

COVID-19 Global Trends & Analyses: May Update 7

Period 15-22 May

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Summary

Global Trends

- In the past week, the global number of cumulative cases surpassed 5 million and the daily number of new reported cases reached an all-time high of 100,474 on May 20.
- The four countries with the highest cumulative number of cases are the **US, Russia, Brazil and the UK**.
 - Poor leadership, regardless of political system, stands out as a major risk factor for country-level coronavirus transmission.
- The epicentre of the pandemic has moved to **Latin America**, which accounted for one-third of new cases in the past week. Peru has the highest per capita attack rate.
- **India** has been reporting between 5,000 and 6,000 new cases a day. Afghanistan, Pakistan, Bangladesh and Indonesia continue to report high numbers of daily new cases.

Easing Restrictions

- While it is still too early to assess the impact of the easing of restrictions in many countries, a few trends have emerged.
- There are few quantifiable indicators being used to monitor the easing or re-institution of restrictions. However, in **Germany** all 16 states have agreed that an incidence of new cases more than 50 per 100,000 per day for seven consecutive days will trigger a return to lockdown. In **Israel**, a daily count of new cases more than 100 will trigger the reintroduction of some restrictions.
- **Iran** has the clearest and most sustained second wave of infections in the world after restrictions were eased (for example, the opening of mosques for Friday prayers) in mid-April.
- The US state of **Texas** also eased restrictions in mid-April and has experienced a steady increase in daily new cases to all-time highs.
- On the other hand, **Austria, Denmark and the Czech Republic** each relaxed restrictions in mid-April and have not seen any new spikes in infections.
- The first "travel bubble" has been established between Latvia, Lithuania and Estonia. Norway, Denmark and Finland are contemplating a Nordic travel bubble but it will exclude Sweden.

COVID Serology Testing: Immunity and Re-infection

- There is still controversy internationally about the validity of many antibody tests available on the market as well as how effective antibodies will be in maintaining immunity and for how long. Experts recommend the use of **ELISA tests** rather than the cheaper lateral flow tests. They caution against using tests that have a specificity less than 98% in low prevalence populations.
 - A **Swedish** study found that just 7.3% of people in Stockholm had developed COVID-19 antibodies by late April, a sign that a decision not to lock down Sweden against the pandemic may bring little herd immunity in the near future.
 - A serosurvey in the **UK** has found that 5% of people across the UK have coronavirus antibodies while the figure in London is 17%.



- The **Johns Hopkins Centre for Health Security** maintains and regularly updates a Web site that lists key characteristics of many of the serological tests for SARS-CoV-2 on the market and in development. This may be useful for Australia as a tool for assessing antibody tests.
- A study by the **South Korean CDC** examined 285 of 447 recovered patients who had tested positive a second time (via PCR) for COVID-19 after being discharged from isolation and testing negative. Researchers tried to isolate infectious coronaviruses (by viral culture) from samples taken from 108 people who retested positive. All of those samples tested negative. 23 of these patients were tested for antibodies and all were positive
 - The team also tracked down 790 contacts of 285 people who retested positive. No new cases appeared to stem from repeat positive patients, indicating perhaps they are not patients aren't infectious.

Global trends^{1 2}

- In the past week, the global number of cumulative cases surpassed 5 million and the daily number of new reported cases reached an all-time high of 100,474 on May 20.
- The four countries with the highest cumulative number of cases are the **USA** (1,620,000), **Russia** (317,554), **Brazil** (310,087) and the **UK** (250,098).
 - Poor leadership, regardless of political system, stands out as a major risk factor for country-level coronavirus transmission.
- The epicentre of the pandemic has moved to **Latin America**, which accounted for one-third of new cases in the past week.
- Brazil reported 21,472 new cases on May 20, an all-time high, and one-fifth of the global figure.
 - Peru, Chile and Ecuador all have higher per capita attack rates than Brazil.
- India has been reporting between 5,000 and 6,000 new cases a day. Afghanistan, Pakistan, Bangladesh and Indonesia continue to report high numbers of daily new cases.
- The Gulf countries with high numbers of migrant workers (Saudi Arabia, UAE, Qatar, and Kuwait) continue to have rapidly expanding outbreaks.
 - Saudi Arabia has reported more than 65,000 cases and ranks #15 in the world.
 - Meanwhile, Singapore which also has a high number of migrant workers appears to be flattening the curve of its second wave.
- The global cumulative case fatality ratio (CFR) is now 6.4%, a drop from last week most probably due to the relatively low CFRs reported by Russia and Brazil.
- The countries with the **highest CFRs** in the world are all in Europe, led by Belgium (16.3%), France (15.5%), the UK (14.3%), Italy (14.2%), Netherlands (12.9%), Sweden (12.2%) and Spain (12%). The lowest CFRs are in Qatar and Singapore (0.1%).
- Over the past 7 days, Sweden has had the highest per capita death rate (average of 6.25 deaths per million per day) in Europe.
- Australia had a small spike on May 22 of 15 cases, the highest since May 15.
- **Victoria** continues to have the highest number of new cases, reporting **74% of new cases in Australia** in the past 7 days.
- **Australia's cumulative testing rate** has risen to 4,586 per 100,000, which **ranks #13 in the world.**

¹ <https://coronavirus.jhu.edu/data/new-cases>

² <https://www.worldometers.info/coronavirus/#countries>



Observations with policy implications for Australia

Issues related to easing restrictions

- The discovery of new coronavirus cases in two students marred the reopening of **South Korean** schools on May 20, forcing 75 high schools to turn pupils away amid fears among some teachers that it was unsafe for classes to resume.
 - Under the new sanitation rules, students and teachers must wear masks except at mealtimes and clean their desks, which will be spaced 1 metre apart.
 - The education ministry keeps track of whether teachers or students have a fever using an online self-diagnostic system and anyone with a temperature over 37.5 degrees Celsius must stay home.
 - If any student tests positive for the virus, the entire school will switch to online classes for at least two weeks.
- Having begun to ease restrictions in mid-April (e.g., many mosques opened for Friday prayers on May 8), **Iran** is experiencing a sustained second wave of infections, focused on the southwestern province of Khuzestan. The number of daily new reported cases has increased from a low of 802 on May 2 to 2,346 on May 20.
- **South Africa** imposed one of the world's toughest lockdowns in late March, with restrictions only easing slightly from May 1 when the country moved to a five-level alert system where five represents the most restrictions. The country moved from level 5 to level 4 on that day. Travel between South Africa's provinces is still prohibited, and international flights are cancelled except for those repatriating citizens.
 - For Level 3 to be approved, South Africa will first need to see a flattening of the curve of Covid-19 infections and that might still be many weeks away. The number of daily new cases has been steadily increasing since May 1, when 304 cases were reported, reaching an all-time high of 1,160 cases on May 17. The cumulative number of cases has reached 18,000, which is many more than Egypt (14,230) with the second highest number on the continent of Africa.
- On May 18, **Italy** permitted cafes, restaurants and bars to reopen for the first time in two months with strict spacing requirements. Worshippers went back to churches and local markets sold produce.
- People across 70% of **Spain** are now allowed to eat or drink on terraces outside restaurants and bars, and the city council in Barcelona announced that locals will be able to return to the sand to sunbathe from Wednesday. However, people will not be allowed to swim and must spend no longer than an hour on the beach.
 - The government has announced the wearing of face masks is to be compulsory as it prepares to seek a fifth, two-week extension of the state of emergency that has been in effect since 14 March.
- The first "**travel bubble**" in the world has been established between the Baltic countries of Latvia, Lithuania and Estonia.
 - Norway, Finland and Denmark are discussing a Nordic "travel bubble". However, Sweden, which still has significant increases in new cases and deaths, will be excluded.
 - Many other European countries, including Greece, are planning to selectively ease border and travel restrictions starting June 15.
- In the **United States**, it's been more than three weeks since the first states began to lift stay-at-home orders. Georgia and Texas led the way, followed soon after by South Carolina and Florida. Georgia allowed barber shops, hair and nail salons, tattoo parlours, gyms and bowling alleys to reopen their doors under new guidelines. A few days later, dine-in restaurants were allowed to serve patrons. However, many businesses that could open have remained closed, especially in Atlanta, out of an abundance of caution. Texas has relaxed restrictions in most of the state but retained them in large cities like Dallas and Houston. Experts have suggested it is still too early to tell if the reopening experiments have been successful or not.



- However, **Texas** has continued to show high rates of daily new cases. Since the end of April, the state has reported its highest number on four separate days, reaching more than 2,000 cases on May 15.
- The Atlanta Journal-Constitution discovered that **Georgia's** apparently flattening curve was due to manipulation of the data by the Georgia Department of Health. They did this by putting the dates out of order on its chart so that May 5 was followed by April 25, then back to May again, whatever made it look like a downslope.
- Georgia ranks #11 in cumulative number of cases (39,801) and added 946 new cases on May 20, an increase of 2.5%.
- **Denmark** may offer some lessons after easing back from restrictions that bore some resemblance to Australia's. Gatherings had been limited to 10, the borders were shut, and gyms and bars were closed. The country also moved early to impose the measures, preventing some of the devastating scenes across the rest of Western Europe. Since scaling back the rules, Denmark hasn't seen a second wave of cases but the virus is lingering, with up to 200 cases still being found each day.
- **Austria** — another member of the so-called first movers club — eased back in the same week and now has a curve with a very similar shape to Australia's. It too is still finding low levels of infection through the community.
- The **German** state of North Rhine-Westphalia, which is one of Germany's most populated areas and includes the cities of Cologne and Dusseldorf, has reversed a decision to reopen gyms, tourist spots, large shops and restaurants on May 11 after it surpassed the threshold of 50 new cases per 100,000 for seven consecutive days. The reversal was made after 150 people were infected with coronavirus after an outbreak at an abattoir.
- **Israel:** After locking down the country in March the Israeli government began easing social distancing restrictions late April. Public worship and exercise had previously been banned and most businesses had been shuttered by the lockdown.
 - Special education and some childcare services have since resumed, while small prayer groups and outdoor exercise has once again been allowed. People were also allowed to return to work in offices with small and hi-tech businesses reopened. This month gyms and shopping centres were reopened and rules prohibiting people from not visiting family and friends or travelling more than 100 metres from their home were reversed.
 - However, social distancing measures may need to be reintroduced if new case numbers rise above 100 per day. New cases of coronavirus in Israel have been on the decline since the beginning of April, with the country sitting at 16,409 total confirmed cases and 245 deaths, and there have been no new spikes in May.



Serological Surveys

Antibody tests could help us understand the extent of COVID-19's spread in populations. Because of limitations in testing accuracy and a plethora of unknowns about immunity itself, however, they are less informative about an individual's past exposure or protection against future infection. Widespread controversy and scepticism exist both about the effectiveness and duration of immune protection after infection and the validity of many antibody tests.

Serological surveys have already been conducted in communities across the **USA**, and their **findings vary widely**. Estimates of positive antibody prevalence range from almost 25% in New York City and 32% in Chelsea, Massachusetts, to between 2.8 and 5.6% in Los Angeles County and 2.8% in Santa Clara County in California³.

Many of the tests currently flooding the market have not been verified by reference laboratories. And even those that have received emergency use authorisation from the U.S. Food and Drug Administration might not be accurate enough to assess disease prevalence outside of hotspots in populations with low infection rates (such as Australia). Experts suggest that tests based on enzyme-linked immunosorbent assays (ELISAs, lab-based) are more valid than those based on lateral flow assays (which are cheaper and point of care), which provide a simple positive or negative result, with no quantitative information⁴.

The **Johns Hopkins Centre for Health Security** maintains and regularly updates a Web site that lists key characteristics of many of the serological tests for SARS-CoV-2 on the market and in development⁵. Experts recommend that tests be validated in studies that include at least 100 positive and negative patients whose infection status is confirmed against a reference standard such as diagnostic test results and symptoms. Antibody tests currently on the market have been validated in samples ranging from only a few dozen individuals to more than 1,000.

Currently, the Centre for Health Security lists tests approved for research or individual use in the U.S. that have a sensitivity between 82 and 100 percent. Specificity ranges from 91 to 100 percent. Some of these concerns can be managed by building models that account for uncertainty. But overestimates of COVID-19's spread could lead to underestimates of CFR and hospitalisation rates—or excessive confidence about herd immunity.

At this stage, experts warn that even the best SARS-CoV-2 antibody tests have little use at the individual level. Although research increasingly shows that most people who have been infected probably produce antibodies to the virus, it is not yet clear whether those antibodies prevent reinfection or how long any immunity will last. So, antibody tests at this stage should be used only for surveillance purposes.

- A Swedish study found that just **7.3% of people in Stockholm** had developed COVID-19 antibodies by late April, a sign that a decision not to lock down Sweden against the pandemic may bring little herd immunity in the near future⁶.
- A serosurvey in the UK (sample size unknown) has found **that 5% of people across the UK** have coronavirus antibodies while the figure in **London is 17%**⁷.

³ <https://www.scientificamerican.com/article/what-covid-19-antibody-tests-can-and-cannot-tell-us/>

⁴ <https://jamanetwork.com/journals/jama/fullarticle/2764954>

⁵ <https://www.centerforhealthsecurity.org/resources/COVID-19/serology/Serology-based-tests-for-COVID-19.html#sec2>

⁶ <https://www.reuters.com/article/us-health-coronavirus-sweden-strategy/swedish-antibody-study-shows-long-road-to-immunity-as-covid-19-toll-mounts-idUSKBN22W2YC>

⁷ <https://www.itv.com/news/2020-05-21/health-secretary-matt-hancock-government-daily-coronavirus-press-conference/>



Reinfections -- how to interpret?

There have been reports from a number of countries of people testing positive for a second time after having tested negative. Recently, 13 sailors on the Theodore Roosevelt aircraft carrier in Guam tested positive for the second time. There has been considerable debate on the implications of re-testing positive.

A study by the **Korean CDC** (KCDC) has provided some clarity⁸. Scientists examined 285 (64%) of 447 recovered patients who had tested positive again for COVID-19 after being discharged from isolation and being cleared of virus (PCR negative). Most (60%) were tested again as part of screening, and 45% had symptoms. In the study, researchers tried to isolate infectious coronaviruses from samples taken from 108 people who retested positive. All of those samples tested negative via viral culture. When the scientists examined 23 of those patients for antibodies against the coronavirus, all had neutralising antibodies. That immune response may protect a person from getting reinfected, at least in the short term.

The team also tracked down 790 contacts of 285 people who retested positive. Of those contacts, 27 tested positive for the coronavirus. Twenty-four of those were cases that officials had previously confirmed. Officials also identified three new cases, all of whom either had contact with the Shincheonji religious group — which was hit particularly hard in the early days of the pandemic — or a confirmed case in their family. No new cases appeared to stem from repeat positive patients, a sign those patients aren't contagious.

Discharged patients tested positive again, on average, 45 days after initial symptom onset. The time from discharge to testing positive again averaged 14.3 days, with a range of 1 to 37 days.

The findings suggest that the diagnostic tests (PCR) are picking up on the genetic material from non-infectious or dead viruses. That lack of infectious virus particles means these people aren't currently infected and can't transmit the coronavirus to others, the researchers say.

⁸ <https://www.sciencenews.org/article/coronavirus-covid19-reinfection-immune-response>