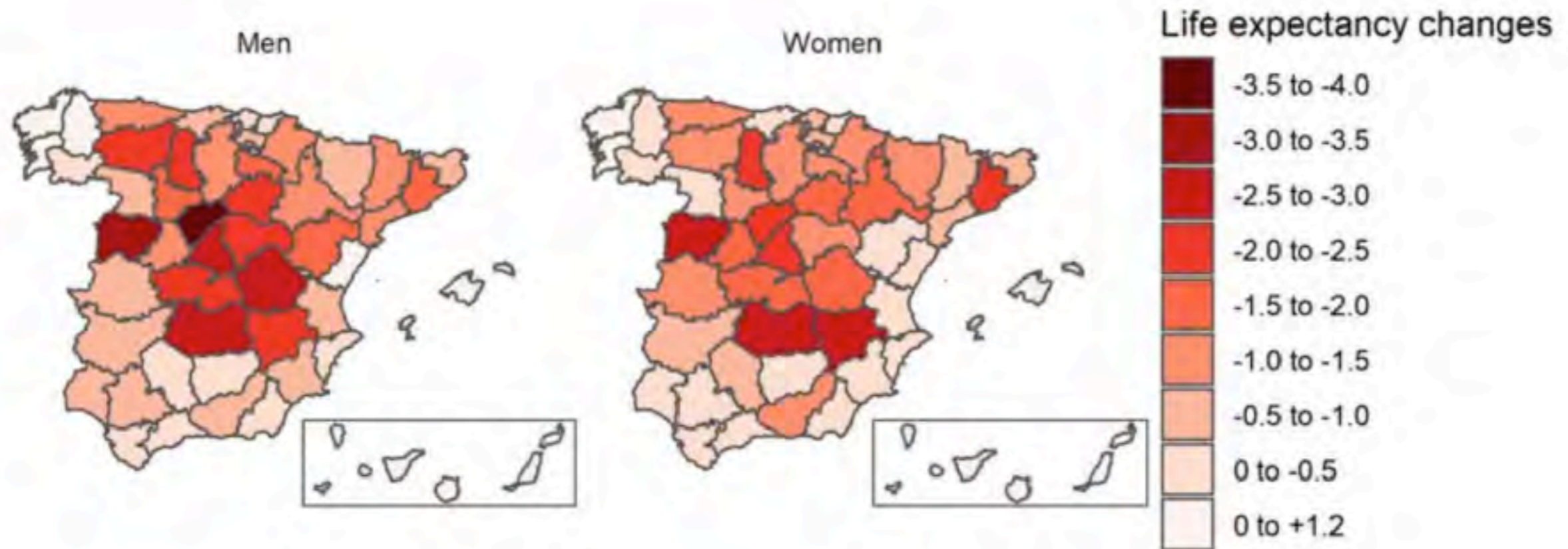
**Canarias:** No ha habido exceso de mortalidad (MoMo). Fallecidos COVID: 793



(1) The Economist “Ten million reasons to vaccinate the world (15 mayor 2021)

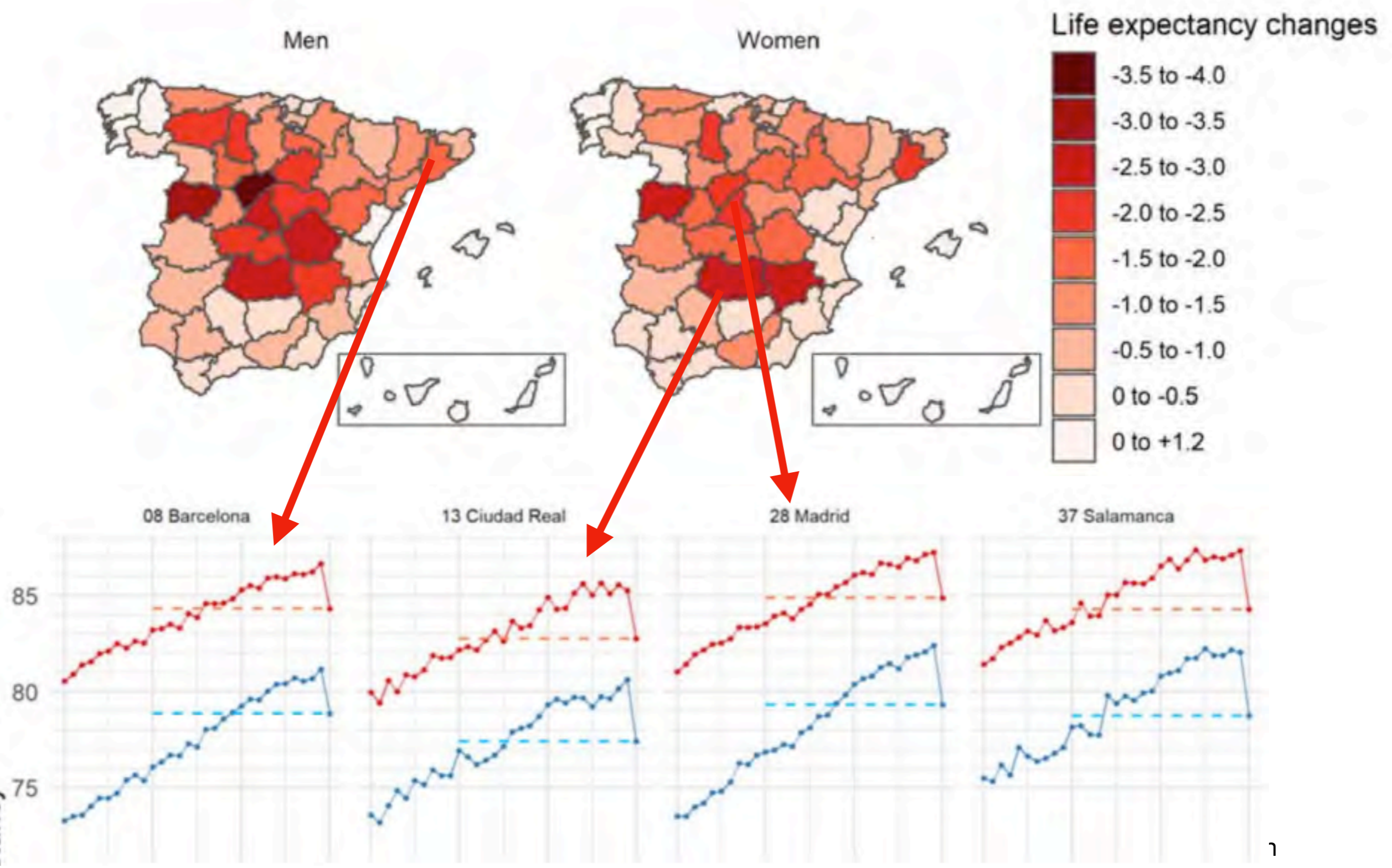
(2) [https://www.isciii.es/QueHacemos/Servicios/VigilanciaSaludPublicaRENAVE/EnfermedadesTransmisibles/MoMo/Documents/informesMoMo2021/MoMo\\_Situacion%20a%206%20de%20julio\\_CNE.pdf](https://www.isciii.es/QueHacemos/Servicios/VigilanciaSaludPublicaRENAVE/EnfermedadesTransmisibles/MoMo/Documents/informesMoMo2021/MoMo_Situacion%20a%206%20de%20julio_CNE.pdf)

**Figure 1.** Life expectancy changes in Spanish provinces in 2020 as compared with 2017-19



La EVN en España ha caído en 2020 1.2 años (H) y 1.1 años (M). Desigualmente por provincias, hasta 3.5 años (3)

Figure 1. Life expectancy changes in Spanish provinces in 2020 as compared with 2017-19



# 1. Introducción

# 2. Coste de la COVID-19

# 3. Desigualdades

# 4. Economía de la prevención

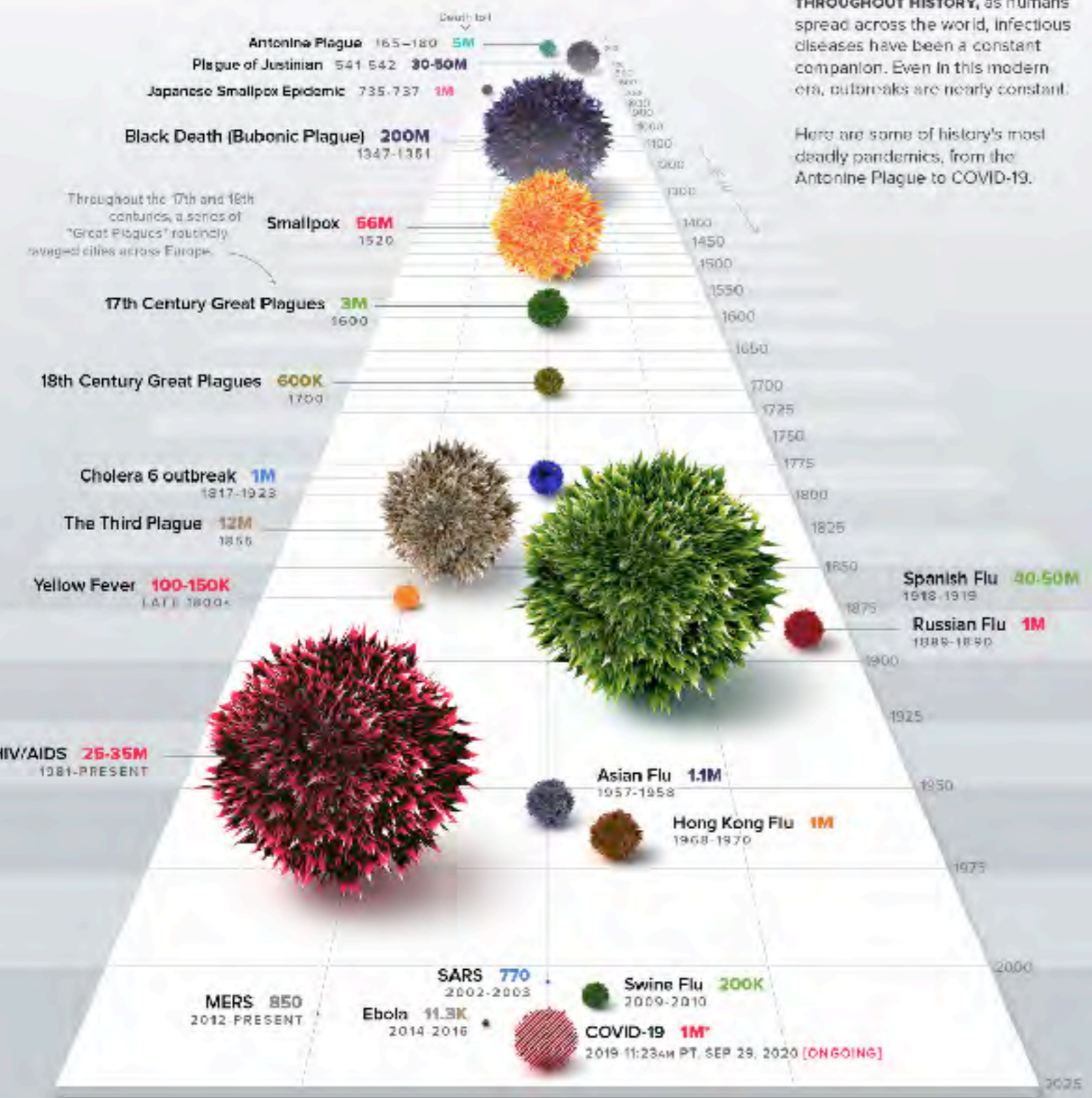
# 5. Conclusión

## HISTORY OF PANDEMICS

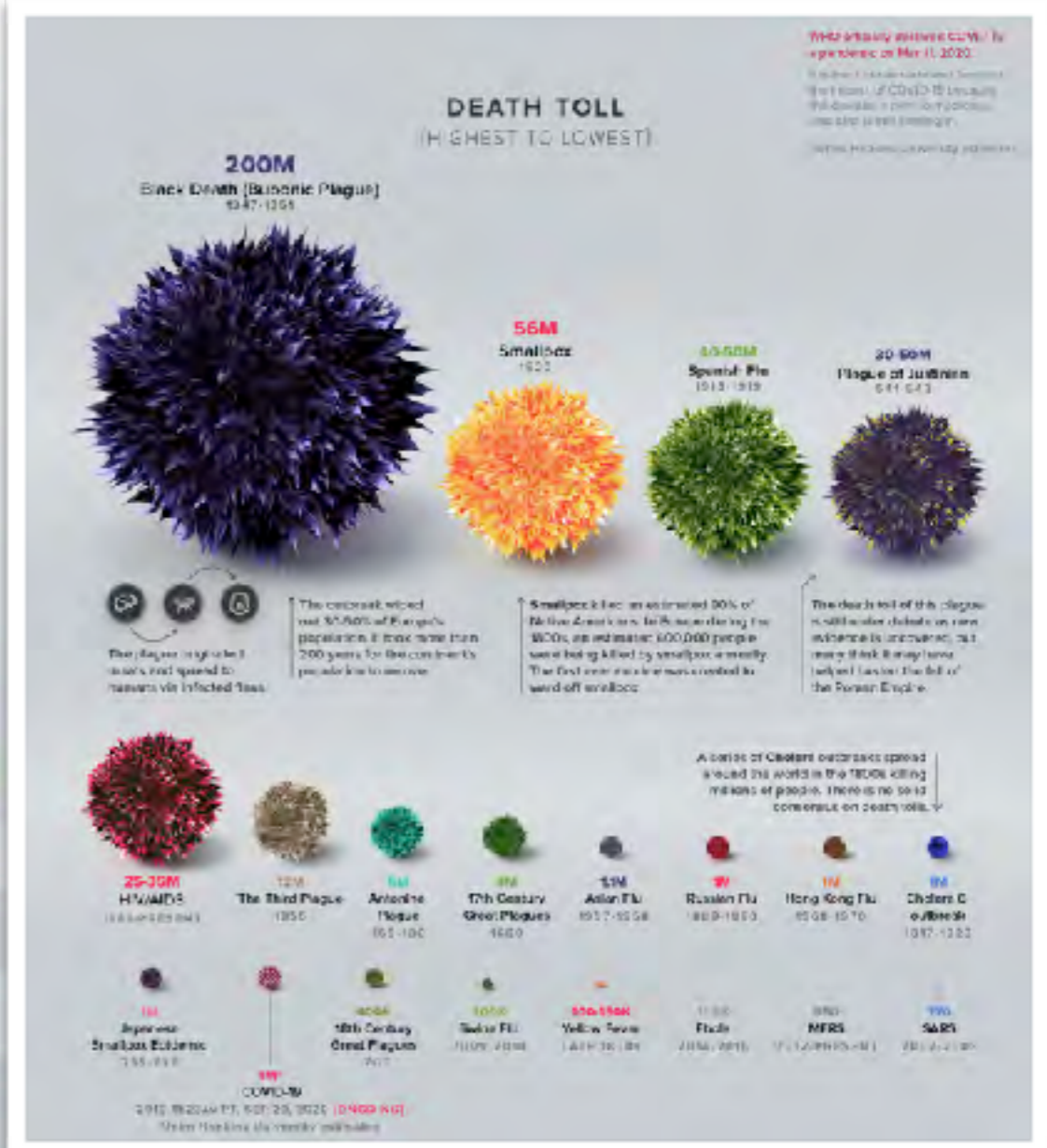
PAN-DEM-IC (of a disease) prevalent over a whole country or the world.

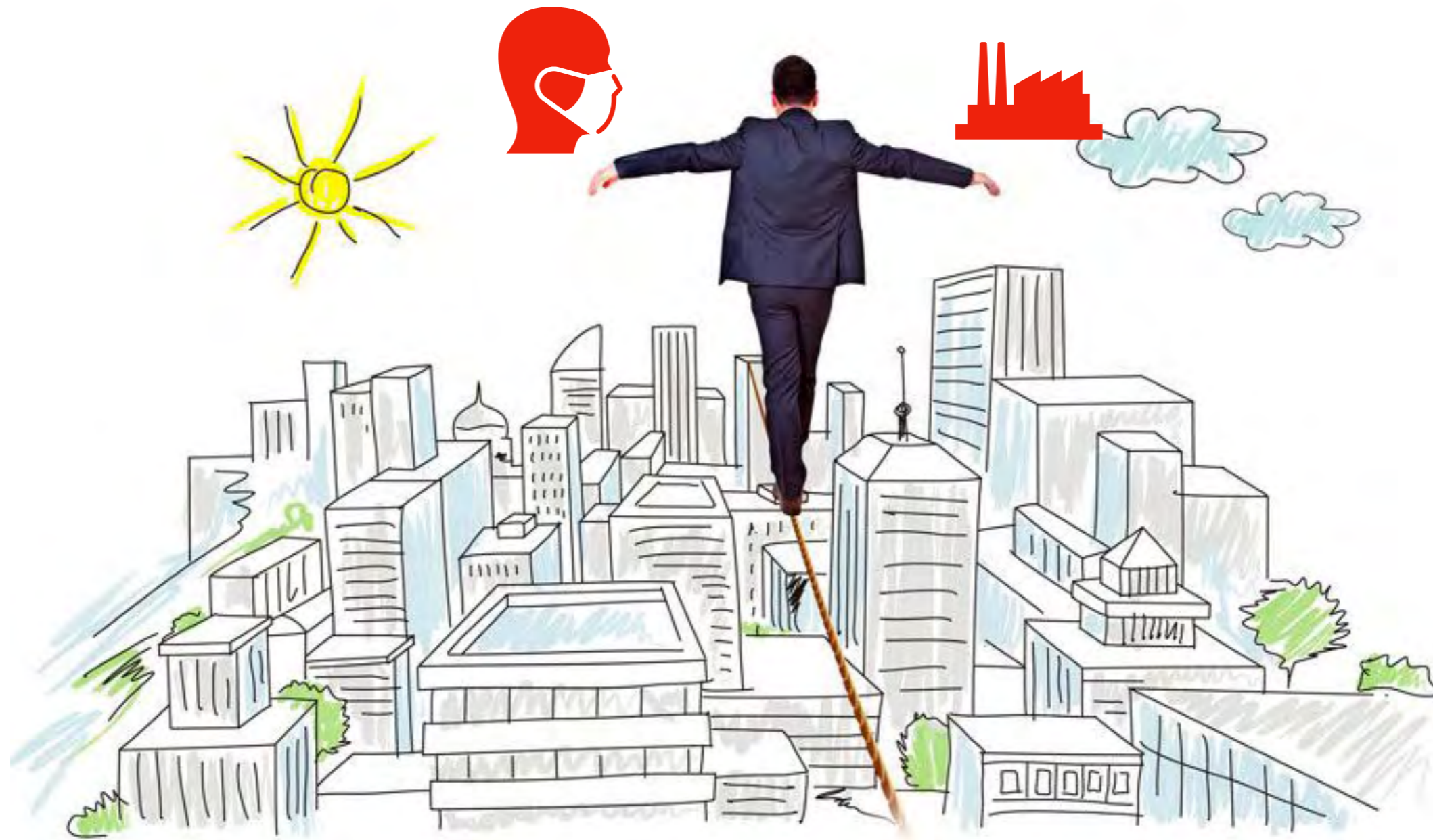
THROUGHOUT HISTORY, as humans spread across the world, infectious diseases have been a constant companion. Even in this modern era, outbreaks are nearly constant.

Here are some of history's most deadly pandemics, from the Antonine Plague to COVID-19.



**Cuarentenas** desde la Edad Media. Consecuencias **económicas**, variables





Nunca las **políticas económicas** habían sido tan **sanitarias**, nunca las políticas de **salud** habían tenido tanto **impacto económico**



Importa el coste macroeconómico  
(PIB) atribuible a la COVID pero  
también su distribución(\*)

(\*) <https://inequality-tracker.caixabankresearch.com/>

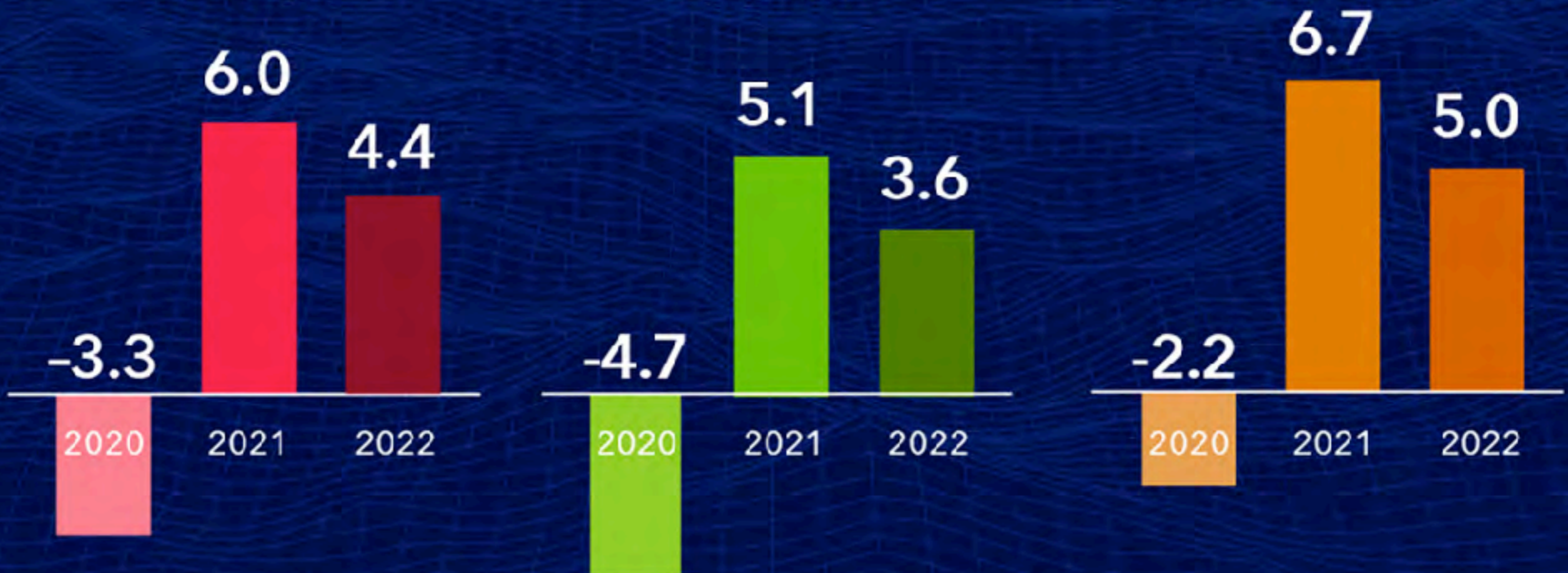
## WORLD ECONOMIC OUTLOOK APRIL 2021

# GROWTH PROJECTIONS

### GLOBAL ECONOMY

### ADVANCED ECONOMIES

### EMERGING MARKETS & DEVELOPING ECONOMIES



## Latest World Economic Outlook Growth Projections

(real GDP, annual percent change)	PROJECTIONS		
	2020	2021	2022
<b>World Output</b>	-3.3	6.0	4.4
<b>Advanced Economies</b>	-4.7	5.1	3.6
United States	-3.5	6.4	3.5
Euro Area	-6.6	4.4	3.8
Germany	-4.9	3.6	3.4
France	-8.2	5.8	4.2
Italy	-8.9	4.2	3.6
Spain	-11.0	6.4	4.7
Japan	-4.8	3.3	2.5
United Kingdom	-9.9	5.3	5.1
Canada	-5.4	5.0	4.7
Other Advanced Economies	-2.1	4.4	3.4
<b>Emerging Market and Developing Economies</b>	-2.2	6.7	5.0
Emerging and Developing Asia	-1.0	8.6	6.0
China	2.3	8.4	5.6
India	-8.0	12.5	6.9
ASEAN-5	-3.4	4.9	6.1
Emerging and Developing Europe	-2.0	4.4	3.9
Russia	-3.1	3.8	3.8
Latin America and the Caribbean	-7.0	4.6	3.1
Brazil	-4.1	3.7	2.6
Mexico	-8.2	5.0	3.0
Middle East and Central Asia	-2.9	3.7	3.8
Saudi Arabia	-4.1	2.9	4.0
Sub-Saharan Africa	-1.9	3.4	4.0
Nigeria	-1.8	2.5	2.3
South Africa	-7.0	3.1	2.0
<i>Memorandum</i>			
Emerging Market and Middle-Income Economies	-2.4	6.9	5.0
Low-Income Developing Countries	0.0	4.3	5.2

El coste de la pandemia es mayor (contrafactual: dejar de crecer)

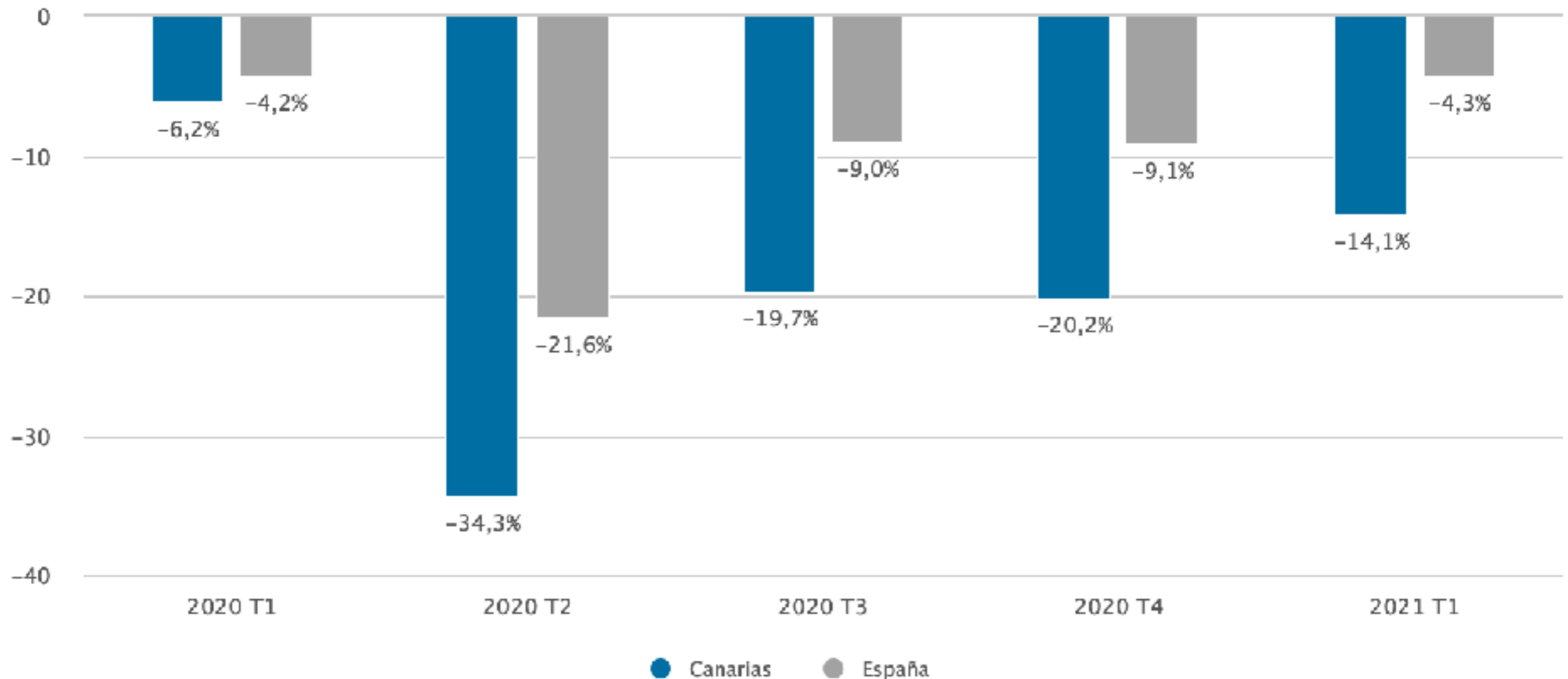
España es el país más afectado de Europa. Europa, peor que las economías avanzadas

Annex Table 1.1.1. European Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment (Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices <sup>1</sup>			Current Account Balance <sup>2</sup>			Unemployment <sup>3</sup>		
	2020	Projections		2020	Projections		2020	Projections		2020	Projections	
		2021	2022		2021	2022		2021	2022		2021	2022
Europe	-5.2	4.5	3.9	2.0	3.1	2.7	1.8	2.2	2.1	...	...	...
Advanced Europe	-6.8	4.5	4.0	0.4	1.4	1.3	2.2	2.5	2.4	7.1	8.0	7.8
Euro Area <sup>4,5</sup>	-6.6	4.4	3.8	0.3	1.4	1.2	2.3	2.8	2.7	7.9	8.7	8.5
Germany	-4.9	3.8	3.4	0.4	2.2	1.1	7.1	7.8	7.0	4.2	4.4	3.7
France	-8.2	5.8	4.2	0.5	1.1	1.2	-2.3	-2.1	-1.8	8.2	9.1	9.2
Italy	-8.9	4.2	3.6	-0.1	0.8	0.9	3.6	3.5	3.4	9.1	10.3	11.6
Spain	-11.0	6.4	4.7	-0.3	1.0	1.3	0.7	1.0	1.9	15.5	16.8	15.8

Canarias:

Tasa de variación interanual del índice de volumen del PIB ajustado de estacionalidad y de calendario. Canarias y España desde 2020



# Canarias



## ¿Por qué cae el PIB? Tres Mecanismos(\*)

- 1. Impacto **directo**. Reducción del consumo y aumento del ahorro
- 2. Impacto **indirecto** vía **mercados financieros** y su impacto en la economía real (reducción de riqueza)
- 3. **Disrupción de la oferta**. Cadenas de suministros, demanda de trabajo y empleo,...

## ¿Por qué cae el PIB? Causas

- 1. **Exógenas** al país. Dependen de la pandemia en otros países con los que se tiene más conectividad
- 2. **Inevitables**. Causadas por las restricciones a la movilidad y a la actividad económica incluso con la política óptima dado el conocimiento del momento
- 3. **Evitables** con una mejor gestión de la pandemia (intervenciones óptimas de los gobiernos)

En la práctica, no se puede diferenciar claramente entre (2) y (3)

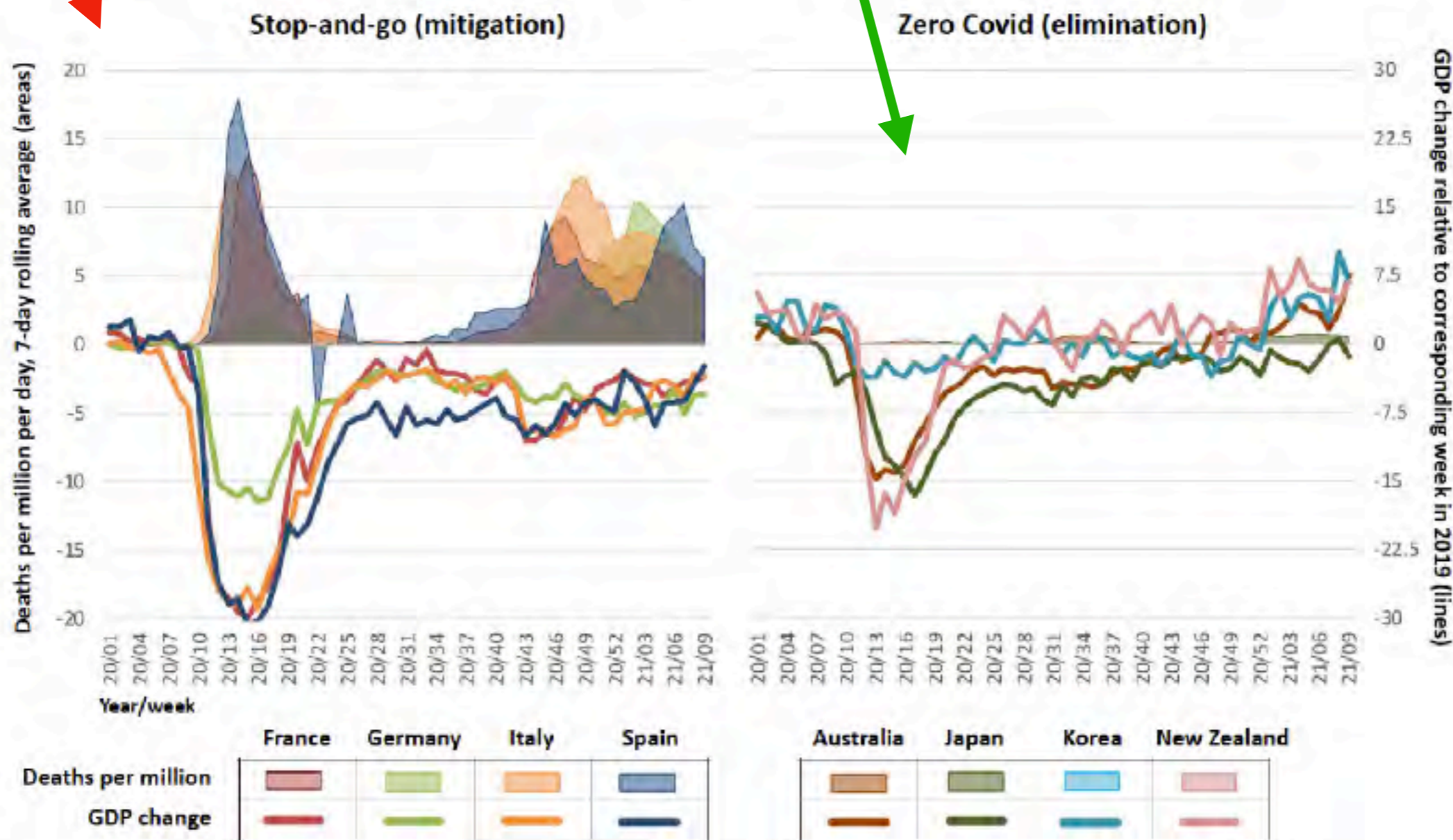
### Countries that were unable to control their outbreaks have tended to suffer the most economic pain





# Red Zone Strategy vs Green Zone Strategy

Figure 1 Daily death per million (areas) and weekly GDP estimates (lines)



Sources: Areas: Roser et al. (2020); GDP estimates: OECD Weekly Tracker of economic activity, see also Woloszko (2020).

<https://voxeu.org/article/aiming-zero-covid-19-ensure-economic-growth>

# Global responses to the pandemic

Oxford Covid-19 government response stringency index

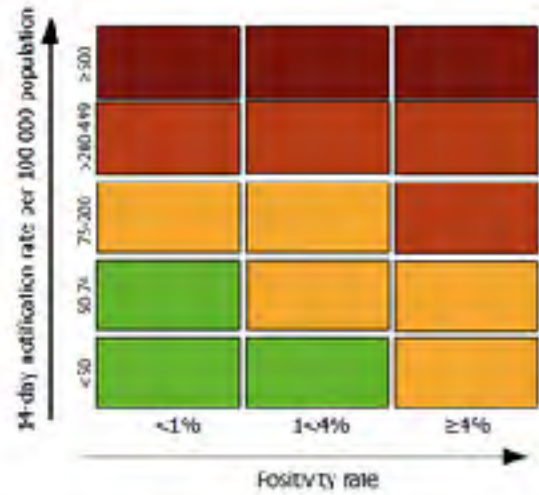


Graphic: Max Harlow, Caroline Nevitt and Aleksandra Wisniewska  
 Source: Blavatnik School of Government, University of Oxford  
 © FT



4 de julio 2021

14-day COVID-19 case notification rate per 100 000 population and test positivity, EU/EEA weeks 25 - 26



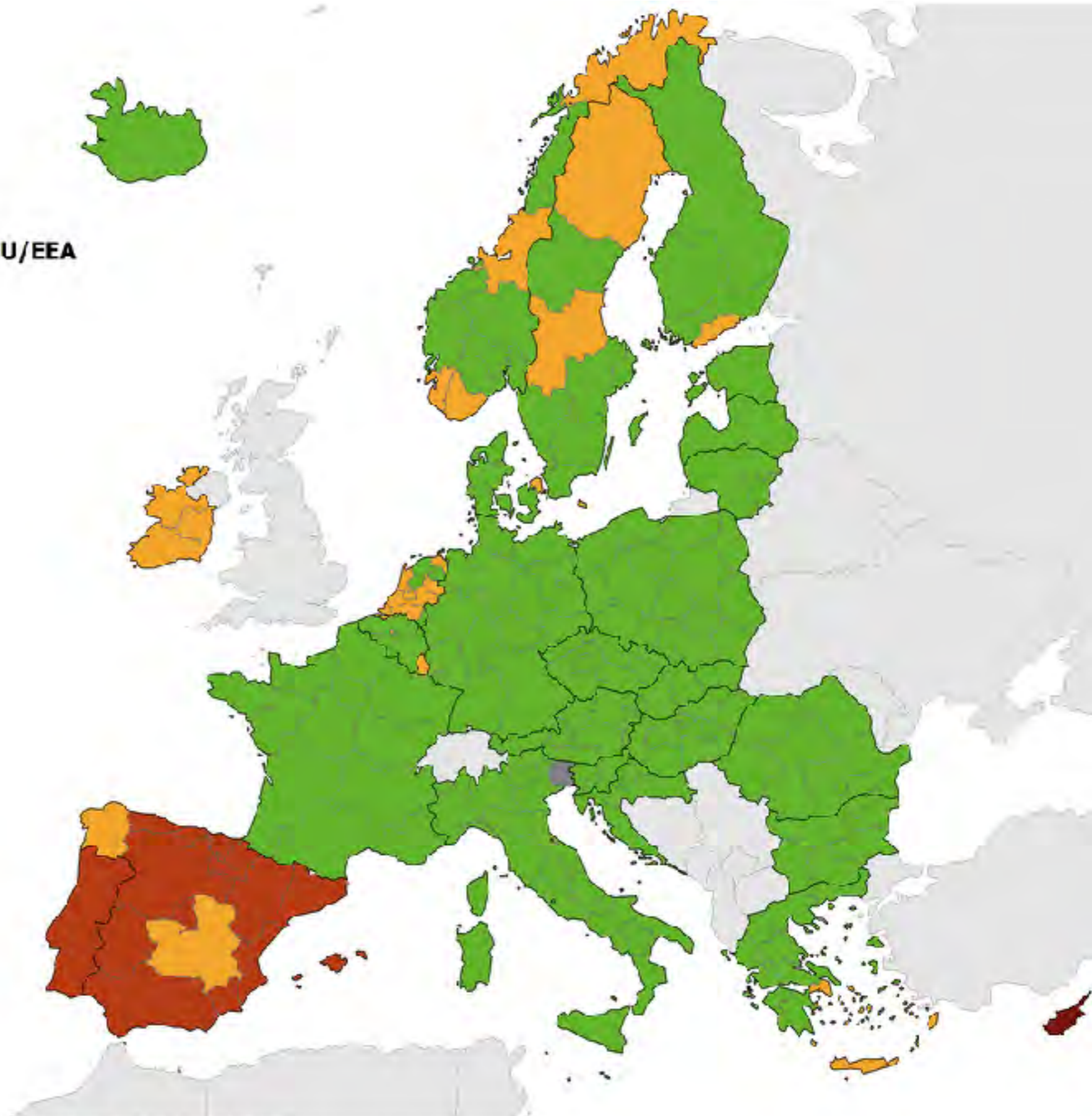
- Testing rate < 300 per 100 000 population
- No data available
- Not included

Regions not visible in the main map extent

- Azores
- Guadeloupe and Saint Martin
- La Reunion
- Martinique
- Canary Islands
- Guyane
- Madeira
- Mayotte

Countries not visible in the main map extent

- Malta
- Liechtenstein

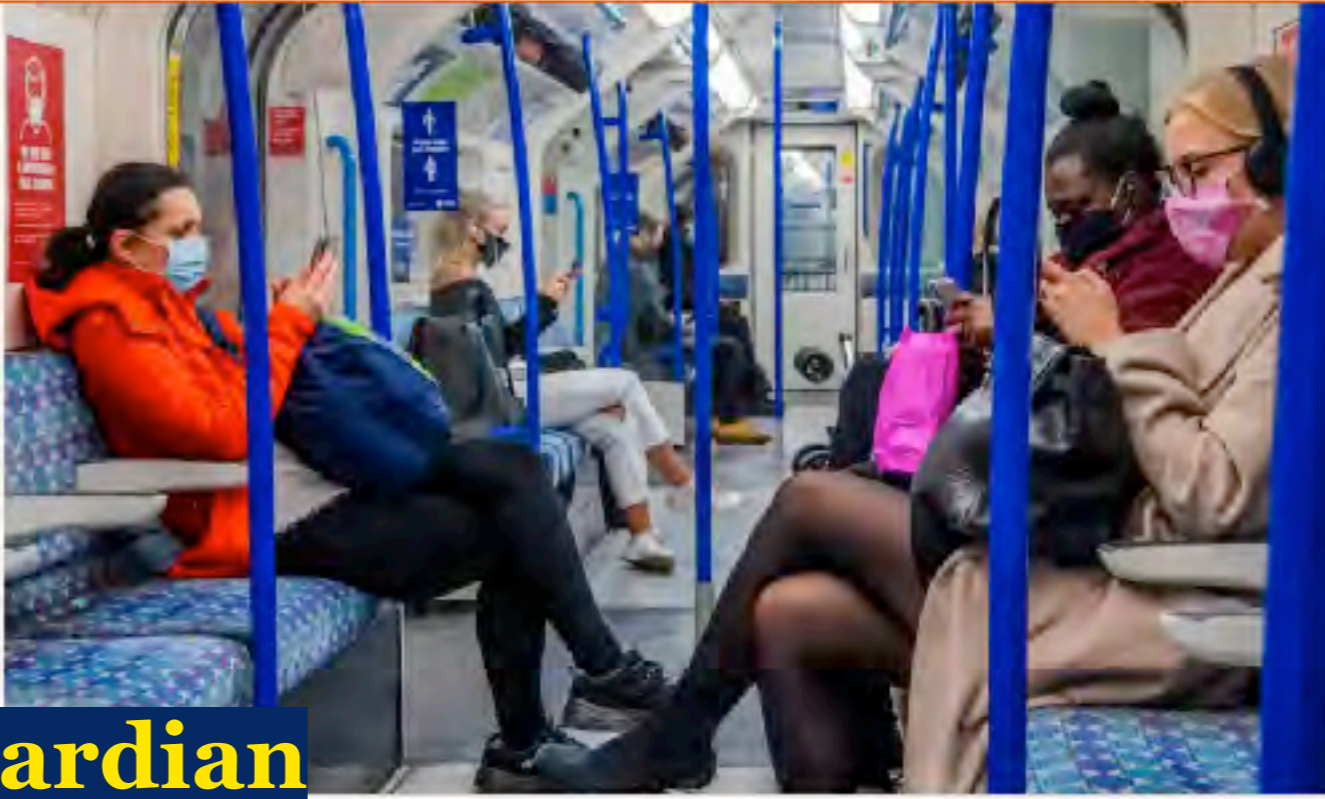


# /// Boris Johnson gave two reasons for lifting all restrictions. Both are wrong

Allowing mass infections now is a terrible idea, even with so many vaccinated, says Christina Pagel, director of UCL's Clinical Operational Research Unit

🕒 13 Jul 2021

**the Guardian**



## Mass infection is not an option: we must do more to protect our young

As the third wave of the pandemic takes hold across England, the UK Government plans to further re-open the nation. Implicit in this decision is the acceptance that infections will surge, but that this does not matter because vaccines have “broken the link between infection and mortality”.<sup>1</sup> On July 19, 2021—branded as Freedom Day—almost all restrictions are set to end. We believe this decision is dangerous and premature.

An end to the pandemic through population immunity requires enough of the population to be immune to prevent exponential growth of SARS-CoV-2. Population immunity is unlikely to be achieved without much higher levels of vaccination than can be reasonably expected by July 19, 2021. Proportionate mitigations will be needed to avoid hundreds of thousands of new infections, until many more are vaccinated. Nevertheless, the UK Government’s intention to ease restrictions from July 19, 2021, means that immunity will be achieved by vaccination for some people but by natural infection for others (predominantly the young). The UK Health Secretary has stated that daily cases could reach 100 000 per day over the summer months of 2021.<sup>2</sup> The link

already suffered greatly. Official UK Government data show that as of July 4, 2021, 51% of the total UK population have been fully vaccinated and 68% have been partially vaccinated. Even assuming that approximately 20% of unvaccinated people are protected by previous SARS-CoV-2 infection, this still leaves more than 17 million people with no protection against COVID-19. Given this, and the high transmissibility of the SARS-CoV-2 Delta variant, exponential growth will probably continue until millions more people are infected, leaving hundreds of thousands of people with long-term illness and disability.<sup>3</sup> This strategy risks creating a generation left with chronic health problems and disability, the personal and economic impacts of which might be felt for decades to come.

Second, high rates of transmission in schools and in children will lead to significant educational disruption, a problem not addressed by abandoning isolation of exposed children (which is done on the basis of imperfect daily rapid tests).<sup>5</sup> The root cause of educational disruption is transmission, not isolation. Strict mitigations in schools alongside measures to keep community transmission low and eventual vaccination of children will ensure children can remain in schools safely.<sup>6-8</sup> This is all the more important for clinically and socially vulnerable children. Allowing transmission to continue over the summer will create a reservoir of infection, which will

the most disadvantaged in our country and other countries with poor access to vaccines.

Fourth, this strategy will have a significant impact on health services and exhausted health-care staff who have not yet recovered from previous infection waves. The link between cases and hospital admissions has not been broken, and rising case numbers will inevitably lead to increased hospital admissions, applying further pressure at a time when millions of people are waiting for medical procedures and routine care.

Fifth, as deprived communities are more exposed to and more at risk from COVID-19, these policies will continue to disproportionately affect the most vulnerable and marginalised, deepening inequalities.

In light of these grave risks, and given that vaccination offers the prospect of quickly reaching the same goal of population immunity without incurring them, we consider any strategy that tolerates high levels of infection to be both unethical and illogical. The UK Government must reconsider its current strategy and take urgent steps to protect the public, including children. We believe the government is embarking on a dangerous and unethical experiment, and we call on it to pause plans to abandon mitigations on July 19, 2021.

Instead, the government should delay complete re-opening until everyone, including adolescents, have been offered vaccination and uptake is



Published Online:

July 7, 2021

[https://doi.org/10.1016/S0140-6736\(21\)01589-0](https://doi.org/10.1016/S0140-6736(21)01589-0)

For UK Government COVID-19

vaccination data see:

<https://coronavirus.data.gov.uk/details/vaccinations>



Rutte last week reimposed curbs on bars, restaurants and nightclubs in the **Netherlands** and cancelled all events involving large crowds until at least 14 August as new cases rose almost sevenfold, from a rolling seven-day average of 49 for every million people on 4 July to nearly 330 at the weekend.

“We had poor judgment, which we regret and for which we apologise.” At least 30 event organisers have launched joint legal proceedings over the U-turn.

*Officials said that of the infections that could be tracked to their source, 37% happened in a hospitality venue such as a bar or club.*

**the Guardian** 12-13 de julio 2021

**Coronavirus live: Netherlands cases rise by more than 500% after reopening; South Korea tightens curbs**

**Dutch PM sorry for early reopening as France tightens Covid rules**



▲ Due to a surge in the number of Covid infections in the Netherlands, the government announced all restaurants and bars must be closed from midnight to 6am. Photograph: Evert Elzinga/EPA

**the Guardian** 12-14 de julio 20212h ago  
06:25**South Korea reports 1,615 new cases as distancing rules tightened for most of country**

South Korea on Wednesday tightened social distancing curbs across most of the country to try to combat its worst-ever outbreak of coronavirus after new cases on Tuesday soared past previous daily peaks to 1,615.

Amid growing concerns over the more contagious Delta variant and a stagnating vaccine rollout, the latest daily tally easily surpassed the previous record - last Friday's 1,378.

Cluster infections have spread rapidly around the capital Seoul and neighbouring areas fuelled by the Delta variant, the Korea Disease Control and Prevention Agency (KDCA) said.

Prime minister Kim Boo-kyum said from Thursday the government would tighten distancing rules across most of the country, with the exception of some southern regions, to level 2 on the country's four-level scale. Under level 2, gatherings of more than eight people are banned, and restaurants and bars must close by midnight.

That is still two levels below the toughest curbs available to the government. Those restrictions - level 4, including a ban on gatherings of more than two people after 6pm - were imposed from Monday in the greater Seoul area.

**Coronavirus live: Netherlands cases rise by more than 500% after reopening; South Korea tightens curbs**



# SARS-CoV-2 elimination, not mitigation, creates best outcomes for health, the economy, and civil liberties

Published Online  
April 28, 2021

[https://doi.org/10.1016/S0140-6736\(21\)00978-8](https://doi.org/10.1016/S0140-6736(21)00978-8)

For the French translation see  
online for appendix 1

For the Spanish translation see  
online for appendix 2

The trade-off between different objectives is at the heart of political decision making. Public health, economic growth, democratic solidarity, and civil liberties are important factors when evaluating pandemic responses. There is mounting evidence that these objectives do not need to be in conflict in the COVID-19 response. Countries

that consistently aim for elimination—ie, maximum action to control SARS-CoV-2 and stop community transmission as quickly as possible—have generally fared better than countries that opt for mitigation—ie, action increased in a stepwise, targeted way to reduce cases so as not to overwhelm health-care systems.<sup>1</sup>

- Australia
- Nueva Zelanda
- Japón
- Islandia
- Corea del Sur

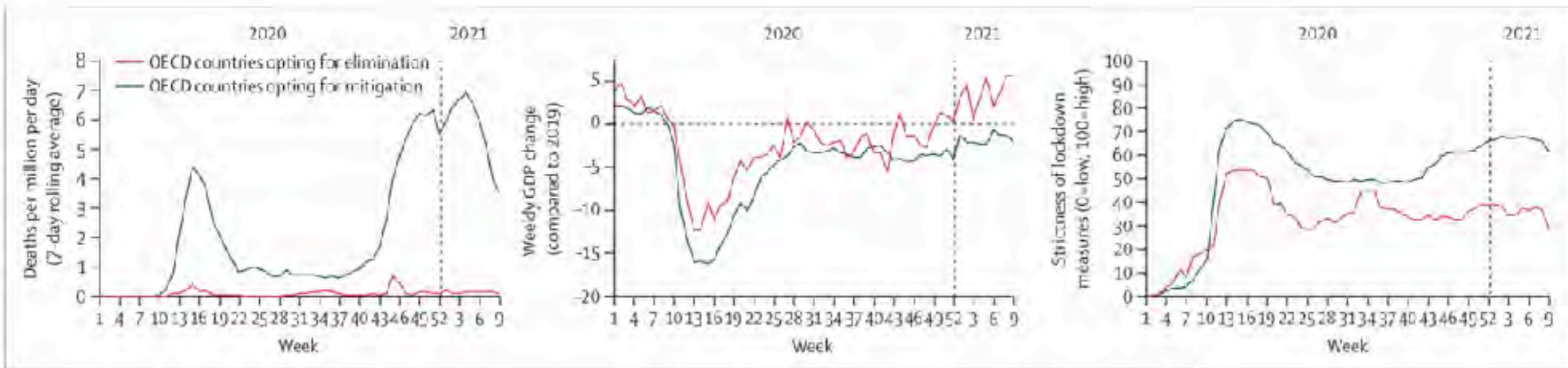


Figure: COVID-19 deaths, GDP growth, and strictness of lockdown measures for OECD countries choosing SARS-CoV-2 elimination versus mitigation

OECD countries opting for elimination are Australia, Iceland, Japan, New Zealand, and South Korea. OECD countries opting for mitigation are Austria, Belgium, Canada, Chile, Colombia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, the UK, and the USA. Data on strictness of lockdown measures are from Oxford COVID-19 government response tracker.<sup>2</sup> Data on COVID-19 deaths are from Our World in Data.<sup>3</sup> Data on GDP growth are from OECD Weekly Tracker of economic activity.<sup>4</sup> GDP—gross domestic product. OECD—Organisation for Economic Co-operation and Development.



**En España 2020, mas del 90% del coste total de la COVID-19 ha sido por caída de PIB**

Table 2. Estimate of the total cost of the COVID-19 crisis for Spain in 2020

Cost component	Cost in 2020 (millions €)	%
Direct health and non-healthcare costs	5,350	2.1%
Lost GDP due to COVID-19 outbreak and outbreak responses	236,914	94.8%
Cost due to premature mortality and long-term morbidity consequences	7,805	3.1%
<b>Total</b>	<b>250,069</b>	<b>100%</b>

## Según el FMI (mayo 2021):

- La COVID le cuesta al mundo **500.000 millones \$ mensuales**
- Los gobiernos gastan **1.5 billones\$ mensuales** en gastos fiscales por la COVID

La COVID pudo haber matado a 10 millones de personas en el mundo(1)



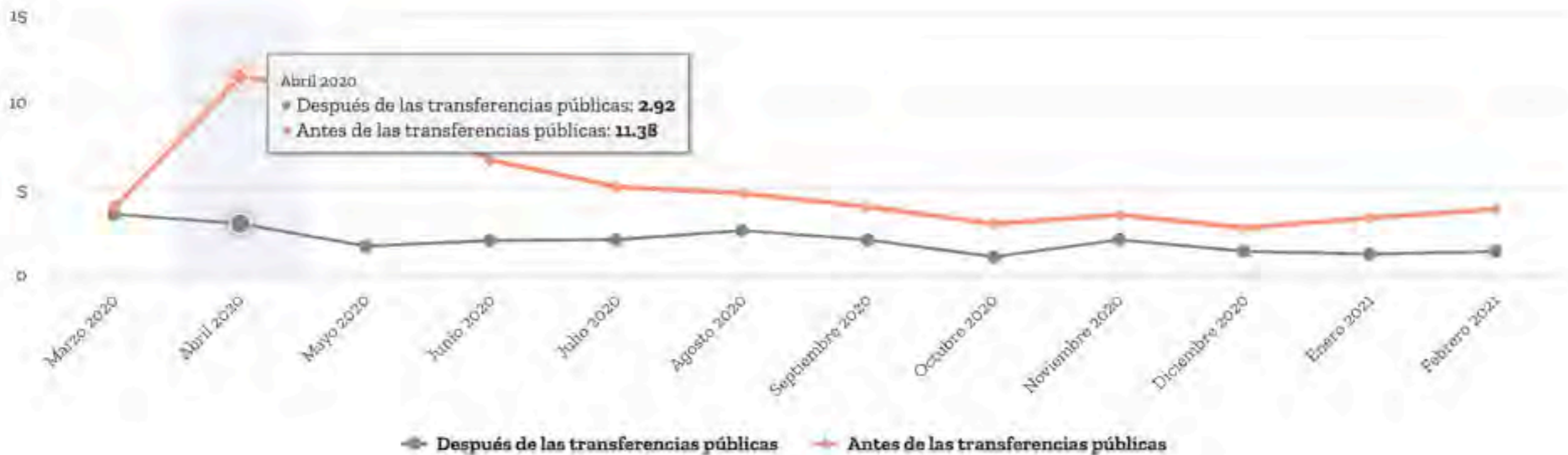
(1) The Economist "Ten million reasons to vaccinate the world (15 mayo 2021)

# Aumento repentino de las desigualdades en renta en España en marzo-abril 2020

Causas proximales: teletrabajo; precariedad

Variación del índice de Gini en España a partir del inicio de la pandemia. Variación en el índice respecto a febrero 2020 (p.p.)

Toda la muestra > Toda la Muestra



Actualizado el 28-04-2021

Descarga de datos

# Impacto desigual según edad

## Los jóvenes, grandes perjudicados (según nivel educativo)

Categorías

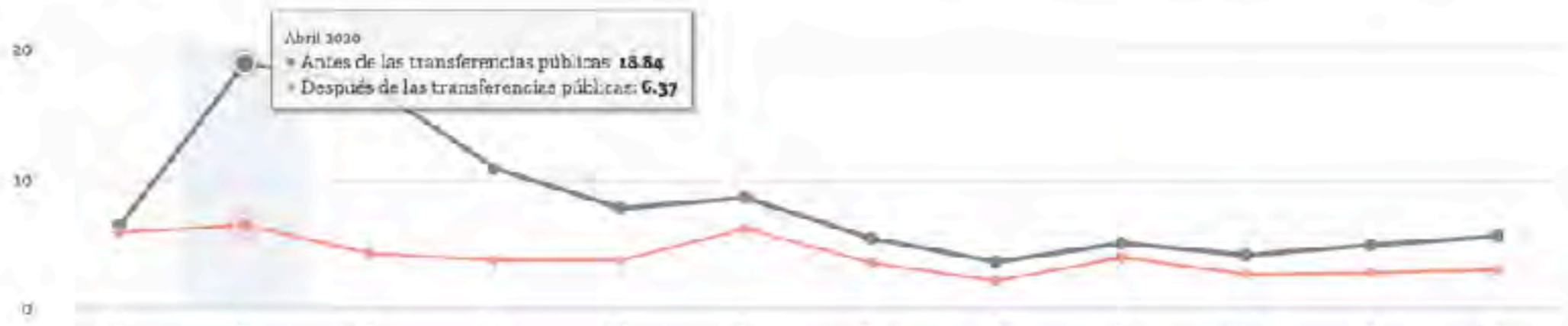
Edad

Edad

- Mayores
- Adultos
- Jóvenes

Variación del índice de Gini en España a partir del inicio de la pandemia. Variación en el índice respecto a febrero 2020 (p.p.)

Edad > Jóvenes



Categorías

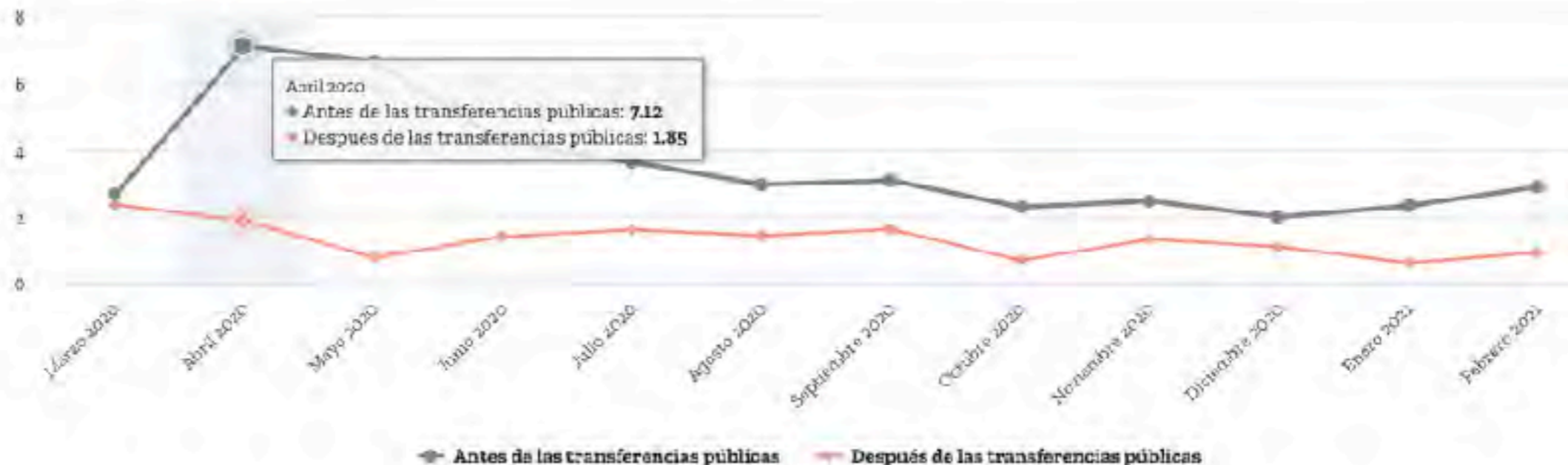
Edad

Edad

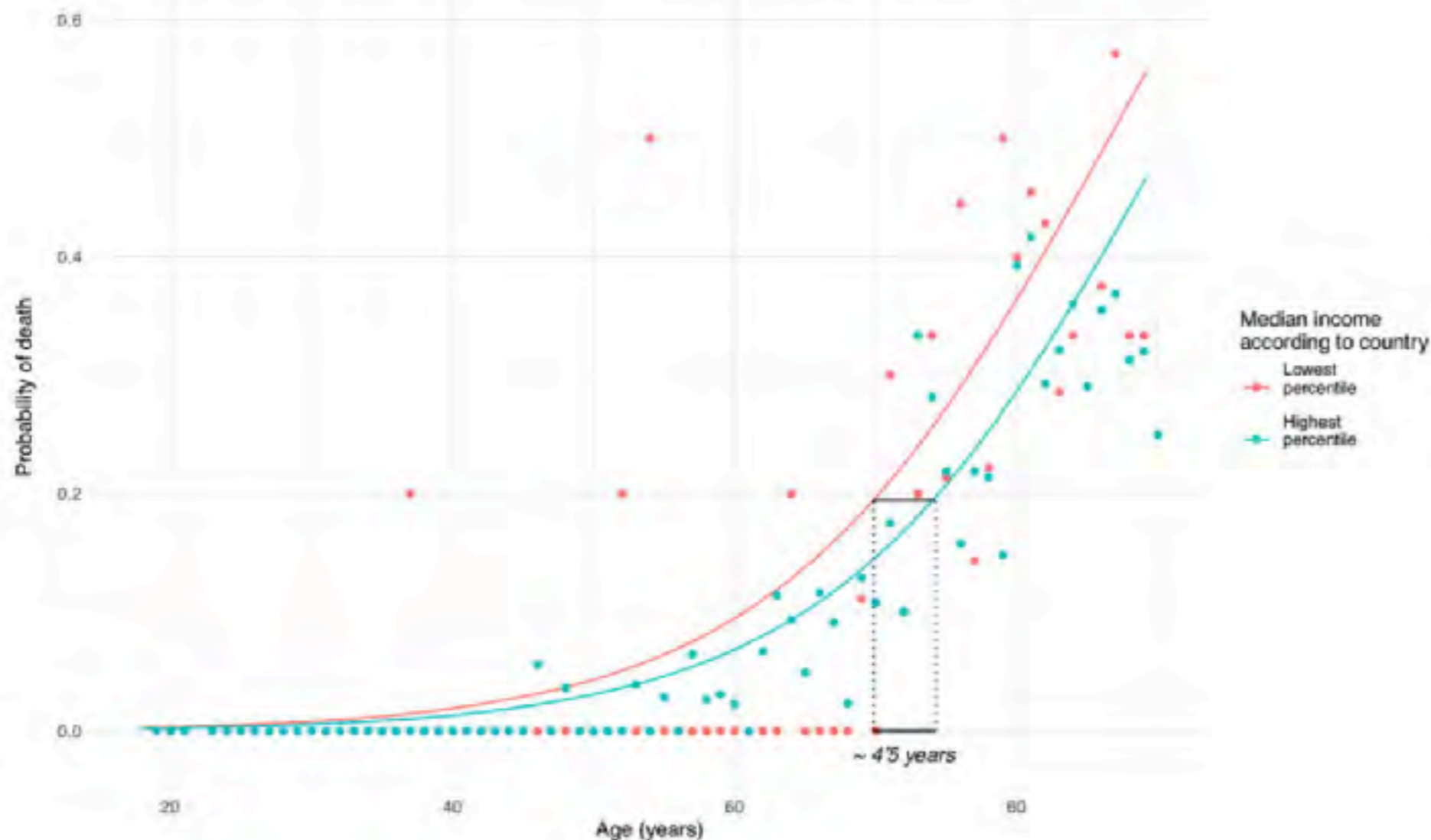
- Mayores
- Adultos
- Jóvenes

Variación del índice de Gini en España a partir del inicio de la pandemia. Variación en el índice respecto a febrero 2020 (p.p.)

Edad > Mayores



10,110 pacientes hospitalizados con COVID en 18 hospitales españoles en 2020  
Además de características clínicas y del hospital, se registra la renta media en el código postal de residencia de cada paciente  
Modelizan riesgo de ingreso en UCI (7.7%) y fallecimiento en el hospital (16.6%)



Los pacientes que viven en las áreas mas pobres tienen la misma prob.de morir en el hospital que pacientes 4.5 años mayores que viven en las áreas mas ricas

Martín-Sánchez FJ et al (2021) “Socio-Demographic Health Determinants Are Associated with Poor Prognosis in Spanish Patients Hospitalized with COVID-19”. J Gen Intern Med. 2021 Jul 8:1–6 (julio 2021)

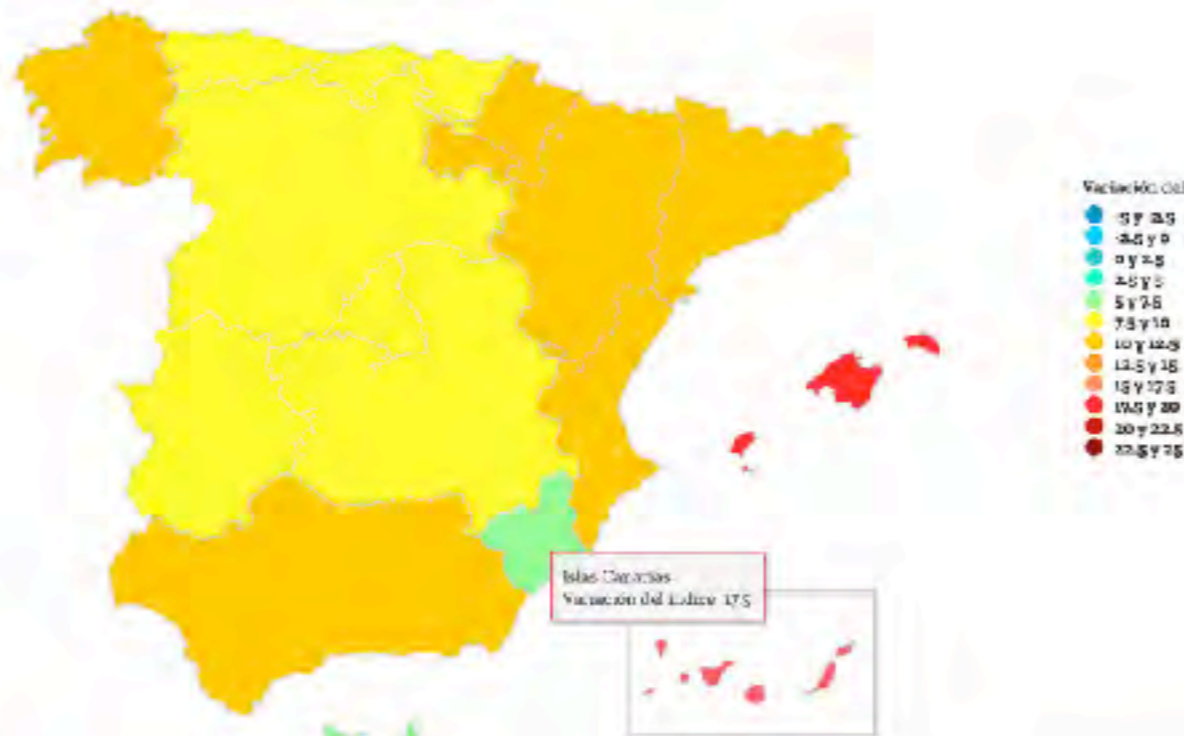
### Antes de las transferencias públicas

abril 2020

abril 2021

Variación del índice de Gini por comunidad autónoma respecto a febrero de 2020  
Antes de las transferencias: 2020 - abril

Variación del índice de Gini por comunidad autónoma respecto a febrero de 2020  
transferencias: 2021 - abril



Mes

abr/2020

abr/2021

### Después de las transferencias públicas

abril 2020

Variación del índice de Gini por comunidad autónoma respecto a febrero de 2020  
Después de las transferencias: 2020 - abril



1.48

abril 2021

Variación del índice de Gini por comunidad autónoma respecto a febrero de 2020  
Después de las transferencias: 2021 - abril



1.95



Incluso las vacunas....



LA VANGUARDIA



## Sociedad

NATURAL / BIG VANG / TECNOLOGÍA / SALUD / QUÉ ESTUDIAR / JUNIOR REPORT / FORMACIÓN / VIVO SEGURO / CATALUNYA RELIGIÓ / VIVO

SUSCRIBETE

INMUNIZACIÓN CONTRA LA COVID

# Desigualdades de hasta el 30% en la vacunación entre barrios de Barcelona



MARTA RICART

01/06/2021 17:27 | Actualizado a 01/06/2021 18:59

La Agencia de Salut Pública de Barcelona (ASPB), que dirige Carme Borrell, y que ha ido estudiando las desigualdades en la afectación de la epidemia en la población sea por su nivel social, su edad o el género, hizo un estudio y constató que inciden en una menor vacunación en algunos barrios sobre todo tres aspectos: el no manejarse bien en el ámbito digital o no tener conexión a internet; las dificultades de idiomas y culturales y el miedo a efectos secundarios (15,5%), reticencias por el tipo de vacuna (15%) y las dificultades de contacto (9%).

# Estrategia TTQ es sumamente coste-efectiva

AEA

	Quantity	Unit cost	Total costs
TTQ strategy daily costs			
Tests (unit cost per test)	187,760	40 €	7,510,400 €
Tracers (unit cost per day)	9,388	129 €	1,206,358 €
Health consequences prevented daily			
COVID-19 total cases	53,286		
COVID-19 cases treated at home	48,615	280 €	13,612,174 €
Hospitalizations	2,931	8,500 €	24,911,191 €
ICU stays	213	33,400 €	7,118,703 €
Cases suffering long-term morbidity	1,048	14,754 €	15,461,009 €
Deaths	480		
QALY gains			
QALY gain from avoided morbidity	2,908		
QALY gain from avoided mortality	1,398		
Total monetary costs			8,716,758 €
Total monetary savings			61,103,076 €
Incremental costs			-52,386,318 €
Incremental QALYs			4,306
Cost per-QALY gained			Dominating
Benefit-to-cost ratio (excluding health and morbidity)			7.0
Benefit-to-cost ratio (including health and morbidity)			19.4

7/1!

**Table 3.**  
Economic and health consequences of the TTQ strategy in Spain

7.0

19.4

03 de mayo de 2021

## El GTM explica los puntos clave para establecer una estrategia de rastreo eficiente

El Grupo de Trabajo Multidisciplinar (GTM), que asesora al Ministerio de Ciencia e Innovación y apoya al Gobierno en materias científicas relacionadas con el COVID-19 y sus consecuencias futuras, analiza en un [nuevo informe los puntos clave para establecer una estrategia de rastreo eficiente](#), cuya implementación dependerá del modelo y la organización del rastreo y de las condiciones locales de la epidemia. Este informe se ha elaborado a solicitud de los Ministerios de Ciencia e Innovación y Sanidad.

Un sistema de rastreo óptimo, explica el informe, sería aquel que investigara "el 100% de las personas que han estado en contacto estrecho con un COVID positivo y las pusiera en cuarentena o aislara antes de que se volvieran contagiosas".

Para mejorar los sistemas de rastreo, el GTM propone:

1. Estabilidad del personal rastreador.
2. Motivación. Además de estrategias de motivación y prevención del burnout en el puesto de trabajo, la rotación con otras actividades COVID puede prevenir la fuga de talento de los equipos.
3. Flexibilidad. Se requieren profesionales formados en salud pública como engranaje esencial en la coordinación de cualquier sistema de rastreo. La experiencia en vigilancia epidemiológica de brotes anteriores ha demostrado ser muy valiosa en el seguimiento COVID.
4. Colaboración ciudadana, y sistema ágil de notificación y sanción de incumplimientos.
5. Escalable, adaptabilidad, progresividad. La capacidad debe poder adaptarse a aumentos exponenciales de casos. El número de rastreadores activos ha de ser variable según la evolución de la epidemia. Esto requiere disponer de una reserva de personas formadas.
6. Con tasas de incidencia muy altas, como en algunas regiones durante la tercera ola, más que rastrear, el objetivo sería aislar en un cuasi confinamiento a toda la población, y preparar el sistema de rastreo, mejorándolo, pero cuando baje la incidencia. En caso de desbordamiento, la prioridad sería detectar y aislar el mayor número de casos posible, pudiendo incluso encomendar a las personas con resultado positivo, en el momento de la llamada, que identifiquen y avisen ellos mismos a sus contactos.
7. Idealmente, el rastreo "manual" podría complementarse con otro basado en algoritmos y apps (radar COVID en España). De cara al futuro, particularmente en situaciones de alta densidad de población y baja incidencia de la epidemia, sería recomendable que los sistemas de trazado manual incluyeran de forma efectiva la información de la APP en sus procedimientos. También que la información sobre las APPs, su funcionamiento y código, y los resultados obtenidos se hicieran públicos abiertamente. También sería interesante una reflexión sobre la incapacidad de Europa y sus gobiernos para ofrecer un modelo integrado y organizar una reflexión informada de la sociedad sobre los conceptos de confidencialidad y bien social.
8. Unos sistemas de información bien articulados tienen gran potencial para mejorar la eficiencia del sistema TRA. Una herramienta centralizada de rastreo, como la que han desarrollado y utilizan en algunas áreas del país, podría ser muy útil.
9. Un sistema de rastreo efectivo y de alta calidad tendría que ser equitativo (facilitar el aislamiento a quien no pudiera y ayudar económicamente a las personas aisladas por las rentas perdidas en su caso), efectivo en cuanto a adherencia a los aislamientos y cuarentenas, y aceptado por la ciudadanía.



## INFORME DEL GTM<sup>1</sup> SOBRE ¿CUÁNTOS RASTREADORES SON NECESARIOS?

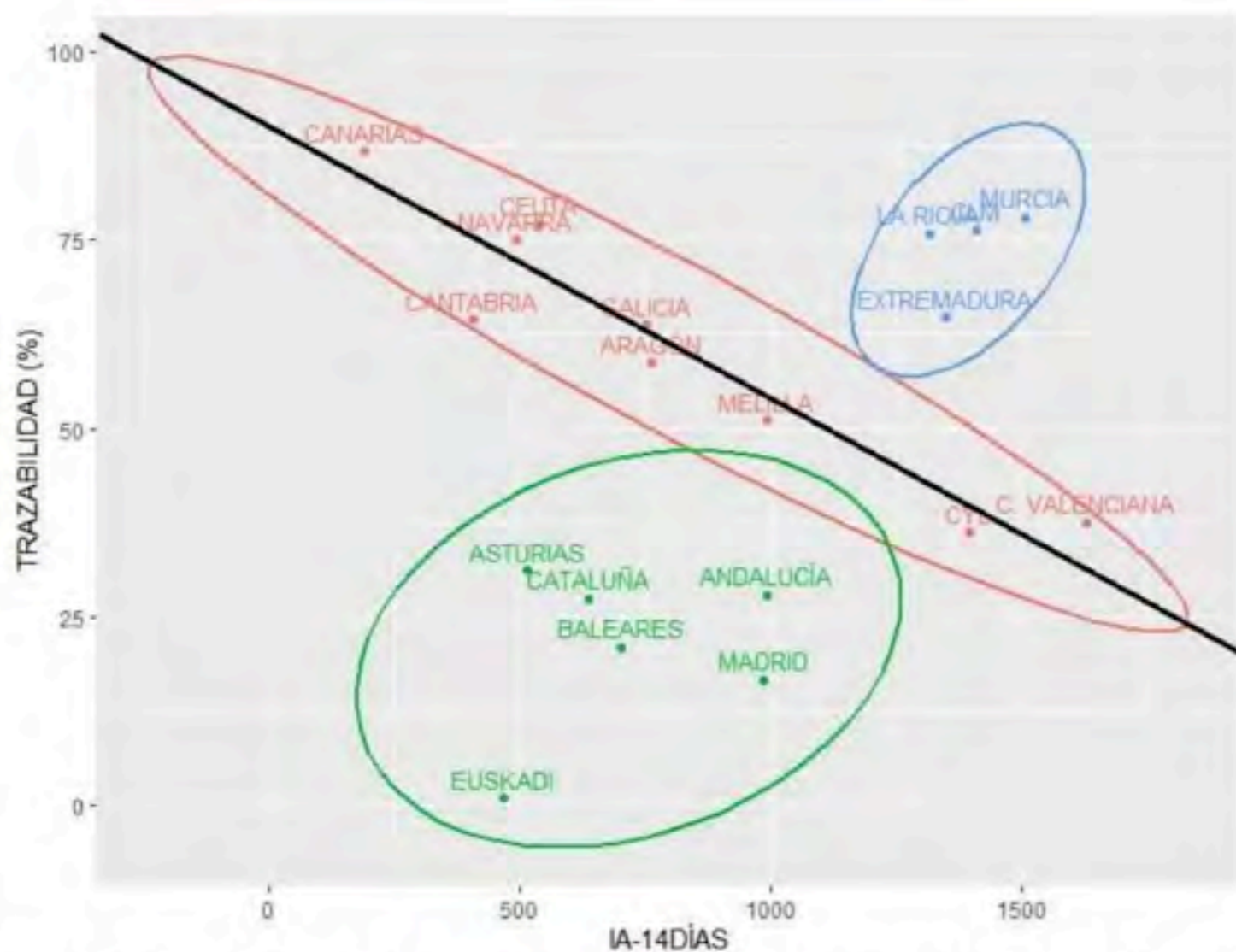
Fecha: 26/03/2021

### Estructura del informe

1. Resumen Ejecutivo
2. Introducción
3. ¿Qué es/Qué hace un rastreador?
4. Indicadores de la eficacia del rastreo
5. Protocolos de rastreo
6. Aspectos críticos de la organización del rastreo
7. Rastreo mediante APPs
8. ¿Cuántos rastreadores hay?
9. ¿Cuántos rastreadores hacen falta?
10. ¿Qué podría hacerse para mejorar?

### Referencias y notas

[https://www.ciencia.gob.es/stfls/MICINN/Ministerio/FICHEROS/Informe\\_GTM\\_sobre\\_rastreadores.pdf](https://www.ciencia.gob.es/stfls/MICINN/Ministerio/FICHEROS/Informe_GTM_sobre_rastreadores.pdf)



**Figura 1.** Representación de las CCAA según Incidencia Acumulada a 14 días (*abscisas*) y porcentaje de trazabilidad (*ordenadas*) mostrando la agrupación en tres clústeres y la recta de regresión de la Trazabilidad sobre la IA-14DÍAS en uno de los clústeres.



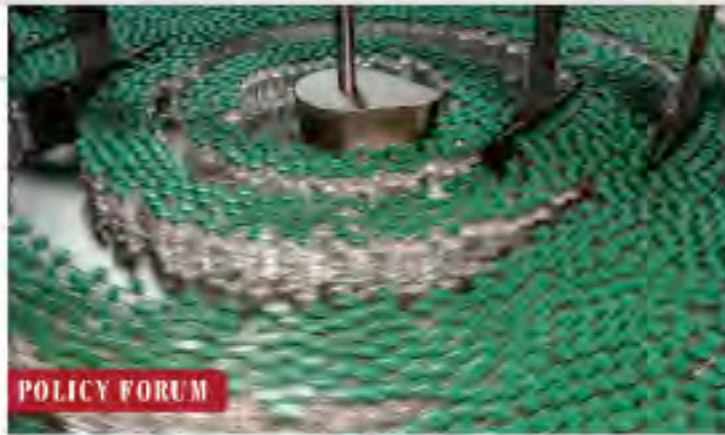
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# La **vacunación COVID de la humanidad** es todavía **más coste-efectiva** que la estrategia TRA



POLICY FORUM

COVID-19: ECONOMICS **Clave: capacidad de producción**

## Market design to accelerate COVID-19 vaccine supply

Build more capacity, and stretch what we already have

By Juan Carlos Castillo<sup>1</sup>, Anrita Ahuja<sup>2</sup>, Susan Athey<sup>3,4</sup>, Arthur Baker<sup>5</sup>, Eric Budish<sup>6,7</sup>, Tasneem Chhedy<sup>8</sup>, Rachel Glenister<sup>9</sup>, Scott Duke Kominers<sup>10,11</sup>, Michael Kremer<sup>12</sup>, Dreg Larson<sup>13</sup>, Jean Lee<sup>14</sup>, Carlos Prendergast<sup>15</sup>, Christopher M. Snyder<sup>16,17</sup>, Alex Tabarrok<sup>18</sup>, Brandon Joel Tan<sup>19</sup>, Witold Wójcicki<sup>20</sup>

ments and international organizations to contact with vaccine producers to further expand capacity and encourage measures described below to “stretch” existing capacity (such as lower-dose regimens) and efficiently allocate courses (such as a cross-country vaccine exchange).

Our analysis involves two exercises, first estimating the global benefits from vaccine capacity already in place, then estimating the benefits of undertaking additional capacity investment starting now (see supplementary materials for all data and methods). The enormous estimates from both exercises provide a wake-up call relevant for the current pandemic—that it is not too

Vaccine capacity equals speed, which has enormous value in a pandemic. Wala of the COVID-19 vaccine developed by AstraZeneca rose along the production line at the Serum Institute of India plant in Pune, India.

late to invest in more capacity—and future pandemics—that preparations to shorten delays in rolling out vaccines, treatments, and other countermeasures at global scale could prevent enormous harm.

### VALUE OF CAPACITY IN PLACE

In our model, a unit of capacity is defined as the fixed investment needed for one course per year of a regulatory-approved COVID-19 vaccine, including production lines as well as complementary investments necessary to get shots into arms (e.g., input-supply chains, transportation logistics, and medical staff at administration sites). Our discussion focuses on production capacity because it involves the most systemic risk and lead time, so more for the rate-limiting step.

Capacity already in place, some of which was installed “at risk” before clinical trials were completed, is more valuable than capacity that comes online later because it can produce vaccine courses without delay. Some credit for the extent of capacity in place can be ascribed to advance contracts that many countries signed with firms. Typically, firms only install capacity at commercial scale once a vaccine is proven safe and effective, creating a delay of at least 8 months between clinical approval and large-scale vaccination. To signing contracts in advance of clinical approval, governments shoulder one of this risk and incentivize firms to install capacity earlier.

It is difficult to pin down the level of capacity currently in place precisely. We take 3 billion courses of annual capacity as our baseline, with half coming online in January and half in April. This baseline is high relative to current production but low relative to best-case production plans for 2021 announced by firms succeeding in phase 3 clinical trials (table S1). We trace out global benefits for a range of capacities around this baseline, from 1 billion to 5 billion annual courses.

The International Monetary Fund (IMF) estimates global GDP losses from COVID-19 of \$12 billion during 2020–2021 (2), an average monthly GDP loss of \$500 billion. More comprehensive harm estimates—including education and health losses—are multiples larger. For example, comprehensive harm in the United States has been estimated (3) to be over five times the projected GDP loss. We use \$1 billion (double the IMF estimate of GDP losses) as a conservative measure of comprehensive global monthly harm.

## Global value of vaccine capacity

GLOBAL CAPACITY (BILLION COURSES)	GLOBAL BENEFIT (TRILLION \$)		TIME TO 70% VACCINATION (MONTHS)	
	GDP ALONE	COMPREHENSIVE	HIGH-INCOME COUNTRIES	WORLD
1	5.3	10.5	31.5	66.0
2	7.5	15.0	16.5	33.7
3	8.7	17.4	11.5	23.0
4	9.4	18.8	9.0	17.6
5	9.8	19.7	7.5	14.4

Vaccine capacity assumes ramp-up such that half of the indicated capacity is available starting January 2021 and the remainder starting April 2021. First two columns estimate global benefit in monetary terms from specified capacity over a 24-month period. Last two columns estimate time until 70% of high-income countries or world population is vaccinated using available capacity. Allocation of capacity to countries of different income levels is based on reported bilateral deals and assumes that global capacity is fully utilized until the target of 70% of world population is vaccinated. Calculations are based on the model outlined in the text and detailed further in the supplementary materials.

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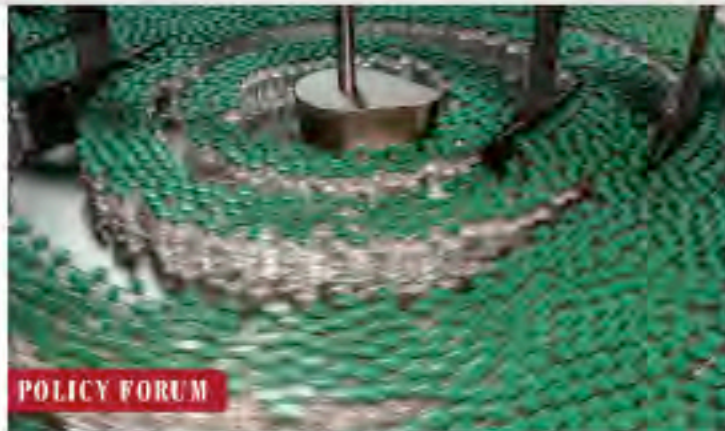
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El valor de una dosis es **5.800\$**  
Unas 316 veces el precio de una dosis de pfizer (15€) y **2.370 veces** el precio de una dosis de AZN  
Ergo: **El precio es lo de menos**, lo importante es **acelerar....**

PHOTO: JAMES H. HARRIS/ISTOCK/GETTY IMAGES

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Each month, COVID-19 kills hundreds of thousands of people, reduces global gross domestic product (GDP) by hundreds of billions of dollars, and generates large, accumulating losses to human capital by harming education and health (1–6). Achieving widespread immunization 1 month faster would thus save many lives and mitigate short- and long-run economic harm. Although the value of vaccines may seem obvious, government action and investment in vaccines have not been commensurate with the enormous scale of benefits, with many countries not likely to achieve widespread immunization until the end of 2022.

We estimate below that installed capacity for 3 billion annual vaccine courses has a global benefit of \$17.5 trillion, over \$5500 per course. Investing now in expanding capacity for an additional annual 1 billion courses could accelerate completion of widespread immunization by over 3 months, providing additional global benefits of \$205 to \$589 per course. This dwarfs prices of \$5 to \$60 per course seen in deals with vaccine producers, indicating the wide gap between social and commercial incentives. We urge govern-

ments and international organizations to contact with vaccine producers to further expand capacity and encourage measures described below to “stretch” existing capacity (such as lower-dose regimens) and efficiently allocate courses (such as a cross-country vaccine exchange). Our analysis involves two exercises, first estimating the global benefits from vaccine capacity already in place, then estimating the benefits of undertaking additional capacity investment starting now (see supplementary materials for all data and methods). The enormous estimates from both exercises provide a wake-up call relevant for the current pandemic—that it is not too

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Si se consigue ampliar la capacidad mundial de produccción en 1000 millones de dosis en 2021, cada nueva dosis fabricada tendrá un valor adicional entre **600\$ y casi 1000\$**

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Por tanto, el objetivo

**económico**

es acelerar la producción y  
distribución de vacunas en todo  
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# ¿Cómo hacerlo?

## El culebrón de la posible suspensión temporal de las patentes

B. González López-Valcárcel, Vicente Ortún, Salvador Peiró. A propósito de las vacunas COVID-19. Innovación, acceso y rol de las patentes 2021, 18 pages. Asociación de Economía de la Salud (AES). [Fulltext](#)

S. Peiró, B. González López-Valcárcel, V. Ortún . 2021. ¿Es solución liberar las patentes de las vacunas COVID? The Conversation. [Fulltext](#) [Abstract](#)

E Castellón, V Ortun, S Peiró, B G Lopez-Valcarcel (2021). El futuro de las vacunas: ampliar la capacidad mundial de producción y mejorar le marco regulatorio. Nada es Gratis, 28 mayo 2021.



Por tanto, el objetivo

## **económico**

es acelerar la producción y distribución de vacunas en todo el planeta

¿Cómo hacerlo?

El culebrón de la posible suspensión temporal de las patentes

- 1. **Distribuir** los excedentes de vacunas (Canada x13, UKx9, EEUU 300millones de dosis sobrantes(\*)...)
- 2. **Permitir la exportación de inputs** para vacunas (EEUU, ley defensa)
- 3. **Incentivar y facilitar las licencias voluntarias** (214 hasta ahora: record!) con financiación internacional

(\*) <https://cnnespanol.cnn.com/2021/04/16/estados-unidos-300-millones-vacunas-covid-trax/>

Por tanto, el objetivo **económico**

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¿Cómo hacerlo?

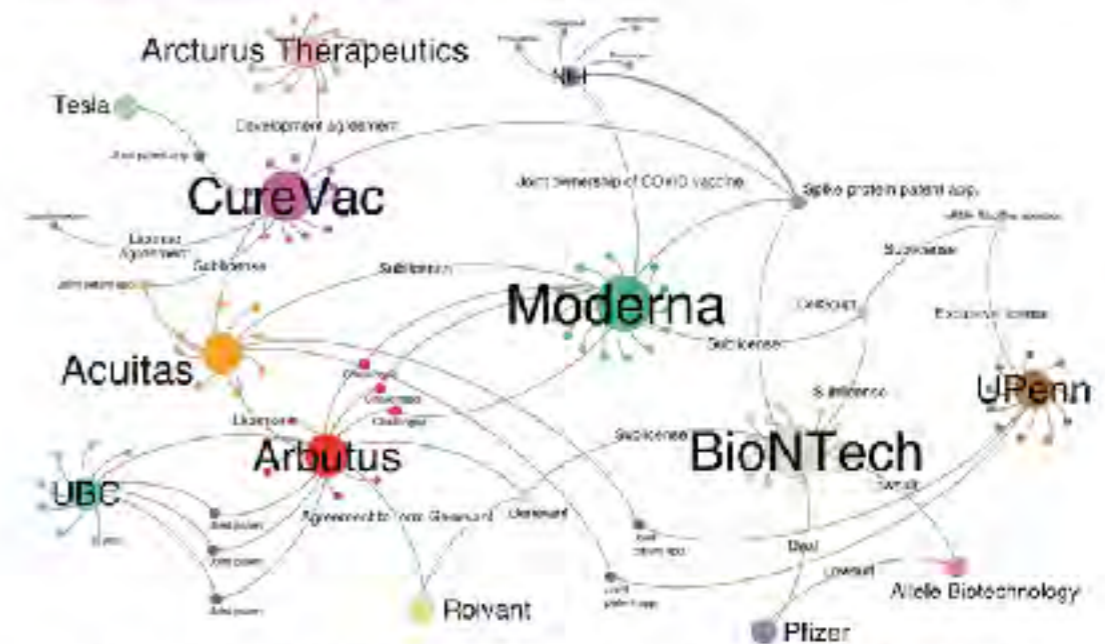
El culebrón de la posible suspensión temporal de las patentes

Posiblemente, la suspensión temporal de patentes no serviría para nada a corto plazo [aunque queda muy bonito]

- 1. **Plazos.** Votación a final de año en la OMC, luego 6 meses de preparación. Transferencia efectiva de tecnología? (mRNA)
- 2. Los cuellos de botella mayores son de **suministro** de **inputs**
- 3. Las **patentes** de las vacunas COVID son **atípicas**: 2 empresas non-for-profit, todas produciendo 24/7 ...

Fig. 1: Patent network analysis of mRNA-based vaccine candidates for COVID-19.

From: A network analysis of COVID-19 mRNA vaccine patents



Larger nodes represent the relevant entities while the edges represent agreements or patents between two entities. Smaller nodes around the entities represent patents that were identified as being relevant to the underlying vaccine technology (see patent history information). The network analysis was developed using Gephi. U Penn, University of Pennsylvania; UBC, University of British Columbia; app, application

Fuente: [Gaviria y Kilic \(2021\)](#)

# Conclusión



## RESUMEN

1. La COVID ha impuesto una enorme **carga de enfermedad** (10 millones de muertos en el mundo, 1 año menos de esperanza de vida al nacer en España. No en Canarias, donde el impacto en salud ha sido muy pequeño)
2. Nunca la **política económica** había sido tan sanitaria, ni la **política sanitaria** tan económica
3. La mayor parte (>90%) del **coste** de la COVID-19 es el **económico** (PIB). Ese coste ha sido mayor en los países desarrollados, mayor aun en España, mayor aún en Canarias
4. Las **políticas** económicas son muy efectivas para reducir la **desigualdad**
5. Las **estrategias de Test, Trazabilidad y Aislamiento** son sumamente **coste-efectivas (7/1)**. Las **vacunas**, mucho más (hasta **1.370/1**)
6. Un **retraso** de una mes en completar la vacunación en el mundo cuesta 500.000 millones\$. El gran reto es acelerar la producción y distribución de vacunas
7. Posiblemente **suspender** temporalmente las **patentes no resolvería** el problema. Financiación y colaboración internacional e incentivar licencias voluntarias son vías de avance a corto plazo

Muchas gracias!



[beatriz.lopezvalcarcel@ulpgc.es](mailto:beatriz.lopezvalcarcel@ulpgc.es)