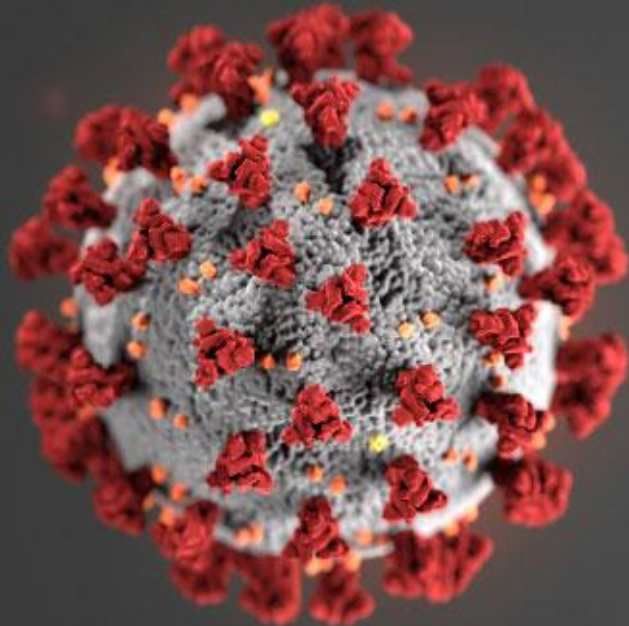


SARS-Cov-2 Report

José Luis Pires

13 October 2020



Contents

SARS-Cov-2

- [Symptoms of COVID-19, Flu and Cold](#)
- [Confirmed cases by Country](#)
- [Deaths by Country](#)
- [Total confirmed Covid-19 cases and deaths per million people](#)
- [Daily new confirmed Covid-19 cases and deaths per million people](#)
- [Number of COVID-19 cases reported weekly by WHO region](#)
- **Portugal**
 - [Cases, Deaths and Projections](#) – per week
- **Ireland**
 - [Cases, Deaths and Projections](#) – per week
- **New Jersey/US**
 - [Cases, Deaths and Projections](#) – per week
- [Recent News](#)

Symptoms of:

➤ COVID-19

➤ Cold

➤ Flu

COVID-19: IDENTIFYING THE SYMPTOMS

Coronavirus
(COVID-19)

SYMPTOMS	COVID-19	COLD	FLU
	Symptoms range from mild to severe	Gradual onset of symptoms	Abrupt onset of symptoms
Fever 	Common	Rare	Common
Cough 	Common	Common	Common
Sore Throat 	Sometimes	Common	Common
Shortness of Breath 	Sometimes	No	No
Fatigue 	Sometimes	Sometimes	Common
Aches & Pains 	Sometimes	No	Common
Headaches 	Sometimes	Common	Common
Runny or Stuffy Nose 	Sometimes	Common	Sometimes
Diarrhea 	Rare	No	Sometimes, especially for children
Sneezing 	No	Common	No

Adapted from material produced by WHO, Centers for Disease Control and Prevention.

THE RELATIVE SIZE OF PARTICLES

From the COVID-19 pandemic to the U.S. West Coast wildfires, some of the biggest threats now are also the most microscopic.

A particle needs to be 10 microns (μm) or less before it can be inhaled into your respiratory tract. But just how small are these specks?

Here's a look at the relative sizes of some familiar particles >

HUMAN HAIR 50-180 μm >
FOR SCALE

FINE BEACH SAND 90 μm >

GRAIN OF SALT 60 μm >

WHITE BLOOD CELL 25 μm >

GRAIN OF POLLEN 15 μm >

DUST PARTICLE (PM₁₀) <10 μm >

RED BLOOD CELL 7-8 μm >

RESPIRATORY DROPLETS 5-10 μm >

DUST PARTICLE (PM_{2.5}) 2.5 μm >

BACTERIUM 1-3 μm >

WILDFIRE SMOKE 0.4-0.7 μm >

CORONAVIRUS 0.1-0.5 μm >

T4 BACTERIOPHAGE 225nm >

ZIKA VIRUS 45nm >



Pollen can trigger allergic reactions and hay fever—which 1 in 5 Americans experience every year.

Source: Harvard Health

The visibility limits for what the naked eye can see hovers around 10-40 μm .



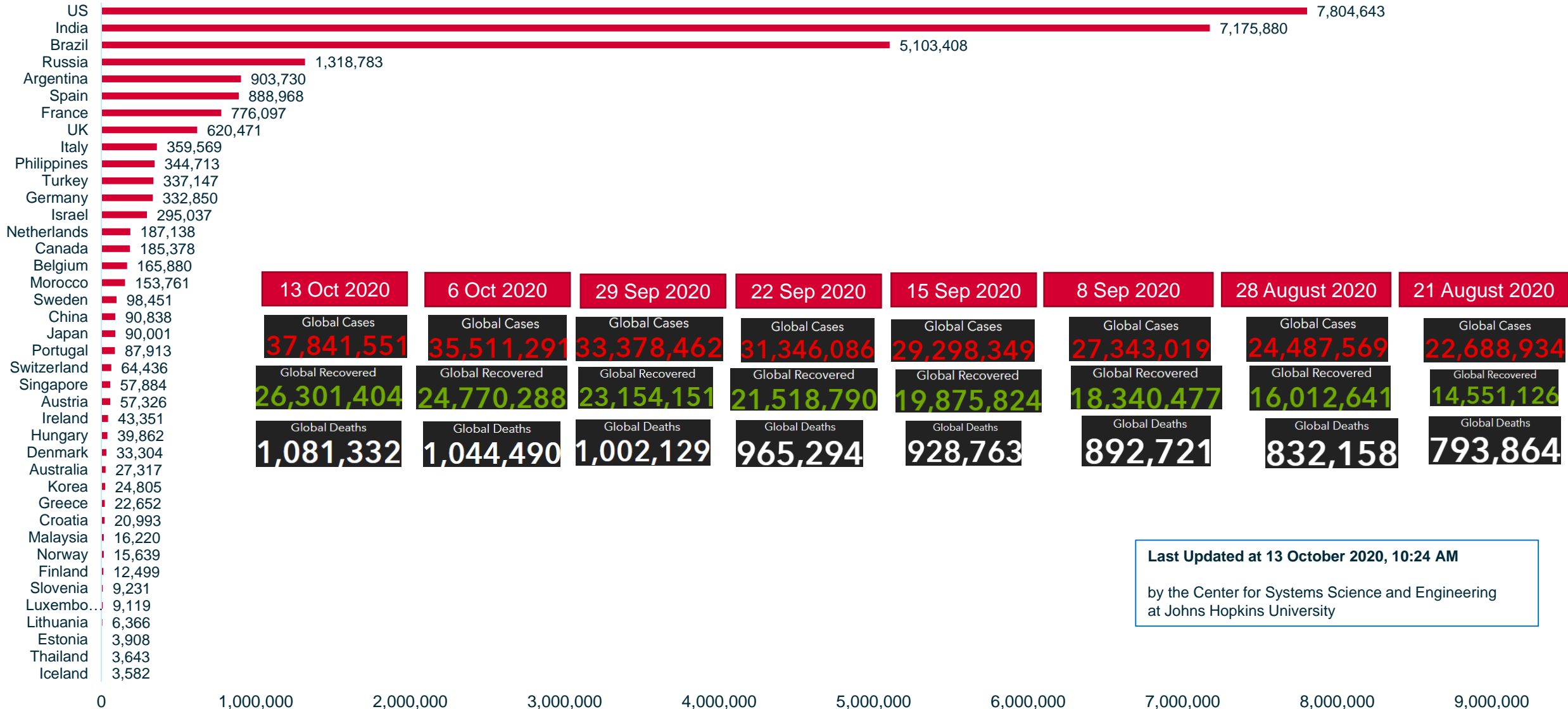
Respiratory droplets have the potential to carry smaller particles within them, such as dust or COVID-19.



Wildfire smoke can persist in the air for several days, and even months.

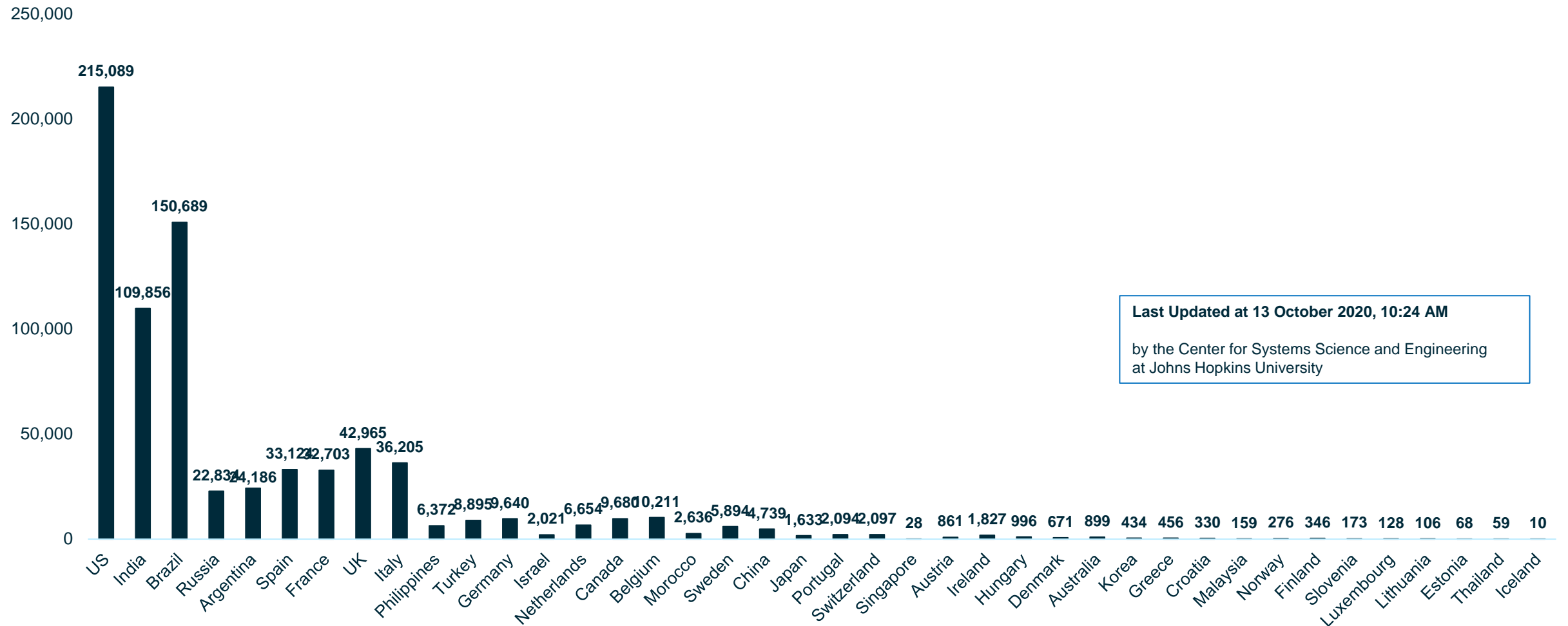
Coronavirus (SARS-CoV-2 / Covid-19) – Confirmed cases by country

Note: Selected Countries, sorted by # of cases



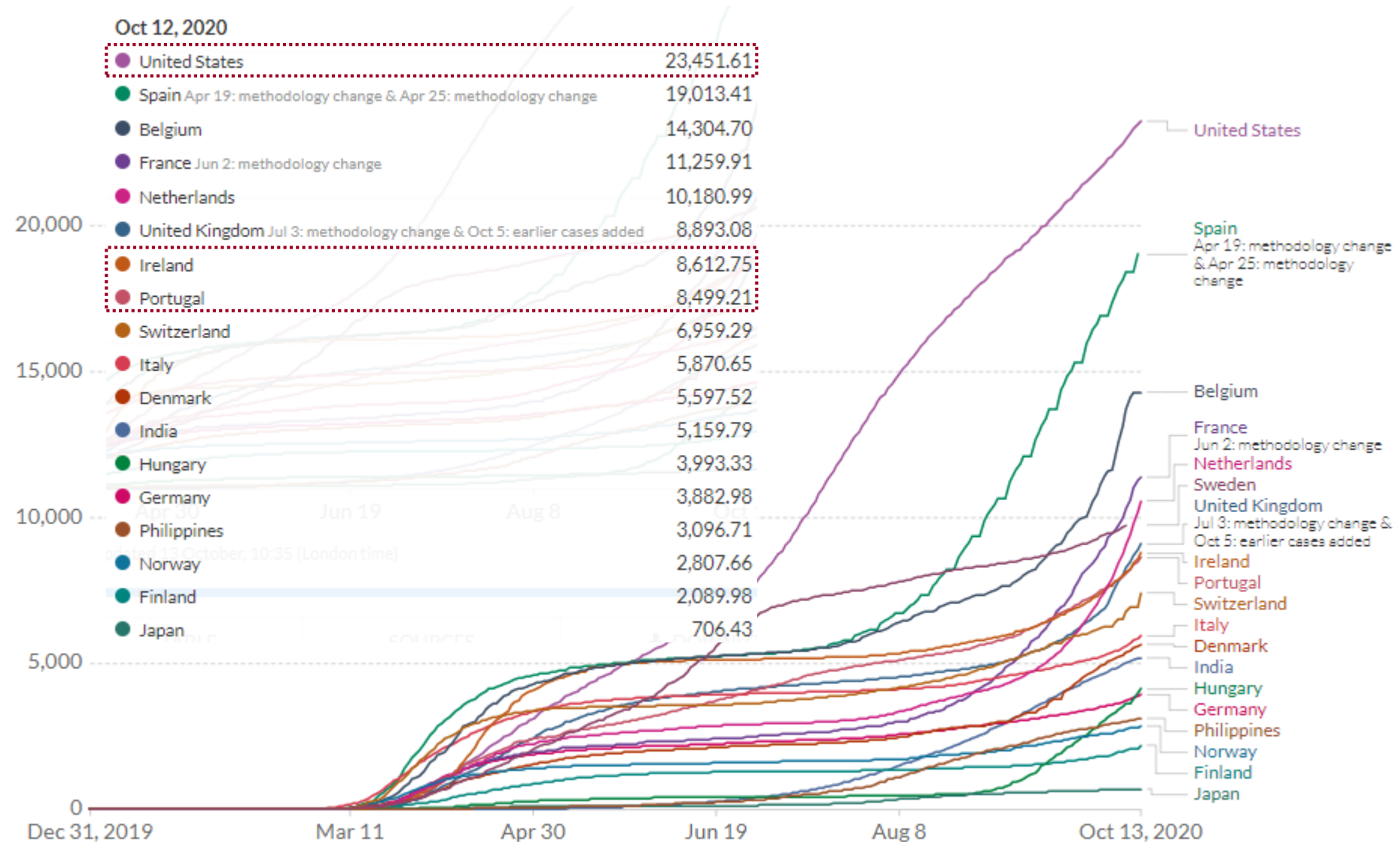
Coronavirus (SARS-CoV-2 / Covid-19) – Deaths by Country

Note: Selected Countries, sorted by # of cases



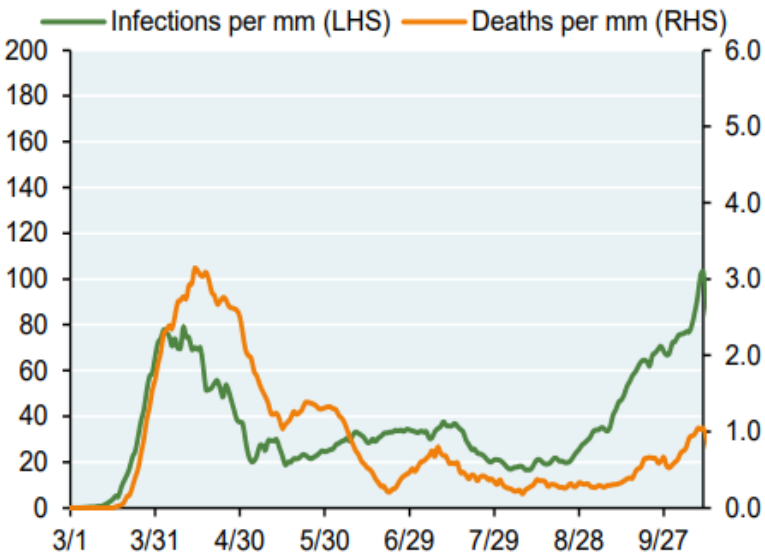
Source: <https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>

Total confirmed Covid-19 cases per million people



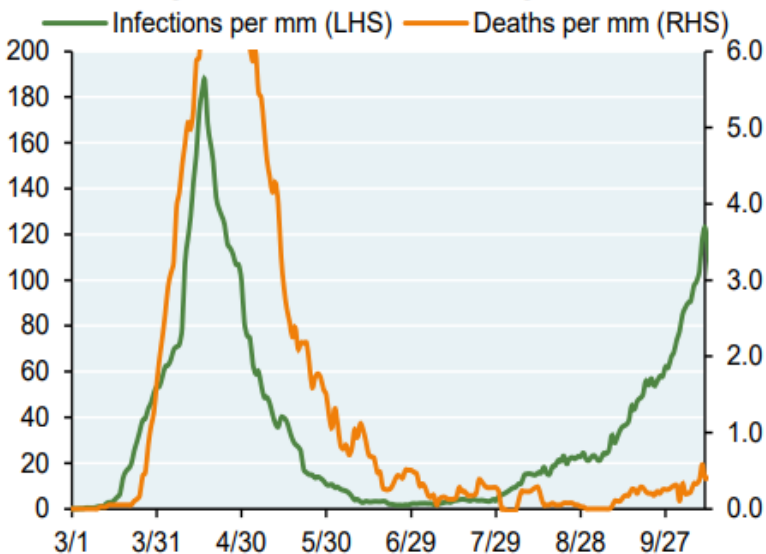
Daily infections vs mortality per million

Portugal daily infections vs mortality



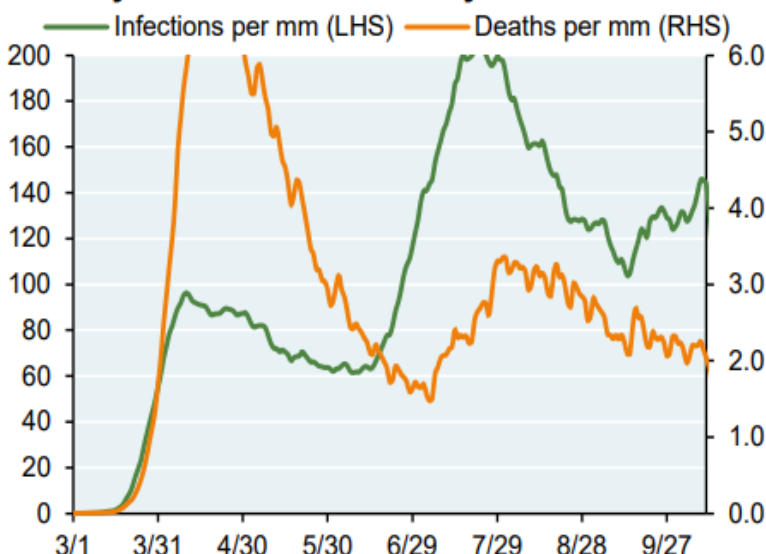
Source: JHU, JPMAM. 10/11/2020. 7 day averages.

Ireland daily infections vs mortality



Source: JHU, JPMAM. 10/11/2020. 7 day averages.

US daily infections vs mortality

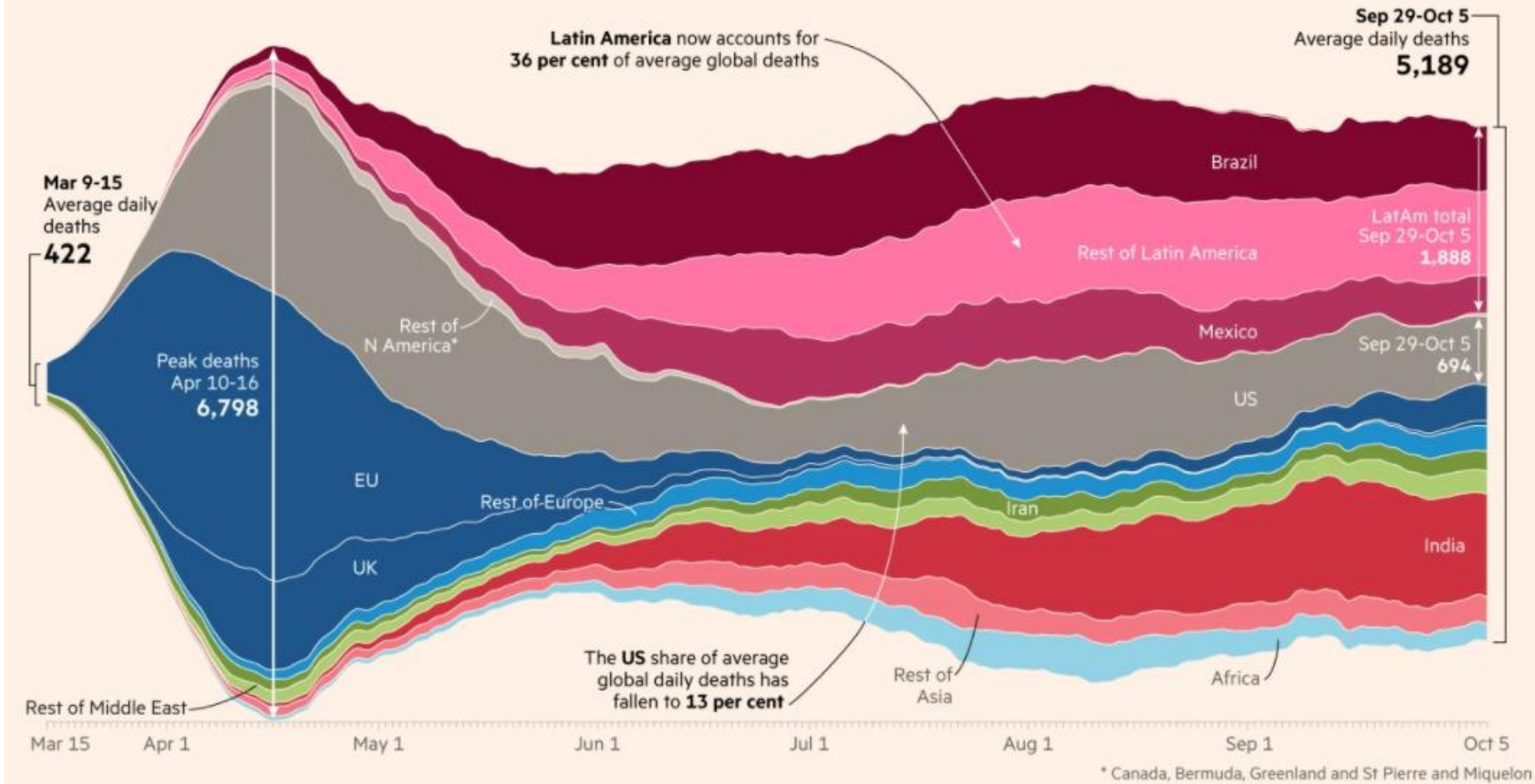


Source: JHU, JPMAM. 10/11/2020. 7 day averages.

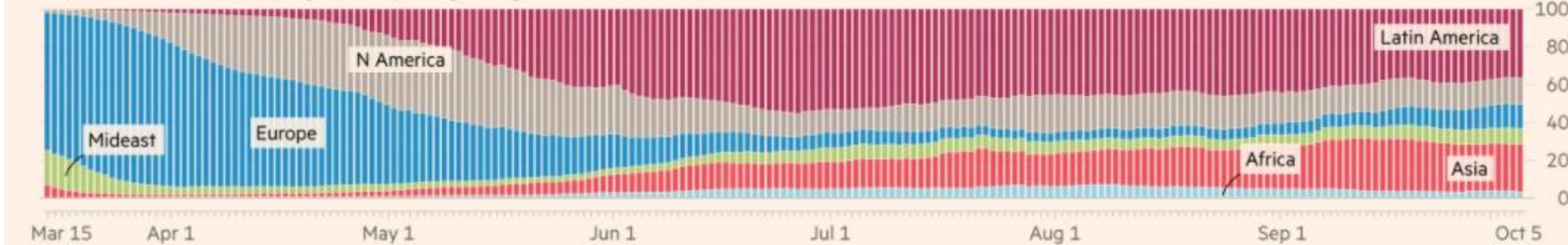
Daily deaths of patients diagnosed with coronavirus (7-day average)

India's death toll surges as the Americas continue to struggle with Covid-19

Daily deaths of patients diagnosed with coronavirus (7-day rolling average)



Daily confirmed deaths (% by region, 7-day rolling average)

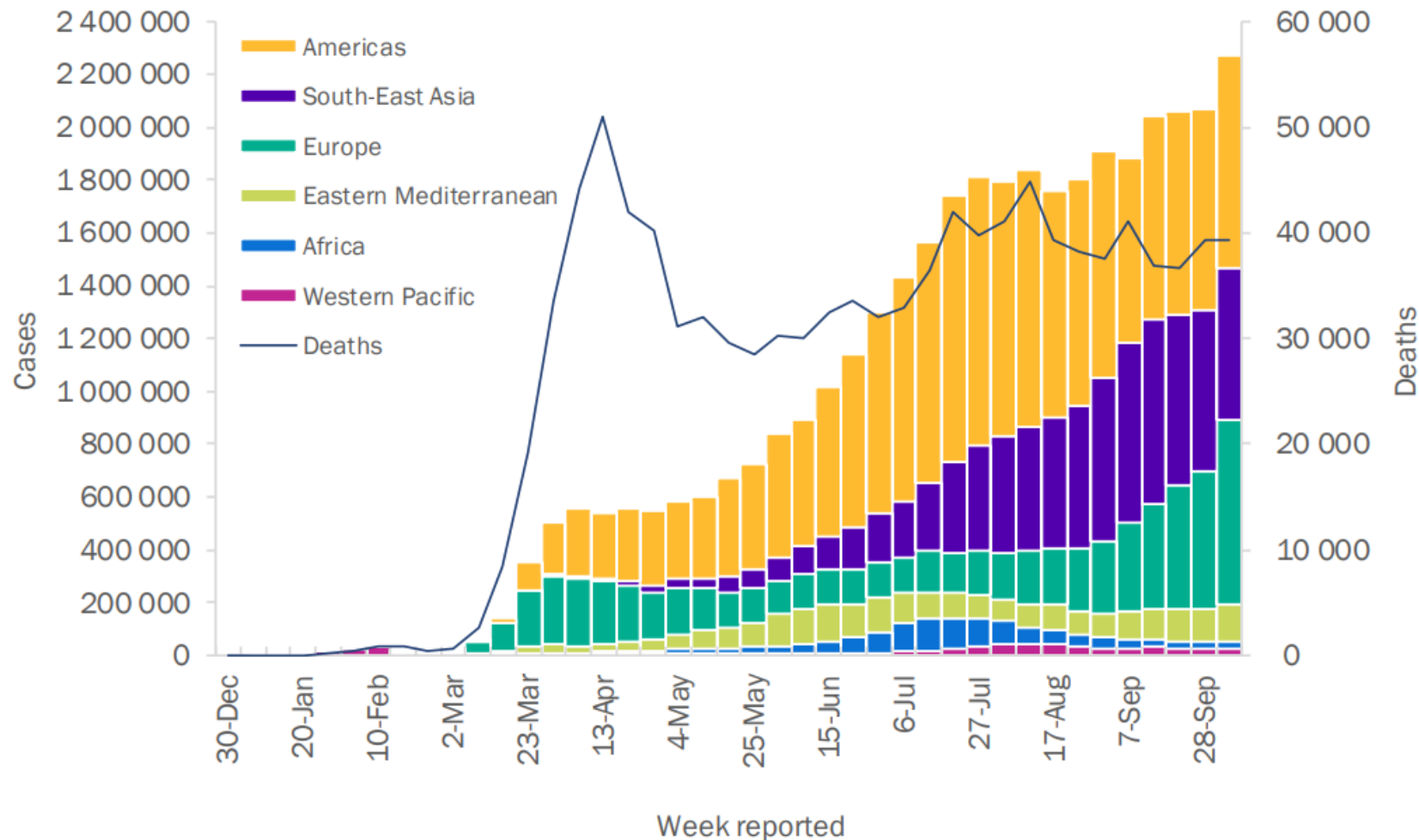


FT graphic: Steven Bernard / @sdbernard

Source: FT analysis of data from the ECDC, the Covid Tracking Project, the UK Dept of Health and Social Care and the Spanish Ministry of Health

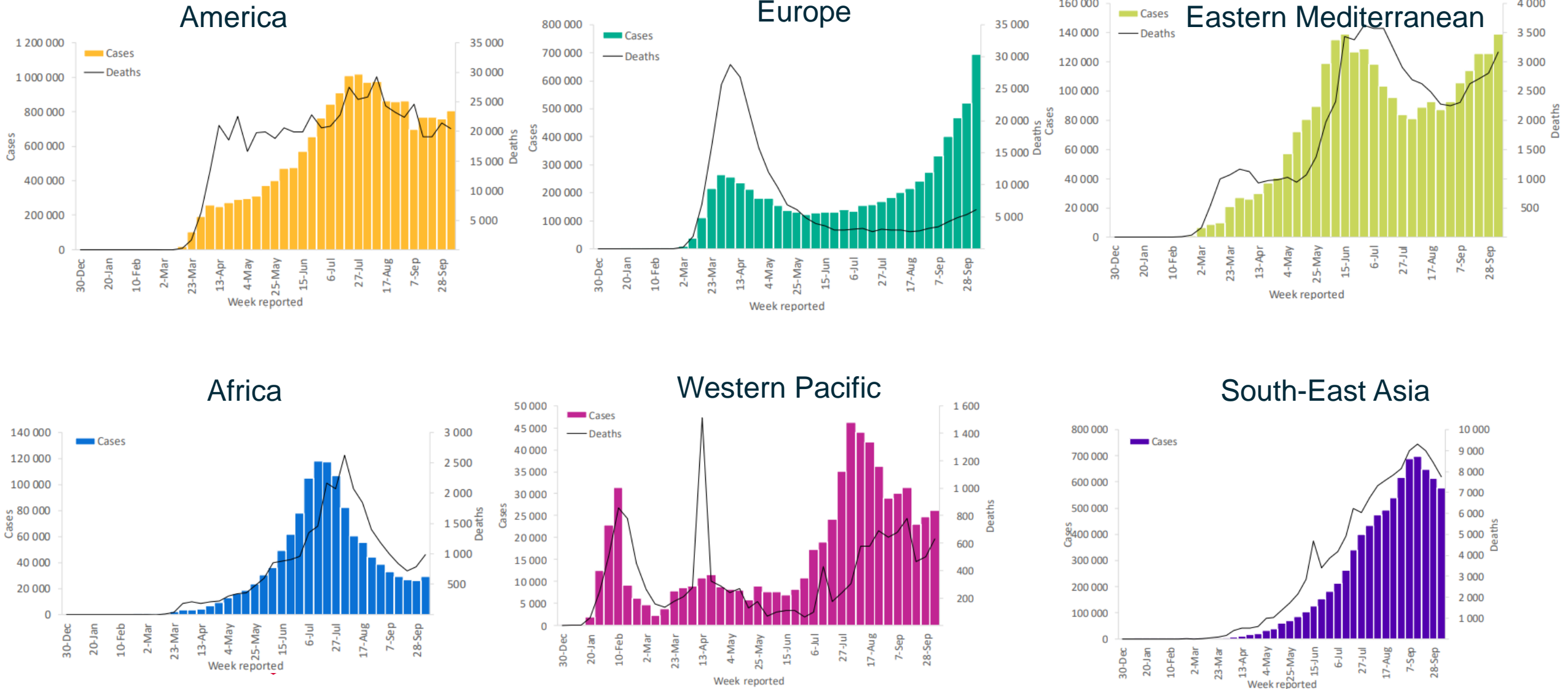
© FT

Number of COVID-19 cases reported weekly by WHO Region, and global deaths, 30 December 2019 through 11 October 2020



Source: WHO

Number of COVID-19 cases reported weekly by WHO Region, and global deaths, 30 December 2019 through 04 October 2020



Portugal

Covid-19 Projections – Portugal – Daily Deaths

Today
12 Oct 2020

14 deaths

Current projection : Mandates are re-imposed for 6 weeks whenever daily deaths reach 8 per million (0.8 per 100k).

Mandates easing : Continued easing of social distancing mandates, and mandates are not re-imposed.

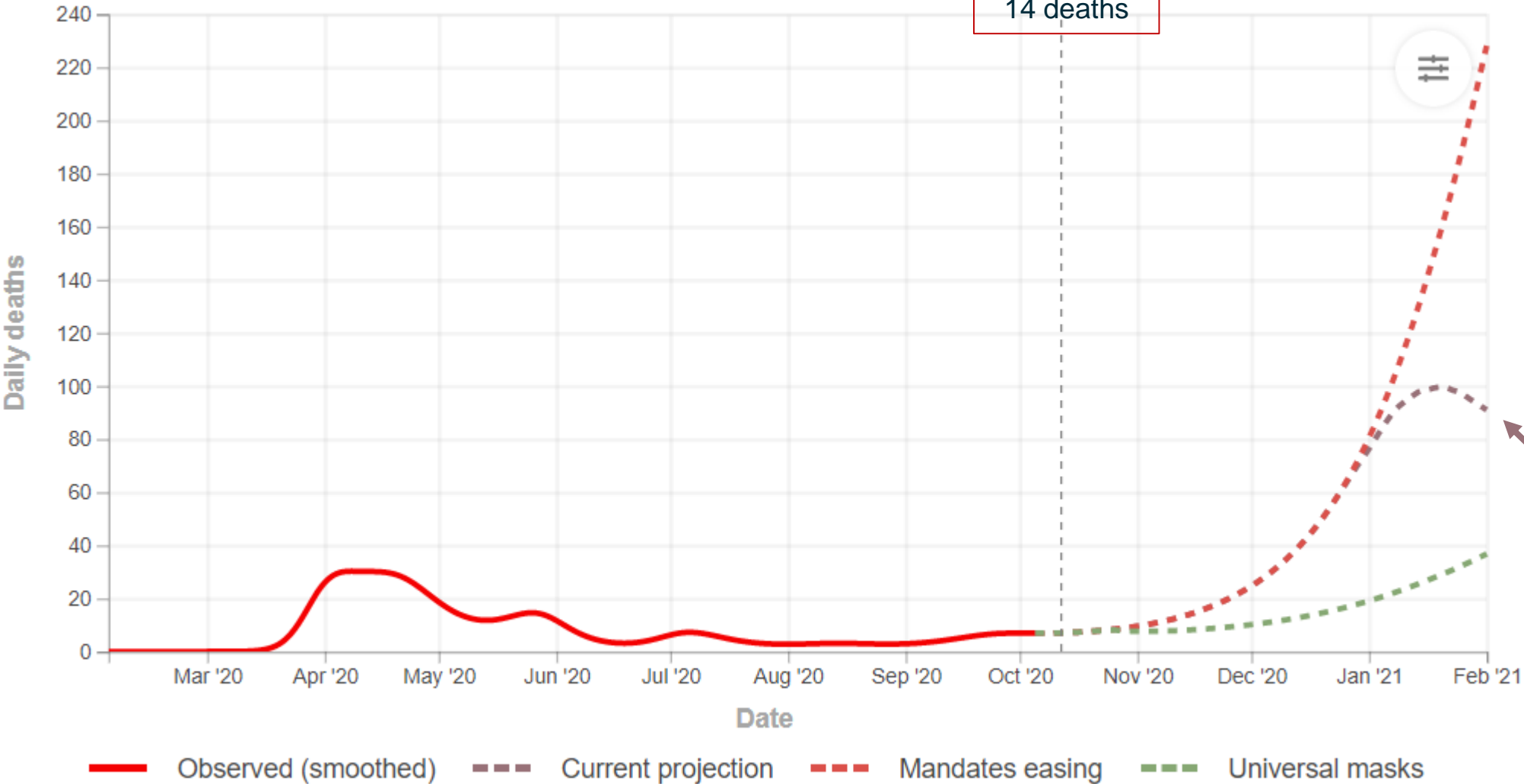
Universal masks : 95% mask usage in public in every location, reaching levels seen in Singapore. Mandates are re-imposed for 6 weeks if daily deaths reach 8 per million (0.8 per 100k).

Projection Daily Deaths

1 February 2021
Projected: 91

Projections in:

• 18 September: 132	Jan 2021
• 24 September: 106	
• 2 October: 172	
• 9 October: 91	Feb 2021



Source: Institute for Health Metrics and Evaluation / University of Washington - <https://covid19.healthdata.org/portugal?view=daily-deaths&tab=trend>

Covid-19 Projections – Portugal – Total Deaths

Today
12 Oct 2020
2,094 deaths

Current projection : Mandates are re-imposed for 6 weeks whenever daily deaths reach 8 per million (0.8 per 100k).

Mandates easing : Continued easing of social distancing mandates, and mandates are not re-imposed.

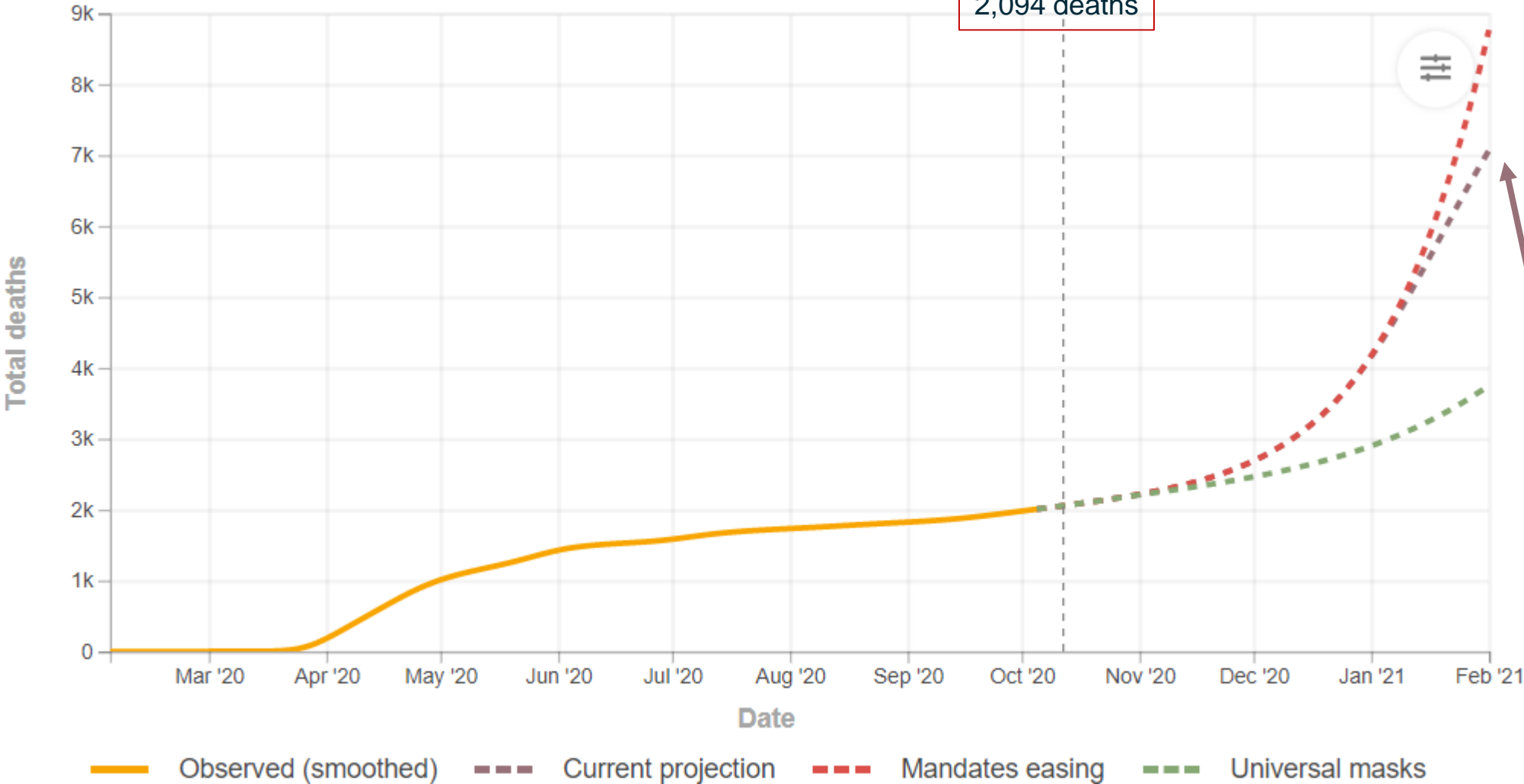
Universal masks : 95% mask usage in public in every location, reaching levels seen in Singapore. Mandates are re-imposed for 6 weeks if daily deaths reach 8 per million (0.8 per 100k).

**Projection
Total Deaths**

**1 February 2021
Projected: 7,067**

Projections in:

• 18 September:	8,698	Jan 2021
• 24 September:	11,352	
• 2 October:	8,386	
• 9 October:	7,067	Feb 2021

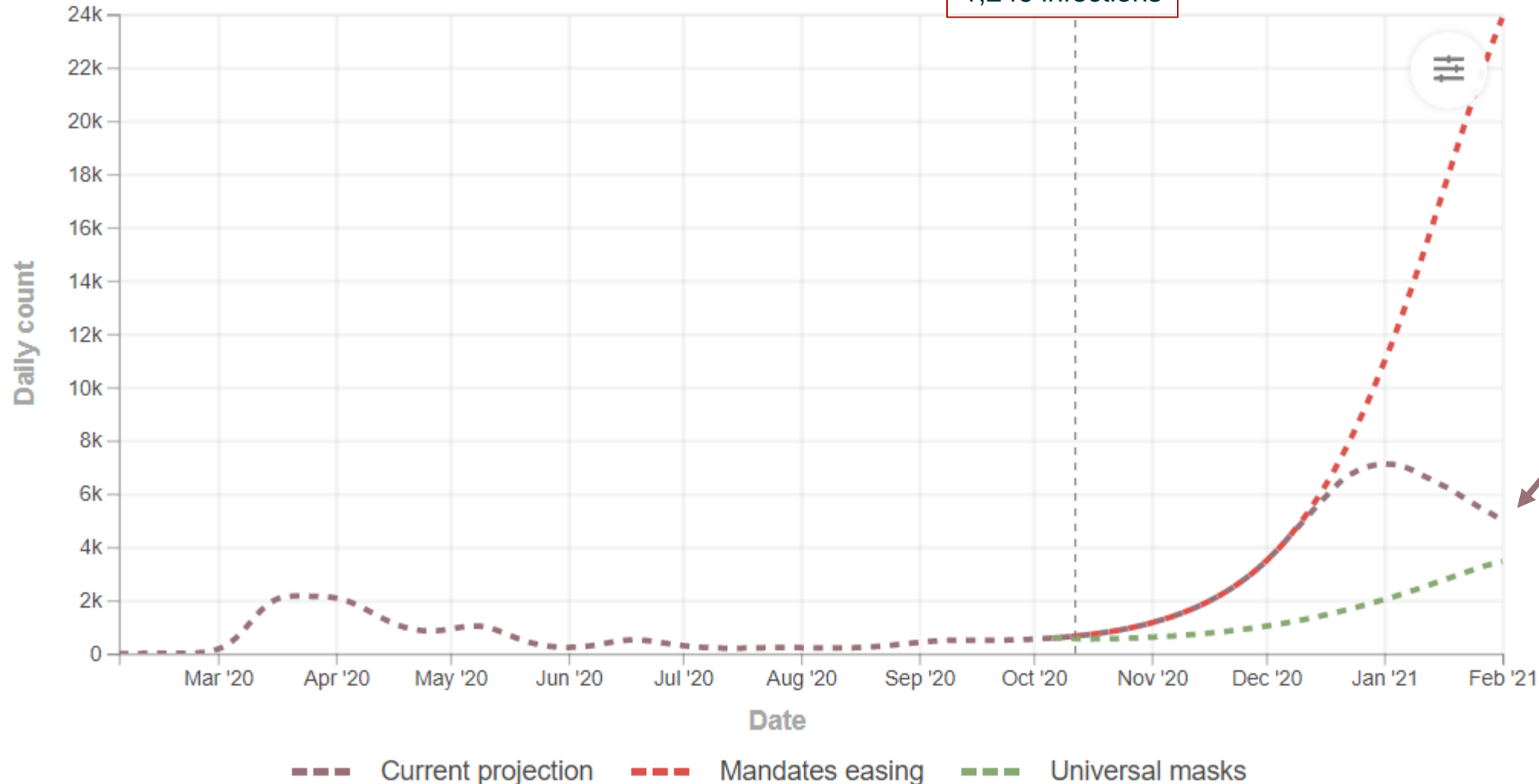


Source: Institute for Health Metrics and Evaluation / University of Washington - <https://covid19.healthdata.org/portugal?view=daily-deaths&tab=trend>

Covid-19 Projections – Portugal – Daily Infections

Today
12 Oct 2020

1,249 infections



Current projection : Mandates are re-imposed for 6 weeks whenever daily deaths reach 8 per million (0.8 per 100k).

Mandates easing : Continued easing of social distancing mandates, and mandates are not re-imposed.

Universal masks : 95% mask usage in public in every location, reaching levels seen in Singapore. Mandates are re-imposed for 6 weeks if daily deaths reach 8 per million (0.8 per 100k).

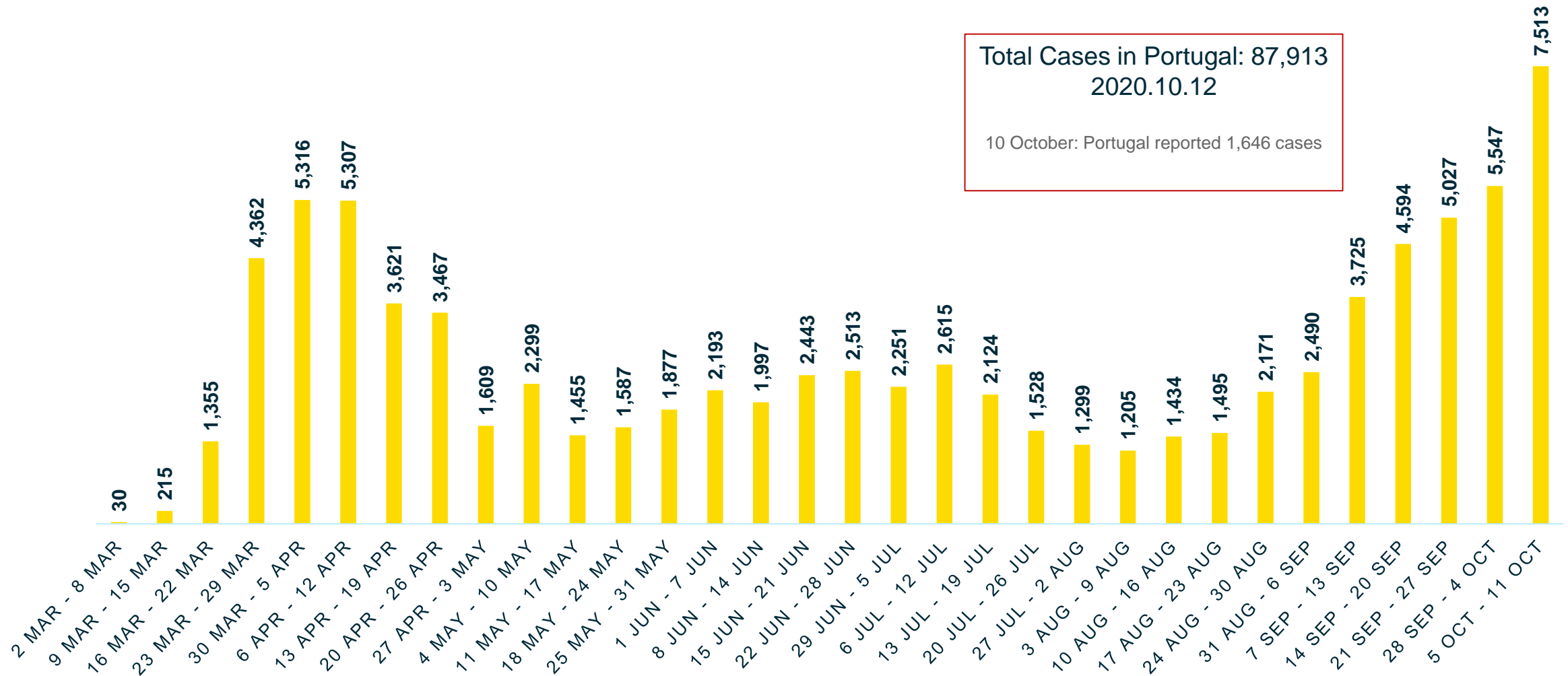
Projection Daily Infections

1 February 2021
Projected: 4,994

Projections in:

- 18 September: 5,478
 - 24 September: 6,292
 - 2 October: 9,498
- Jan 2021
- 9 October: 4,994
- Feb 2021

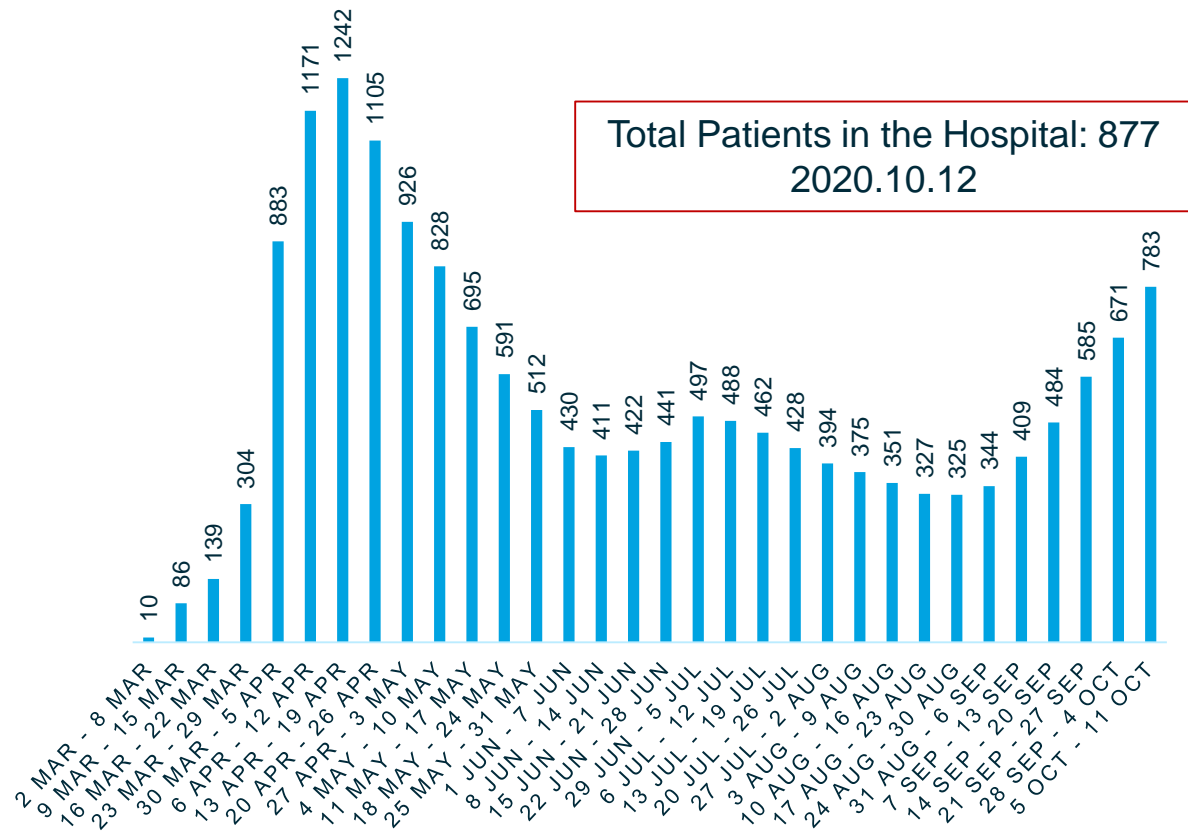
Coronavirus (SARS-CoV-2 / COVID 19) – Portugal – New cases per week



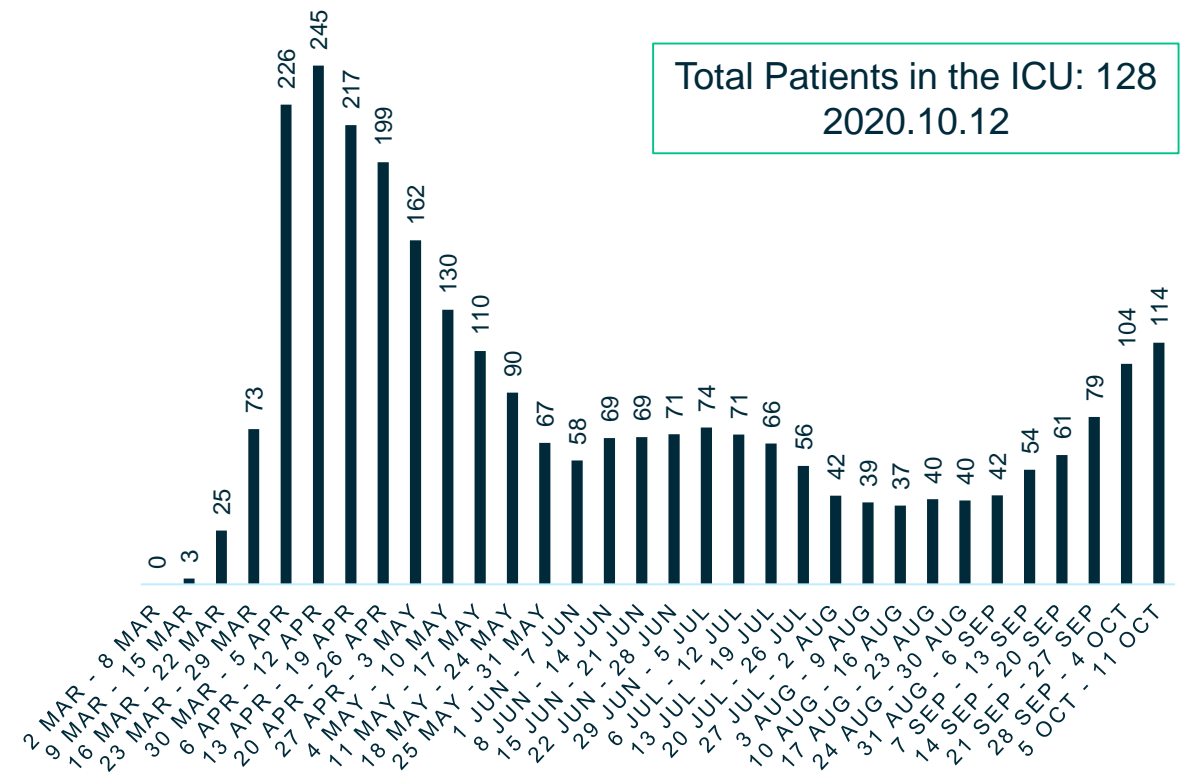
Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

Coronavirus (SARS-CoV-2 / COVID 19) – Portugal – Hospital stable/ICU per week

■ Average # of Patients stable in the Hospital per week

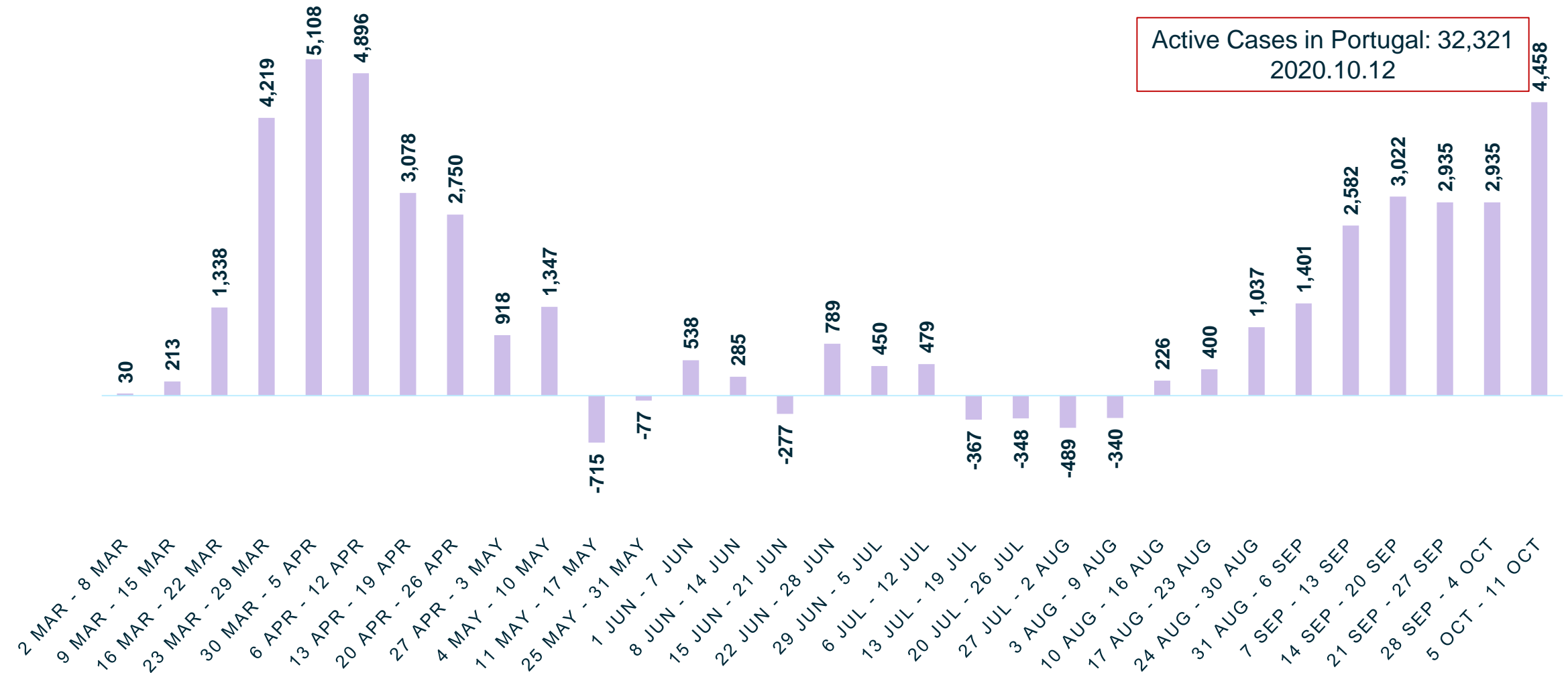


■ Average # of Patients in the ICU per week



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

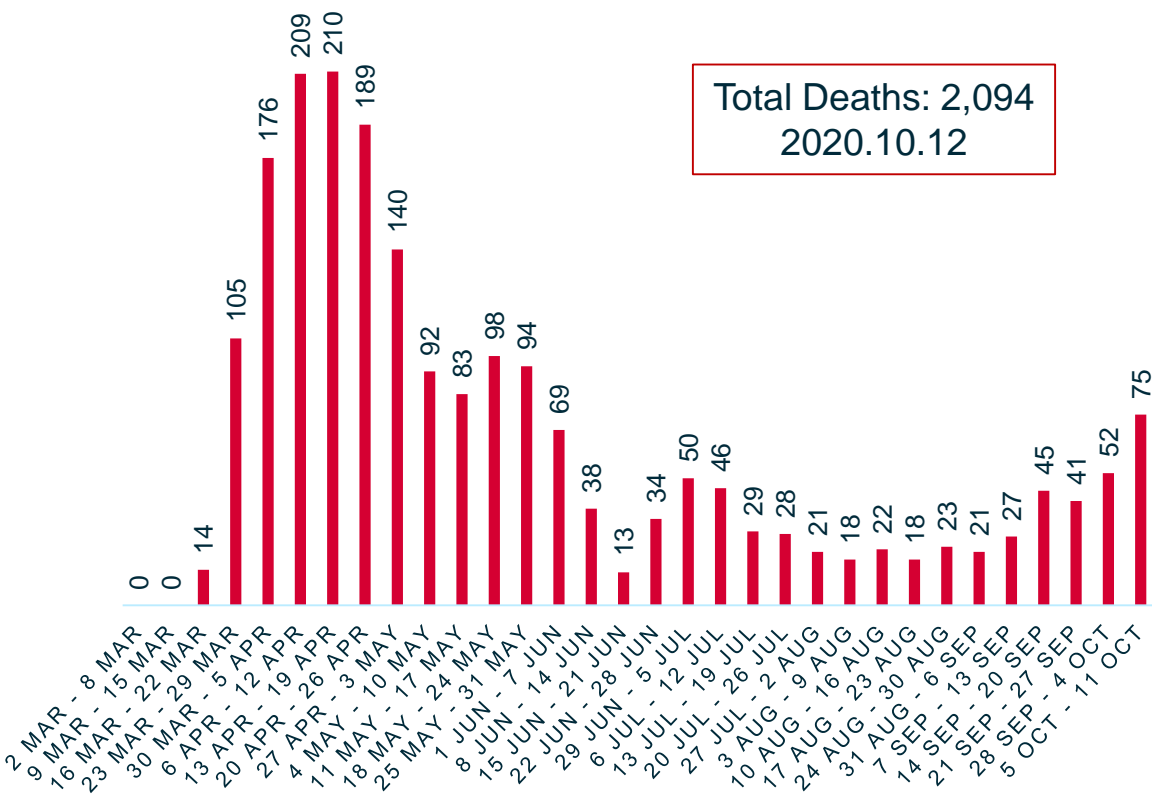
Coronavirus (SARS-CoV-2 / COVID 19) – Portugal – New Active cases per week



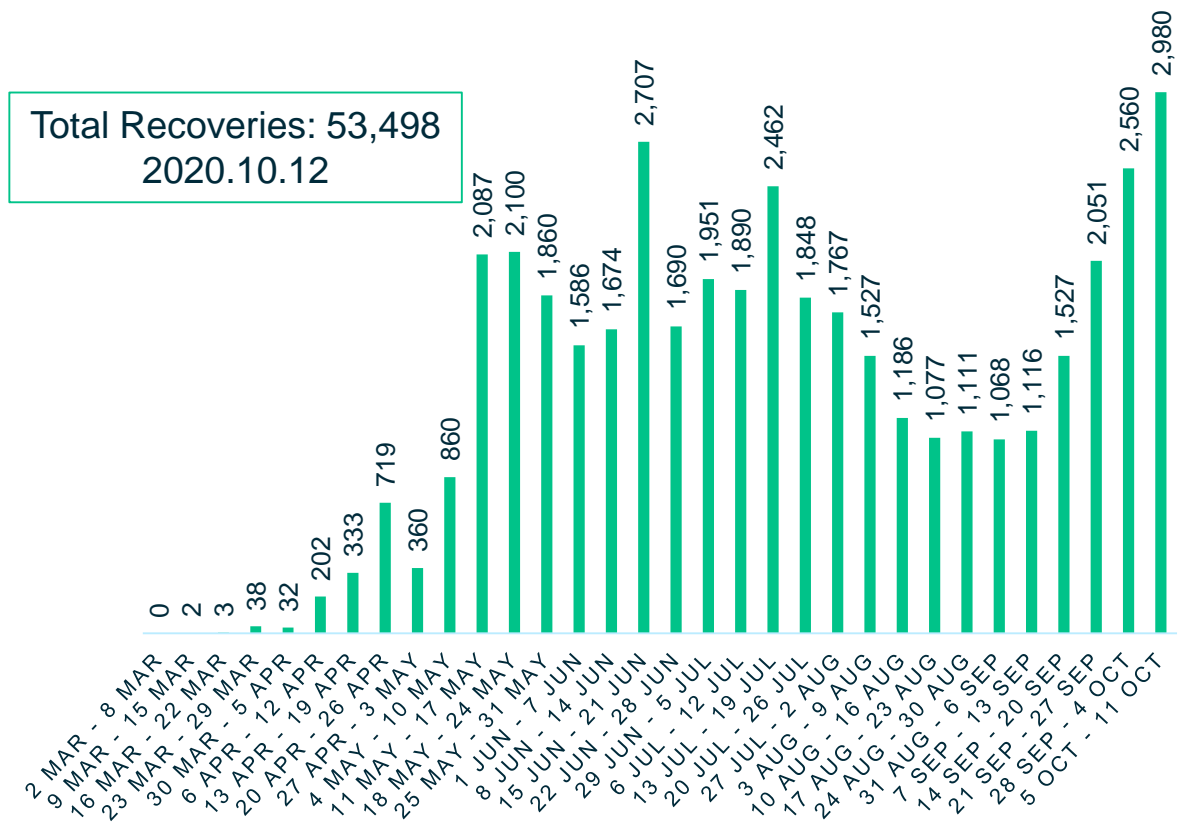
Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

Coronavirus (SARS-CoV-2 / COVID 19) – Portugal – New deaths/recoveries per week

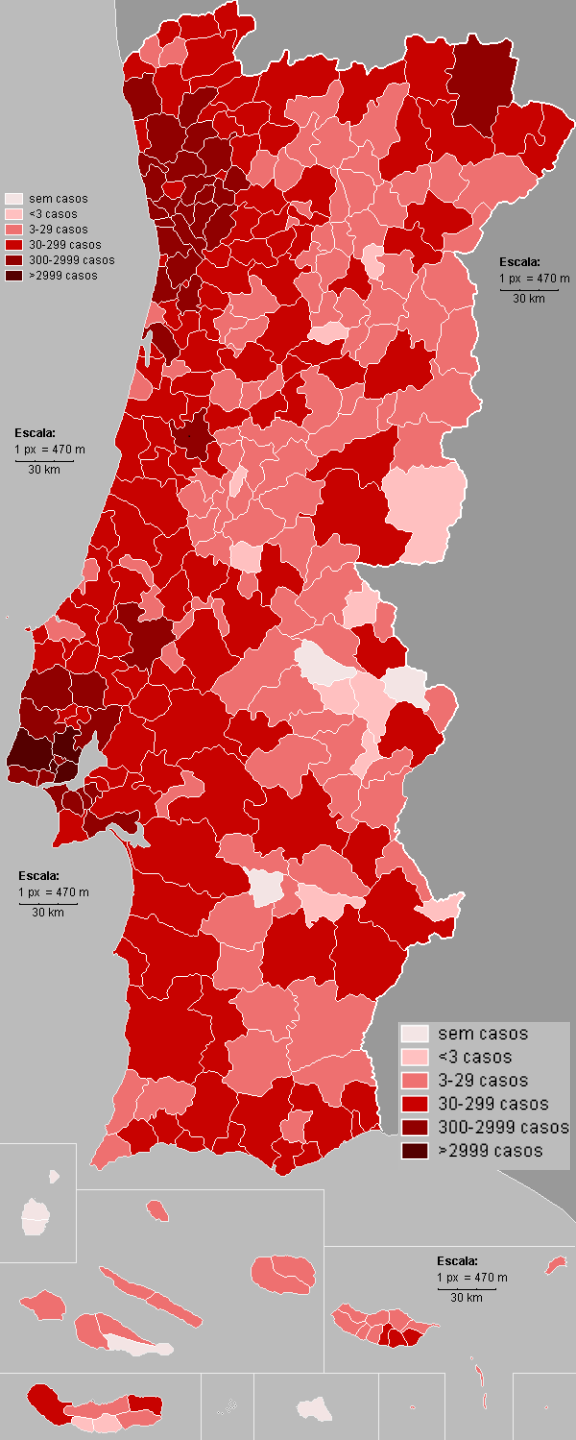
■ # of deaths per week



■ # of recoveries per week



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>



Coronavirus (SARS-CoV-2 / COVID 19)

Portugal

12 October 2020

COVID-19 | RELATÓRIO DE SITUAÇÃO | 12 OUTUBRO 2020

SITUAÇÃO EPIDEMIOLÓGICA EM PORTUGAL

TOTAL DE CASOS E VARIAÇÃO

32 321 | + 924

ATIVOS

53 498 | + 311

RECUPERADOS

2 094 | + 14

ÓBITOS

48 844 | + 431

CONTACTOS EM VIGILÂNCIA

87 913 | +1 249

CONFIRMADOS

TOTAL DE CASOS, DE ÓBITOS E VARIAÇÃO POR REGIÃO

Açores

298 | + 3

15 | -

Madeira

294 | +10

0 | -

32 947 | + 602

924 | + 8

7 082 | + 87

272 | -

43 646 | + 505

836 | + 6

1 645 | + 15

26 | -

2 001 | + 27

21 | -

Legenda

CASOS CONFIRMADOS

ÓBITOS

DISTRIBUIÇÃO DOS CASOS EM INTERNAMENTO

877 | + 34

INTERNAMENTO

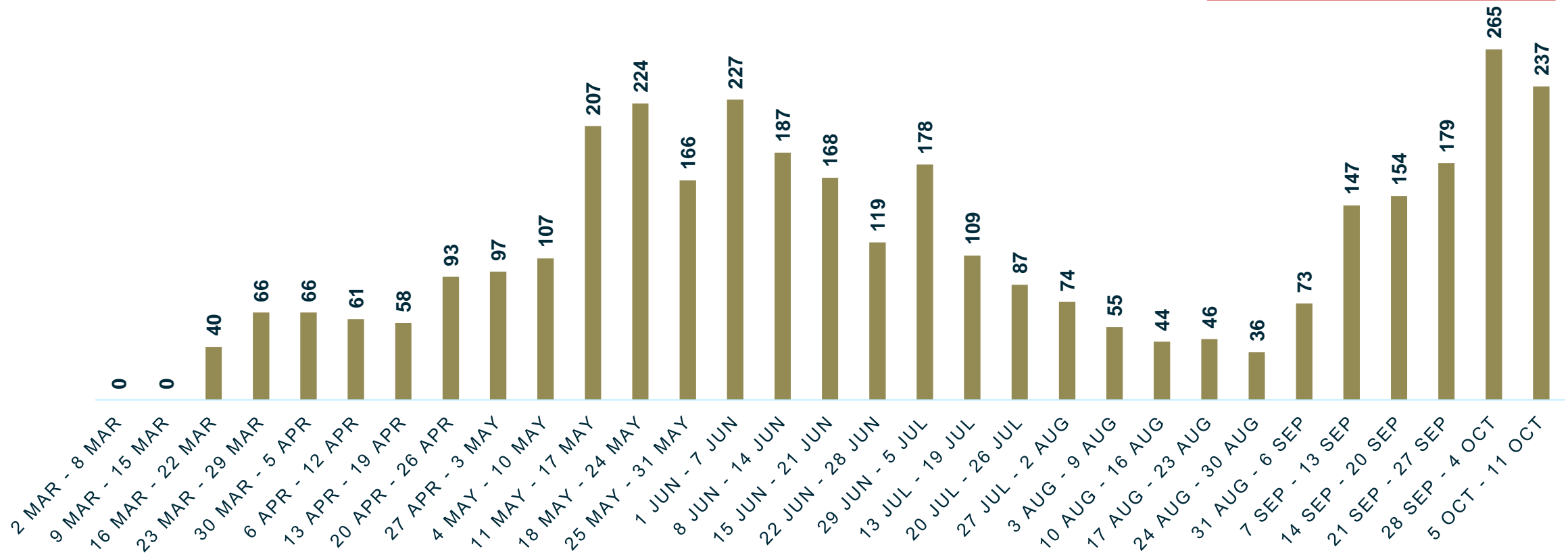
128 | + 4

INTERNAMENTO
EM UCI

October 2020

Coronavirus (SARS-CoV-2 / COVID 19) – Loures - New cases per week

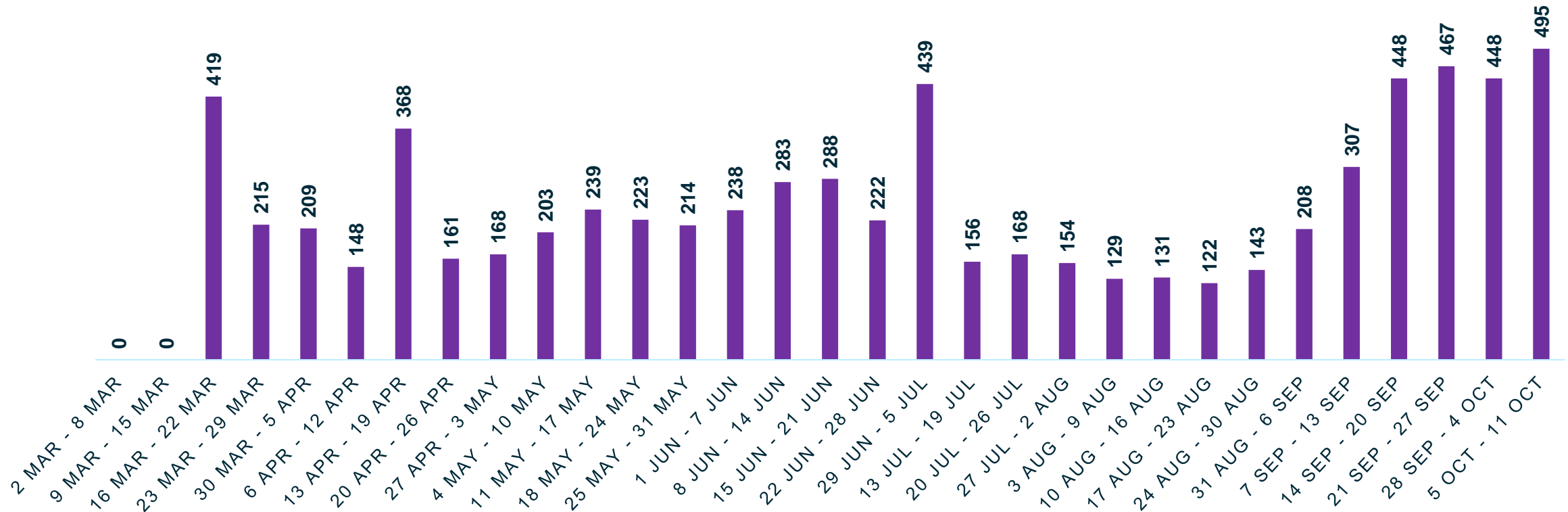
Total Cases in Loures: 3,594
2020.10.12



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

Coronavirus (SARS-CoV-2 / COVID 19) – **Lisbon** - New cases per week

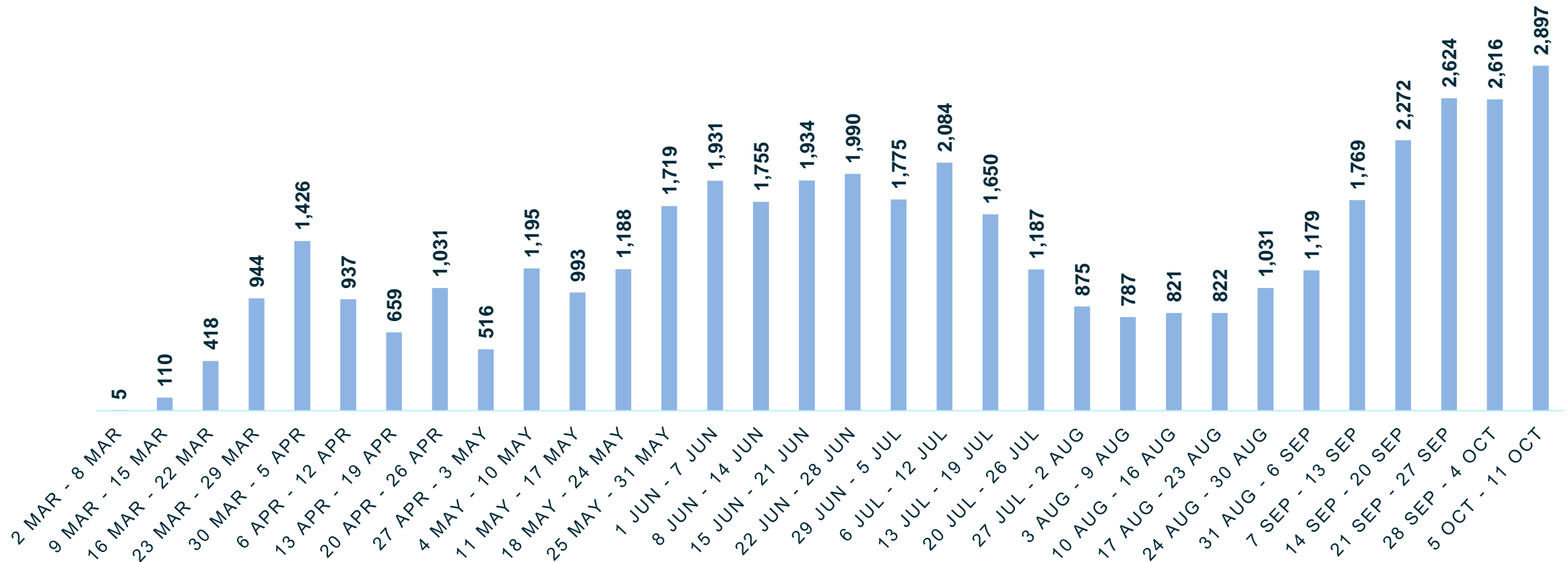
Total Cases in Lisbon: 7,460
2020.10.12



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

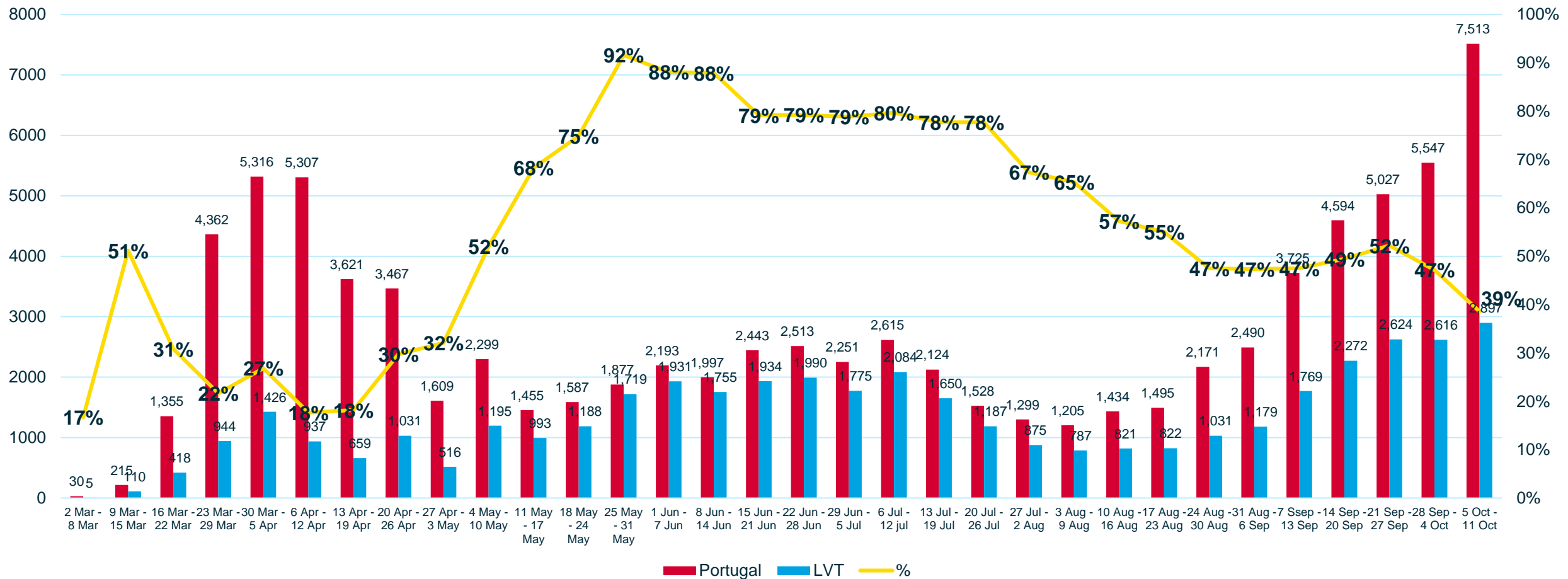
Coronavirus (SARS-CoV-2 / COVID 19)) – **Lisbon and Tagus Valley** - New cases per week

Total Cases in Lisbon and Tagus Valley: 43,646
2020.10.12



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

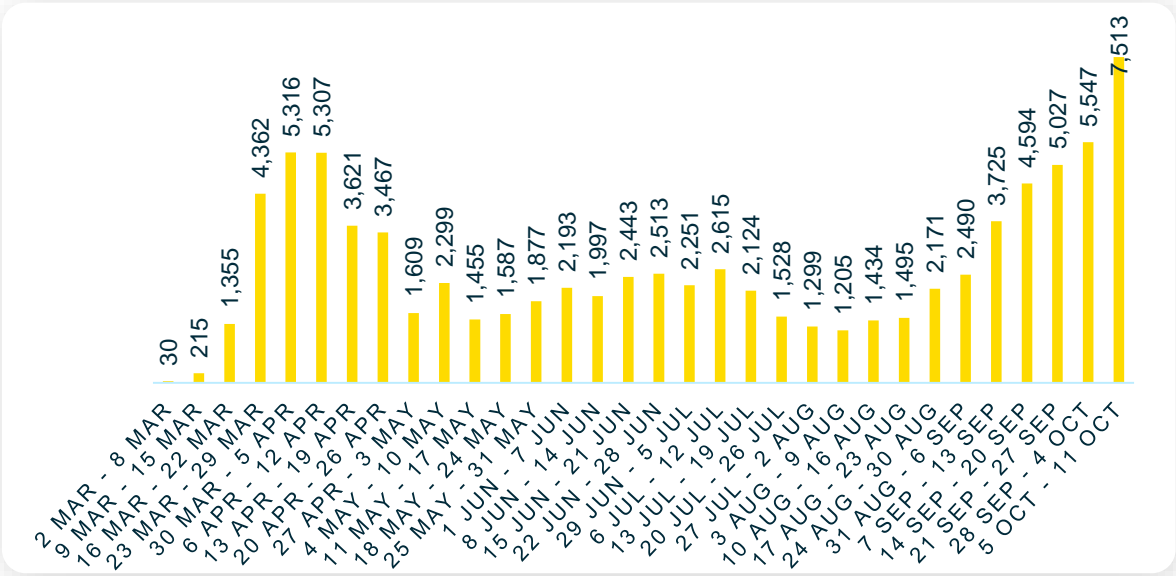
Coronavirus (SARS-CoV-2 / COVID 19) – % of new cases in Lisbon and Tagus Valley - New cases per week



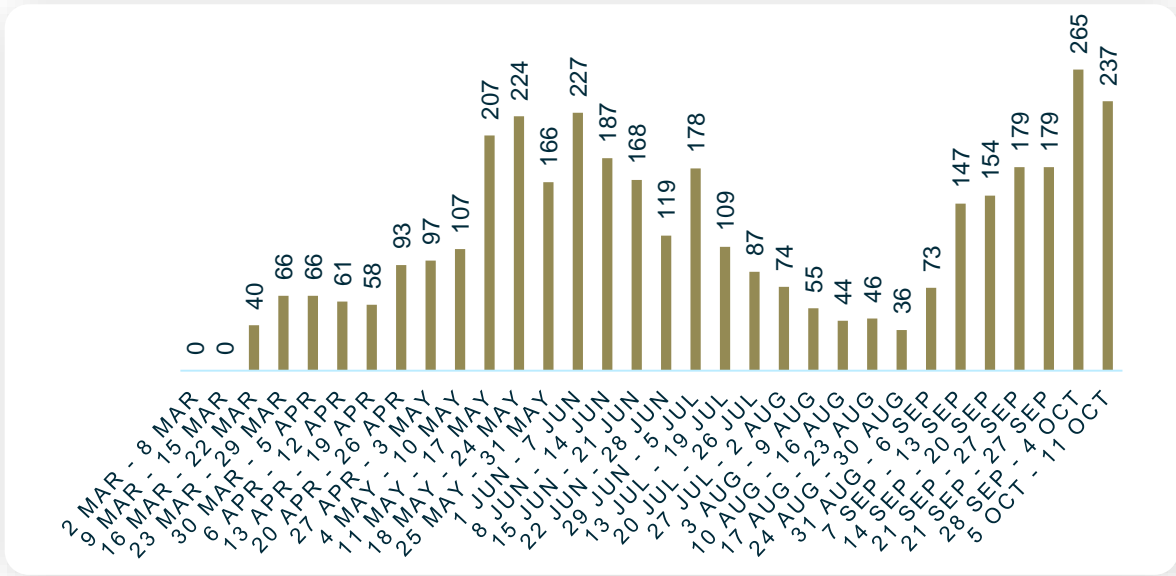
Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

SARS-CoV-2 / COVID 19 - New cases per week

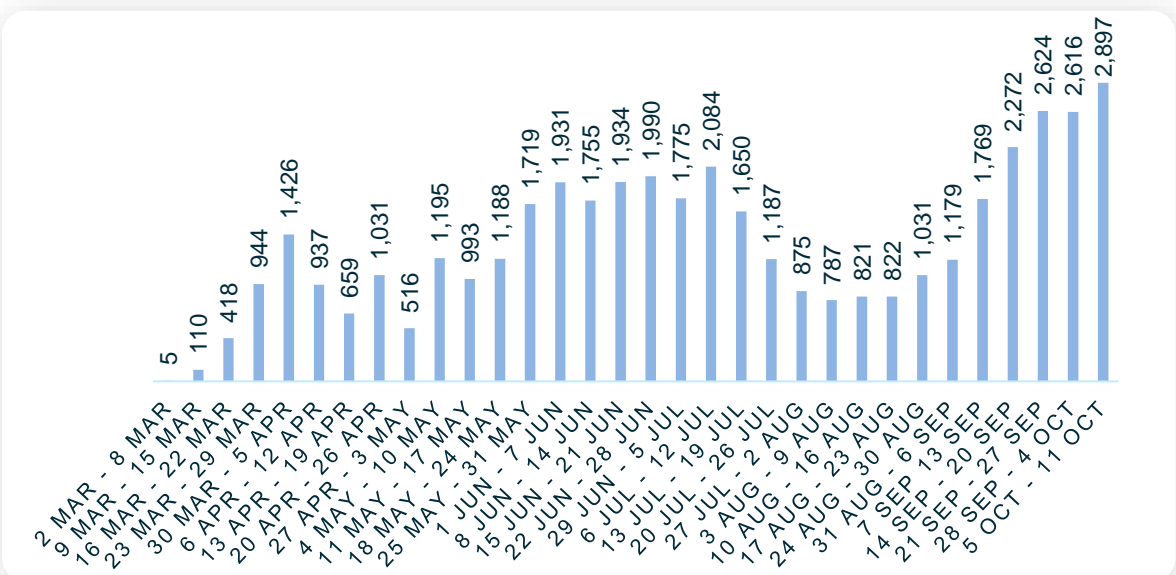
Portugal



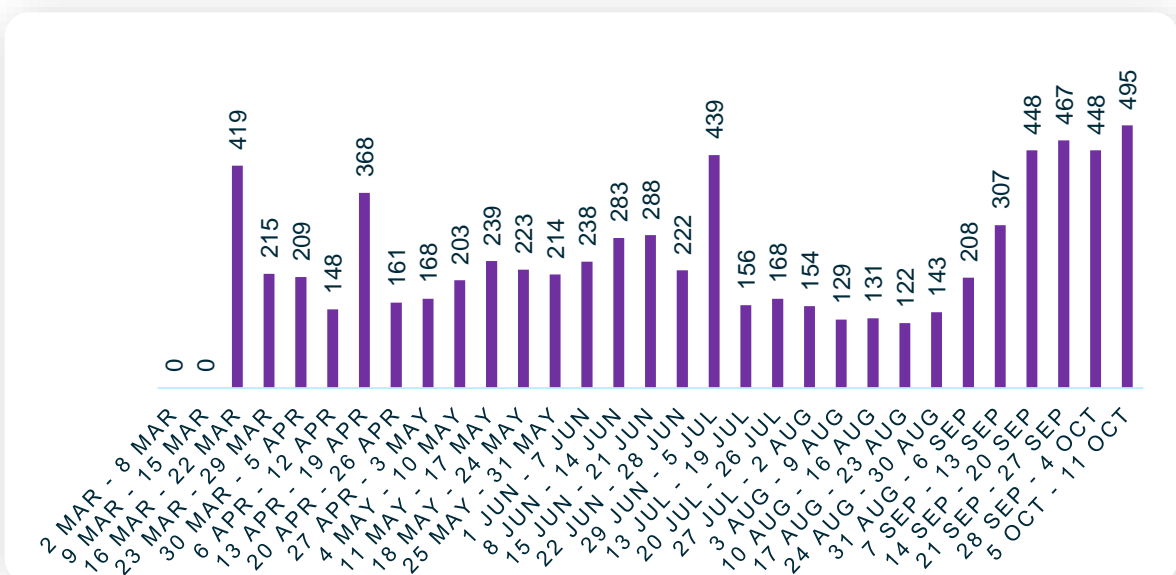
Loures



Lisbon and Tagus Valley

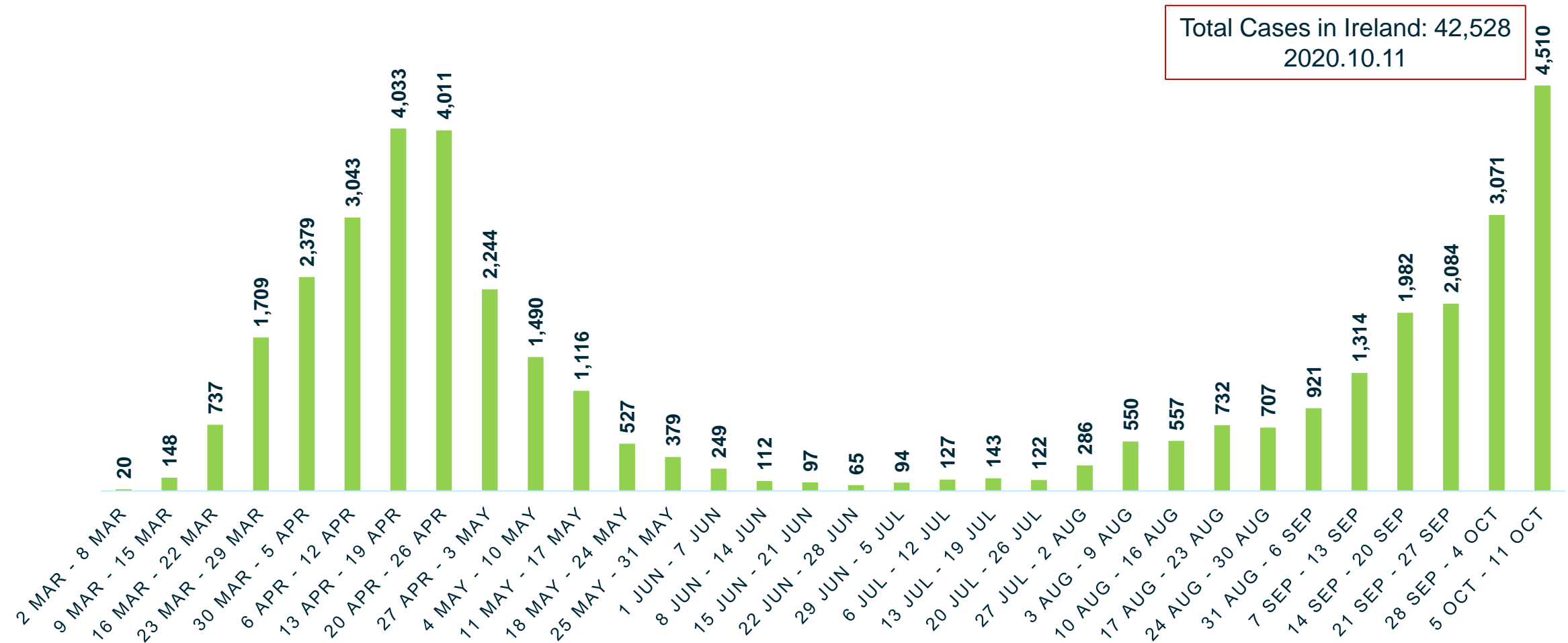


Lisbon



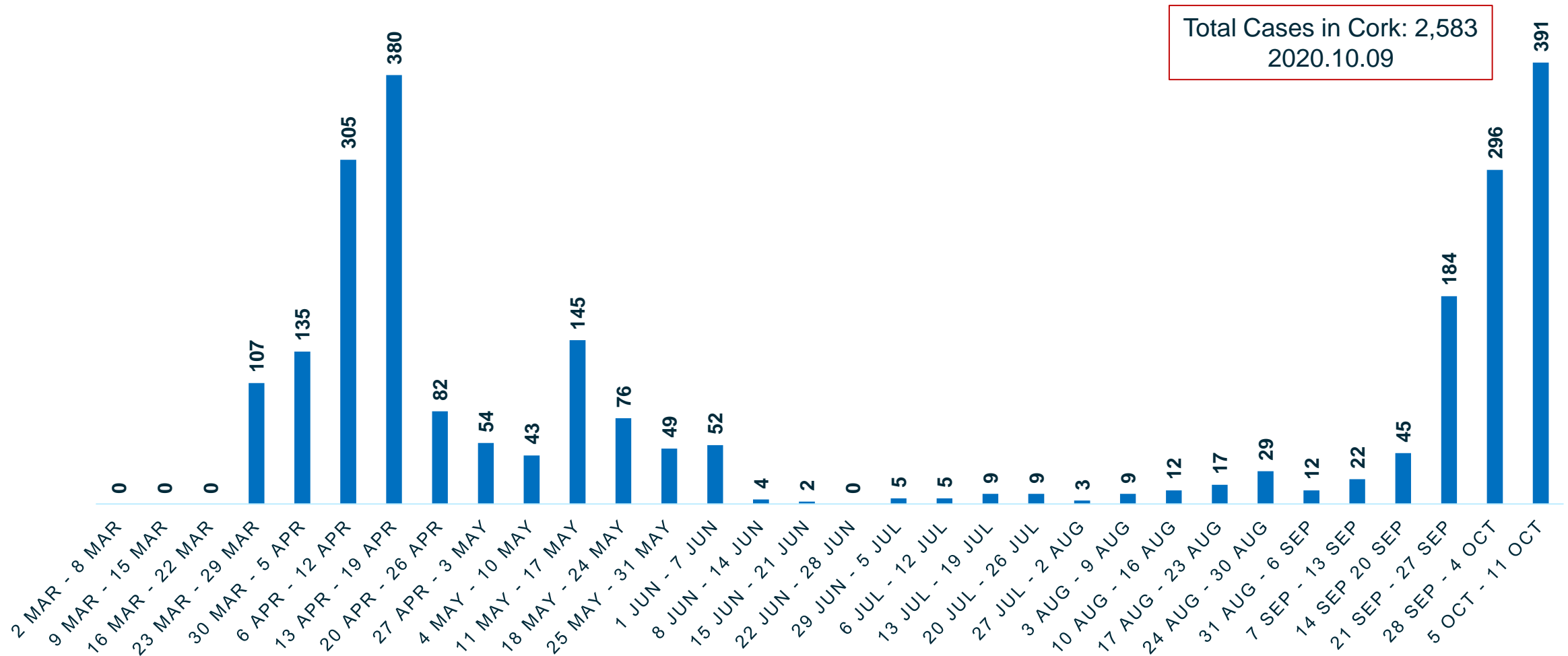
Ireland

Coronavirus (SARS-CoV-2 / COVID 19)) – Ireland - New cases per week



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

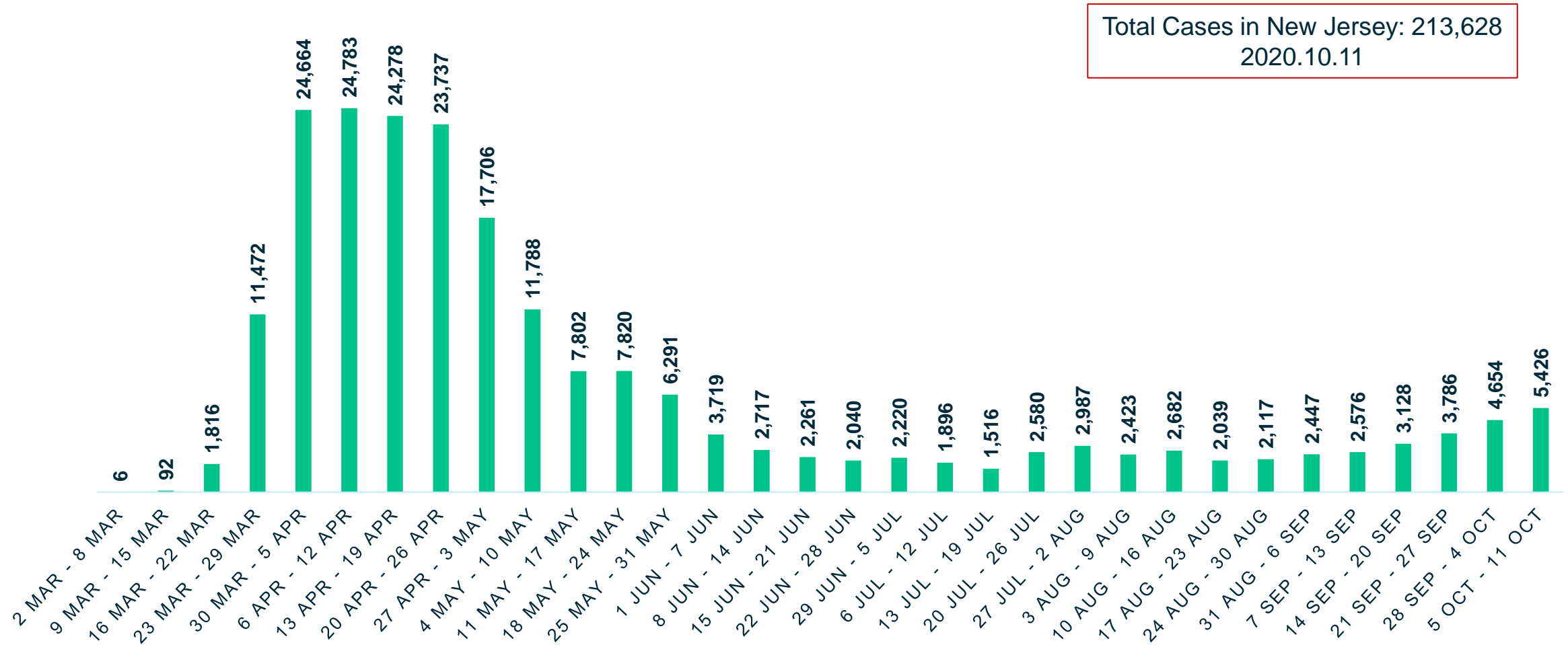
Coronavirus (SARS-CoV-2 / COVID 19) – **Cork** - New cases per week



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

New Jersey

Coronavirus (SARS-CoV-2 / COVID 19)) – **New Jersey** - New cases per week



Source: <https://covid19.min-saude.pt/ponto-de-situacao-atual-em-portugal/>

Recent News

The latest coronavirus updates and developments impacting the global pharmaceutical supply chain...

- **13 October**

- Johnson & Johnson has announced the temporary pause of further dosing in all its vaccine candidate clinical trials for Covid-19 after one of the study participants reported an unexplained illness. The ENSEMBLE trial's independent Data Safety Monitoring Board (DSMB) and the company's internal clinical and safety physicians are currently reviewing and evaluating the participant's illness.

- **12 October**

- AstraZeneca has received an investment of approximately \$486m from the US Government to develop and supply its long-acting antibody (LAAB) cocktail, AZD7442, for Covid-19 treatment. The company intends to supply up to 100,000 doses of the therapy beginning towards the end of 2020. In the coming weeks, AZD7442 will progress into two Phase III trials in a total of over 6,000 subjects enrolled at sites across the US and other countries.
- UK researchers are conducting a clinical trial to test the Bacillus Calmette-Guérin (BCG) vaccine, which is currently used to protect babies from tuberculosis, for its ability to protect against Covid-19. The UK arm of the large-scale, global study is being led by the University of Exeter. Named BRACE, the trial will involve more than 10,000 healthcare staff and care home workers across the UK, Australia, the Netherlands, Spain, and Brazil.
- Gilead Sciences has reported final results from the Phase III ACTT-1 clinical trial, where its experimental antiviral Veklury (remdesivir) demonstrated consistent, clinically meaningful improvements when compared to placebo, in hospitalised adults with mild-moderate or severe Covid-19. Data showed that treatment with the drug led to a faster time to recovery.

- **8 October**

- Eli Lilly has submitted an application to the US Food and Drug Administration (FDA) seeking emergency use authorisation (EUA) for LY-CoV555 monotherapy for treating higher-risk patients with mild-to-moderate Covid-19. The company also plans to submit an EUA application to the FDA for a combination therapy of LY-CoV555 and LY-CoV016 in November this year.
- US-based biotechnology company Moderna may seek an emergency use authorisation (EUA) from the US Food and Drug Administration (FDA) for its Covid-19 vaccine candidate after 25 November. With the EUA, the FDA can authorise the use of unapproved medical products or treatments during public health emergencies.

The latest coronavirus updates and developments impacting the global pharmaceutical supply chain... (cont.)

- **6 October**

- The FDA said it has worked to make clear to Covid-19 vaccine developers what standards would have to be met to authorize use of shots. One such path is an emergency-use authorization, or EUA, a fast-track procedure that relies on less safety and efficacy data than a full approval.
- NVIDIA is creating a supercomputer named Cambridge-1 to enable artificial intelligence (AI)-based research on Covid-19, as well as other healthcare areas. Claimed to be the UK's most powerful supercomputer, Cambridge-1 will be initially leveraged by GlaxoSmithKline, AstraZeneca, Guy's and St Thomas' NHS Foundation Trust, King's College London and Oxford Nanopore Technologies for pharmaceutical research.

- **1 October**

- European regulators are set to start an accelerated review of a Covid-19 vaccine front-runner from the University of Oxford and AstraZeneca Plc. Trials were halted earlier this month due to concerns about a trial participant who fell ill. However Reuters also reported that the US Food and Drug Administration had widened its investigation of the incident that led to the trial halt. US authorities have yet to approve the restart of the trial there.
- Pfizer and BioNTech have started enrolling participants into a Phase III clinical trial of their Covid-19 vaccine candidate in South Africa. Designed to assess the safety and efficacy of the vaccine candidate, the trial will involve nearly 800 subjects at four sites across Gauteng, Limpopo and the Western Cape. The South African Health Products Regulatory Authority (Sahpra) granted approval for the trial on 22 September 2020.

- **30 September**

- World Bank president David Malpass has said that the bank is seeking board approval for a \$12bn Covid-19 vaccine financing plan to ensure enough vaccine doses are available for poor and developing countries. In an exclusive interview with Reuters, Malpass added that the plan is to help these countries obtain and distribute vaccines early to healthcare and other essential workers, as well as boost manufacturing worldwide.
- Moderna has reported data from the second interim analysis of Phase I clinical trial of its Covid-19 vaccine candidate, mRNA-1273, which was found to be generally well-tolerated at 25µg and 100µg dose levels in participants aged 56-70 and above 71 years. Immune responses were found to be dose-dependent, with the 100µg dose demonstrating higher binding and neutralising antibody titres.

The latest coronavirus updates and developments impacting the global pharmaceutical supply chain... (cont.)

- **29 September**

- The FDA has placed partial clinical hold on Inovio Pharmaceuticals' planned Phase II/III clinical trial of its potential Covid-19 vaccine, INO-4800. The regulator asked the company to provide more information on the trial, including details about the use of CELLECTRA 2000 delivery device. Inovio would respond to FDA's queries in October, after which the agency will have up to 30 days to decide whether the trial may proceed.

- **28 September**

- Ireland recorded 430 new infections on Sunday, the most in five months, with Dublin accounting for around half the cases.
- Industrial companies in China registered profits for the fourth straight month in August although the growth is lower than that of 2020.
- Despite the growth, the recovery of China from the impact of the Covid-19 pandemic remains uneven, with industrial production growing by 5.6% in August compared to the previously year.
- Johnson & Johnson (J&J) subsidiary Janssen has reported positive interim data from an ongoing Phase I/IIa clinical trial of a potential Covid-19 vaccine, JNJ-78436735. According to the results, a single dose of the vaccine candidate showed a strong neutralising antibody response in almost all participants aged 18 years and above.

- **25 September**

- The virus is continuing to mutate throughout the course of the pandemic, according to new research, with experts believing it is probably becoming more contagious. The study did not find that mutations of the virus had made it more lethal or changed its effects.
- Ireland's government moved to tighten restrictions in a second county and signalled more limits may follow. Travel to and from Donegal in the north-west of the country will be limited, while restaurants will be restricted to outdoor service only. That mirrors restrictions placed on Dublin six days ago.
- US-based biotechnology firm Novavax has started the first Phase III clinical trial of its potential Covid-19 vaccine, NVX-CoV2373, in the UK. Performed with the UK Government's Vaccines Taskforce, the trial will investigate the safety, efficacy and immunogenicity of NVX-CoV2373. The study is designed to recruit up to 10,000 participants aged 18 to 84 years, with and without relevant comorbidities, over the coming four to six weeks.
- The US FDA is yet to provide authorisation for AstraZeneca to resume its Covid-19 vaccine trial in the country, nearly three weeks following a pause over safety concerns. The US regulators are still investigating an illness in one of the trial participants, even after the clinical programme restarted in the UK and other countries, according to Reuters.

- **23 September**

- Fujifilm Toyama Chemical has reported that the Phase III clinical trial of Avigan (favipiravir) has met its primary endpoint of time to negative conversion of detectable SARS-CoV 2 viral RNA in the RT-PCR assays, and to relief of symptoms, in Covid-19 patients with non-severe pneumonia in Japan. Based on the positive data, the company plans to seek approval for the drug to treat Covid-19, expanding its current indication for influenza patients.

The latest coronavirus updates and developments impacting the global pharmaceutical supply chain... (cont.)

- **22 September**

- An \$18 billion initiative to deploy a Covid-19 vaccine around the world is moving into the next phase, with 156 countries and regions joining the program.
- Countries across Europe including the UK, Spain and France are witnessing a surge in the number of Covid-19 cases.
- Some of these countries have just started showing signs of economic revival and new lockdowns to control the recent surge in cases may have serious consequences.
- Meanwhile, the epidemic in the UK appears to be doubling every seven days, according to the government's chief scientific advisor.
- More than 150 countries, including 64 higher income and 92 low- and middle-income economies, have joined the World Health Organization (WHO), Gavi, the Vaccine Alliance and Coalition for Epidemic Preparedness Innovations of COVAX Facility, which aims for equitable distribution of Covid-19 vaccines. However, China and the US are missing from the list of members. COVAX Facility intends to begin signing agreements with vaccine manufacturers and developers to potentially secure two billion doses by the end of next year.

- **21 September**

- Russia has granted marketing authorisation for R-Pharm's Covid-19 prescription drug, Coronavir, to treat outpatients with mild to moderate infection. The antiviral drug has become the first coronavirus drug to be rolled out in pharmacies in Russia.
- Sanofi and GlaxoSmithKline (GSK) have signed an advanced purchase agreement with the European Commission (EC) to supply up to 300 million doses of their potential Covid-19 vaccine, following regulatory approval.
- The European Medicines Agency's human medicines committee (CHMP) has recommended that dexamethasone can be considered a treatment option for adult and adolescent Covid-19 patients needing oxygen therapy.

- **18 September**

- Moderna plans to seek emergency authorisation for the use of its Covid-19 vaccine in high-risk groups, if the vaccine shows at least 70% effectiveness, said Reuters citing the company's chief executive. The vaccine candidate is currently in Phase III trial, which enrolled 25,296 participants so far. An interim analysis is expected to take place in October or November.

Sources

- https://en.wikipedia.org/wiki/Timeline_of_the_2019%E2%80%9320_Wuhan_coronavirus_outbreak
- <https://www.seattletimes.com/seattle-news/health/coronavirus-timeline-how-the-outbreak-unfolded/>
- <https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>
- <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>
- <https://www.pharmaceutical-technology.com/news/coronavirus-a-timeline-of-how-the-deadly-outbreak-evolved/>
- <https://www.cphi-online.com/updated-covid19-pharma-tracker-news082415.html>
- <https://www.dgs.pt/em-destaque.aspx>