



Coronavirus (COVID-19) Executive Briefing

Understand the COVID-19 outbreak, its impact on the global economy, and initial implications for specific sectors

Last Updated: 26 May 2020

Twentieth in the series

Key Developments and Changes Since Last Update



499,348 new cases since Thursday; total confirmed cases near 5.5 million	<ul style="list-style-type: none">▪ The virus has now spread to 189 countries/regions with nearly 5.5 million confirmed cases and more than 300,000 deaths.	Slide 6
The US records the highest number of infections, but recorded death rates decline	<ul style="list-style-type: none">▪ The number of confirmed cases in the US exceeds 1.6 million, with deaths exceeding 98,000.	Slide 7 - 9
Infection peak and decline forecasts	<ul style="list-style-type: none">▪ Infection peak weeks and decline forecasts for countries with the most infections.▪ Decline rates are slowing, lengthening time to 'zero new case' weeks.	Slide 10 - 12
No therapeutic or preventative options are available, but the pipeline is crowded	<ul style="list-style-type: none">▪ Currently there are 1,807 clinical trials for COVID-19 (+53 from the last update).▪ Gilead's remdesivir's recent trial success makes it the new standard of care; now approved in Japan.	Slide 17- 29
Upward trends in clinical trial disruption continue	<ul style="list-style-type: none">▪ At least 1,229 trials and 526 Pharma/Biotech companies and CROs associated with disrupted clinical trials.▪ Trial activity starting to resume after a period of disruption.	Slide 30 -32
Worldwide GDP forecast to contract	<ul style="list-style-type: none">▪ Consensus forecasts for worldwide GDP growth in 2020 are (-)1.9%. The Congressional Budget Office of the US foresees economic growth to contract by 11% in Q2 2020 and deficit to swell to \$2 trillion in 2020	Slide 34 - 37
In the short-term, unemployment will rise in all major economies	<ul style="list-style-type: none">▪ US unemployment rate reached record high in 43 states in April▪ Goldman Sachs forecasts US unemployment rate to peak 25% in Q2, worse than the Great Depression.	Slide 39
Top 10 countries' response to COVID-19	<ul style="list-style-type: none">▪ Managing lockdown and recovery measures	Slide 40 - 46
GlobalData polls	<ul style="list-style-type: none">▪ Concerns over the virus are falling; business confidence is improving; job losses occurring	Slide 47
Sector impact	<ul style="list-style-type: none">▪ Sector impact and mitigation strategies for specific industry sectors	Slide 51 - 92

A large, detailed 3D rendering of a virus particle, likely SARS-CoV-2, shown in a light teal color against a dark blue background. The virus has a complex, multi-layered structure with many small protrusions and indentations. A vertical teal bar is on the left side of the page.

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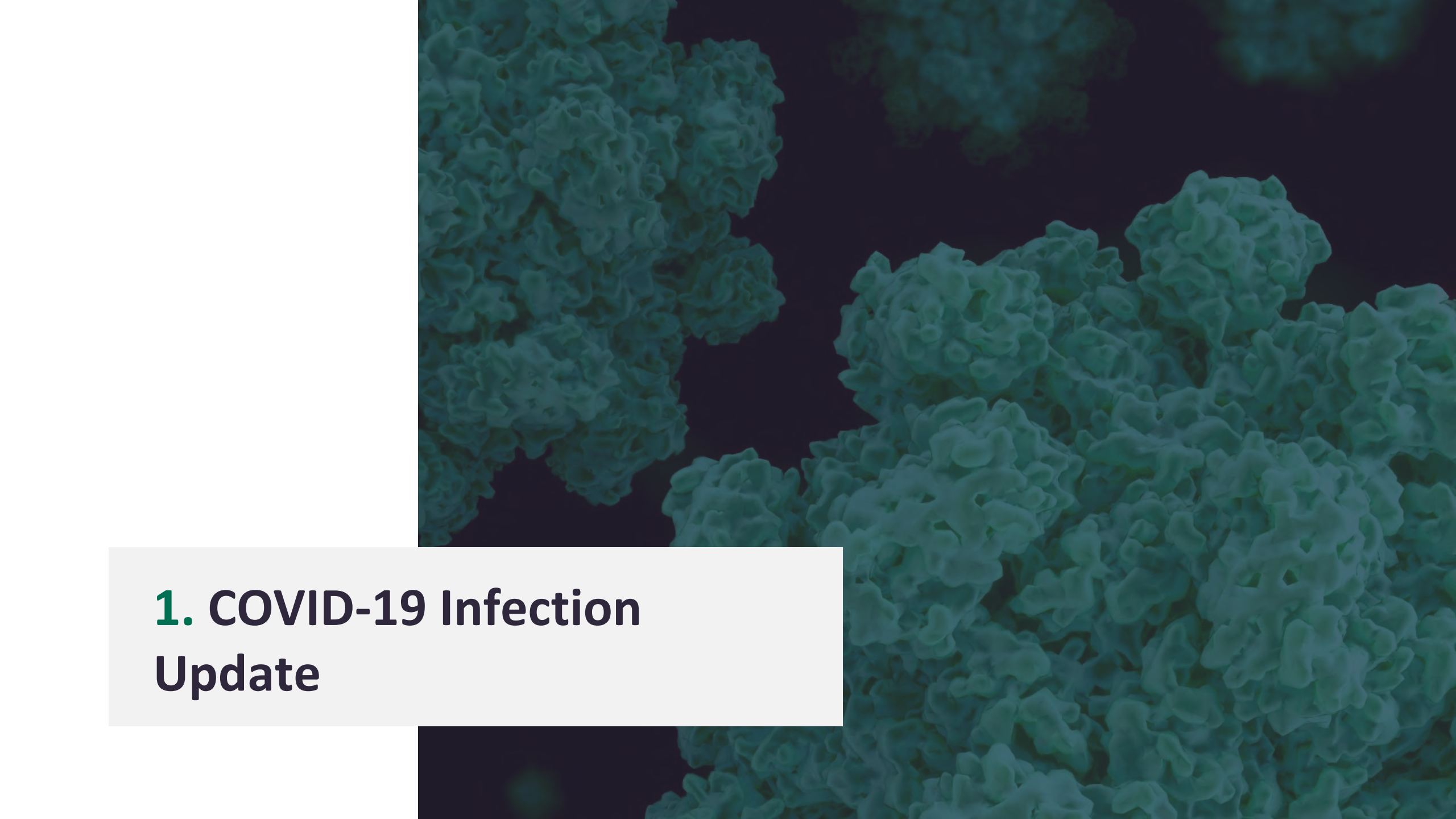
- Testing Statistics by Country

COVID-19 Vaccine and Therapeutic Development

Economic Impact

- Overview of Top Economies
- Stock Market Indices
- Unemployment
- GDP
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Sector Impact

A microscopic view of COVID-19 particles, showing numerous spherical, textured structures with a crown-like appearance, characteristic of the virus. The particles are rendered in shades of teal and green against a dark background.

1. COVID-19 Infection Update

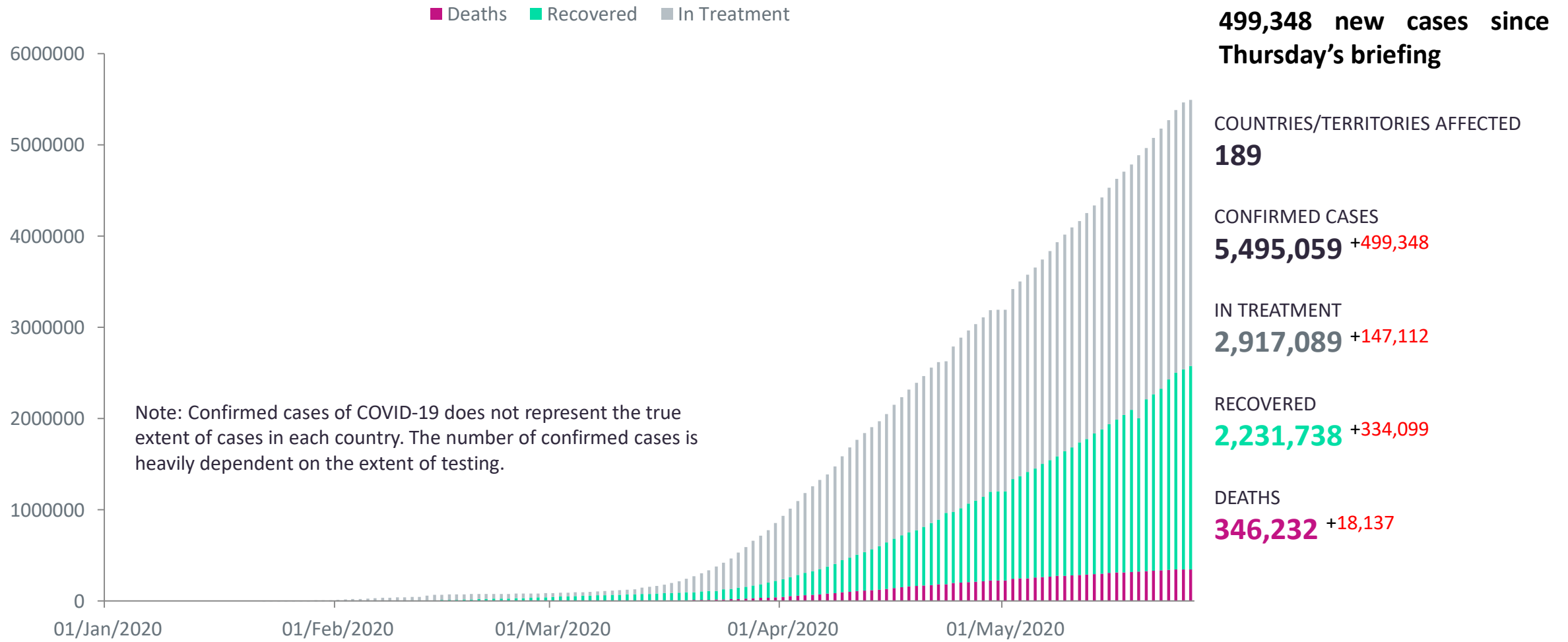


-
- The virus has spread to 189 countries, with nearly 5.5 million confirmed cases
 - The highest official case counts are in the US, Brazil, Russia, UK, Spain, Italy, France, Germany, Turkey and India
 - The number of confirmed cases in the US exceeds 1.6 million
 - The US has recorded the highest number of fatalities, which exceeds 98,000
 - Worldwide recorded deaths decline
 - Case fatality rates exceed 10% in Spain, Italy, France, and UK

Infection Rates Continue to Increase



Impact of COVID-19 +/- change between 21 May 2020 and 26 May 2020
as of 26 May 2020

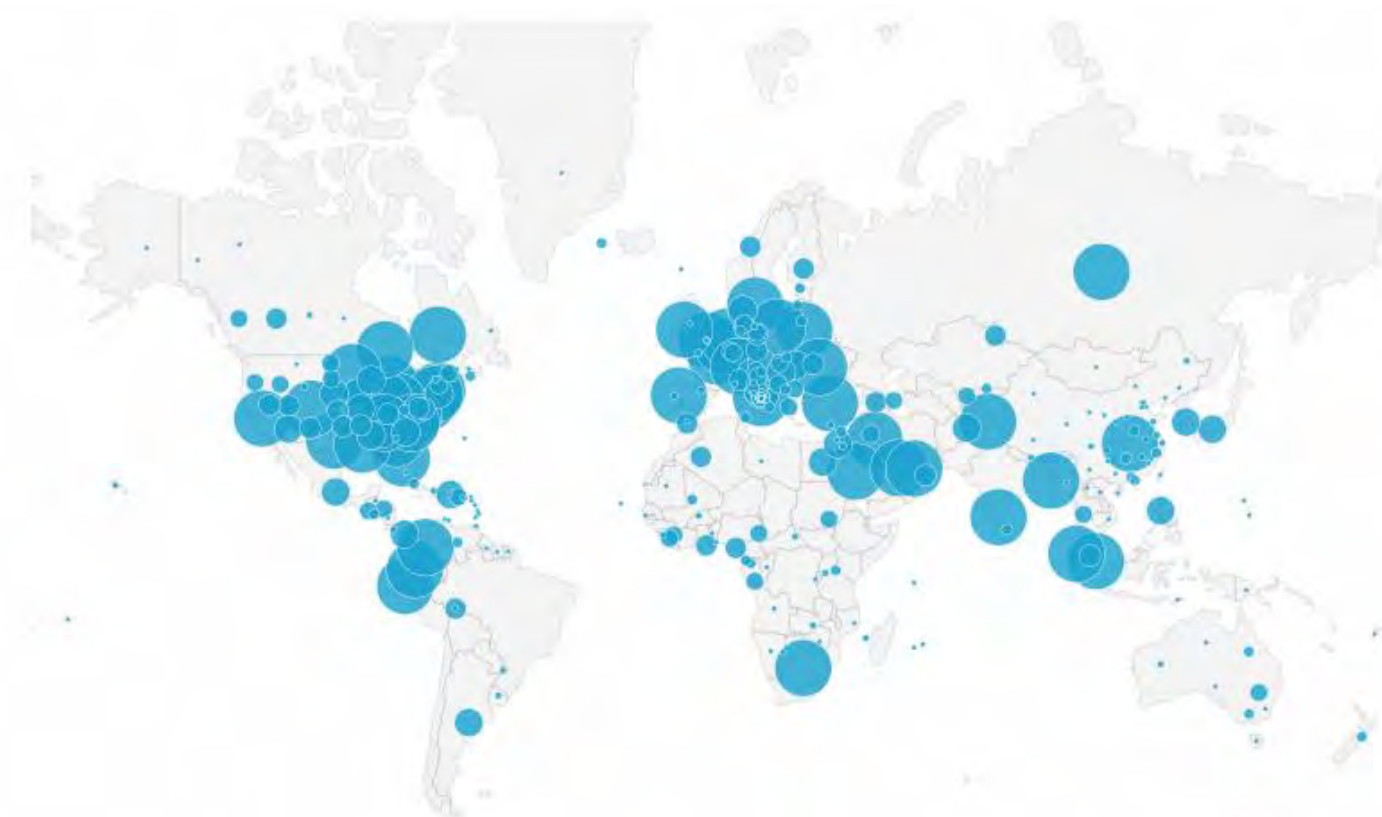


COVID-19 is a Worldwide Problem



Affected Countries/Regions

as of 26 May 2020



Note:

Confirmed cases of COVID-19 do not represent the true extent of cases in each country. The number of confirmed cases is heavily dependent on the extent of testing.

On 25 May, Spain revised its COVID-19 death count. Total deaths were reduced as it eliminated duplicate cases, and cases that were notified as probable COVID-19 but not confirmed.

Source: GlobalData Analysis; 2019 Novel Coronavirus COVID-19 (2019-nCoV) Data Repository by Johns Hopkins CSSE; Verdict Media

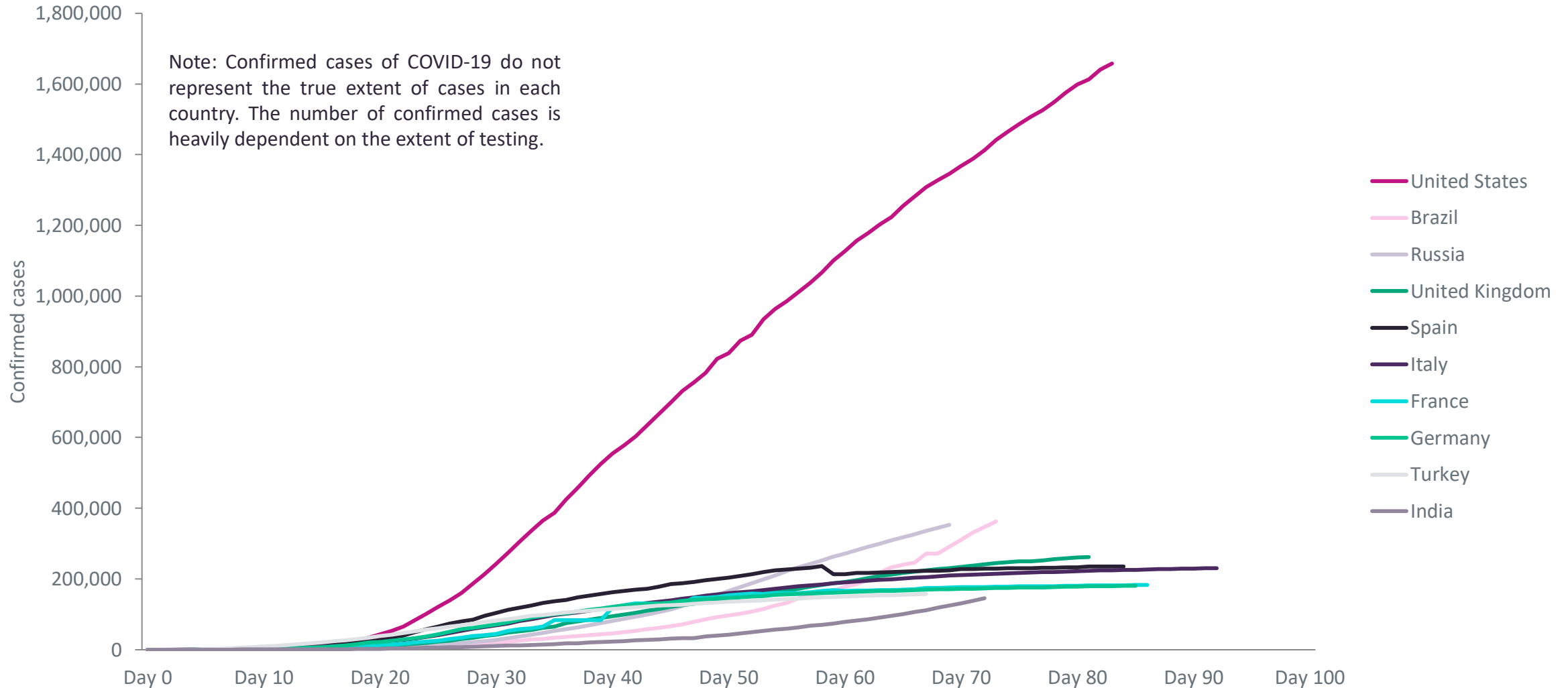
	Confirmed Cases	Recovered	Deaths
United States	1,662,302 +110,634	379,157 +84,845	98,220 +4,789
Brazil	374,898 +83,319	153,833 +37,150	23,473 +4,614
Russia	353,427 +44,722	118,798 +33,406	3,633 +661
United Kingdom	262,547 +12,928	1,161 +45	36,996 +1,210
Spain	235,400 +2,845	150,376	26,834 -1,054
Italy	230,158 +2,794	141,981 +9,699	32,877 +547
France	183,067 +1,367	65,317 +1,845	28,460 +325
Germany	180,600 +2,127	161,199 +4,233	8,309 +165
Turkey	157,814 +5,227	120,015 +6,028	4,369 +147
India	144,950 +32,922	60,706 +15,284	4,172 +738

US Records the Highest Number of Infections



COVID-19 Confirmed Case Trajectories for Countries With The Highest Infection Numbers

Cumulative confirmed cases, by days since 100th case for top 10 countries by confirmed cases till the 100th day, as of 26 May 2020

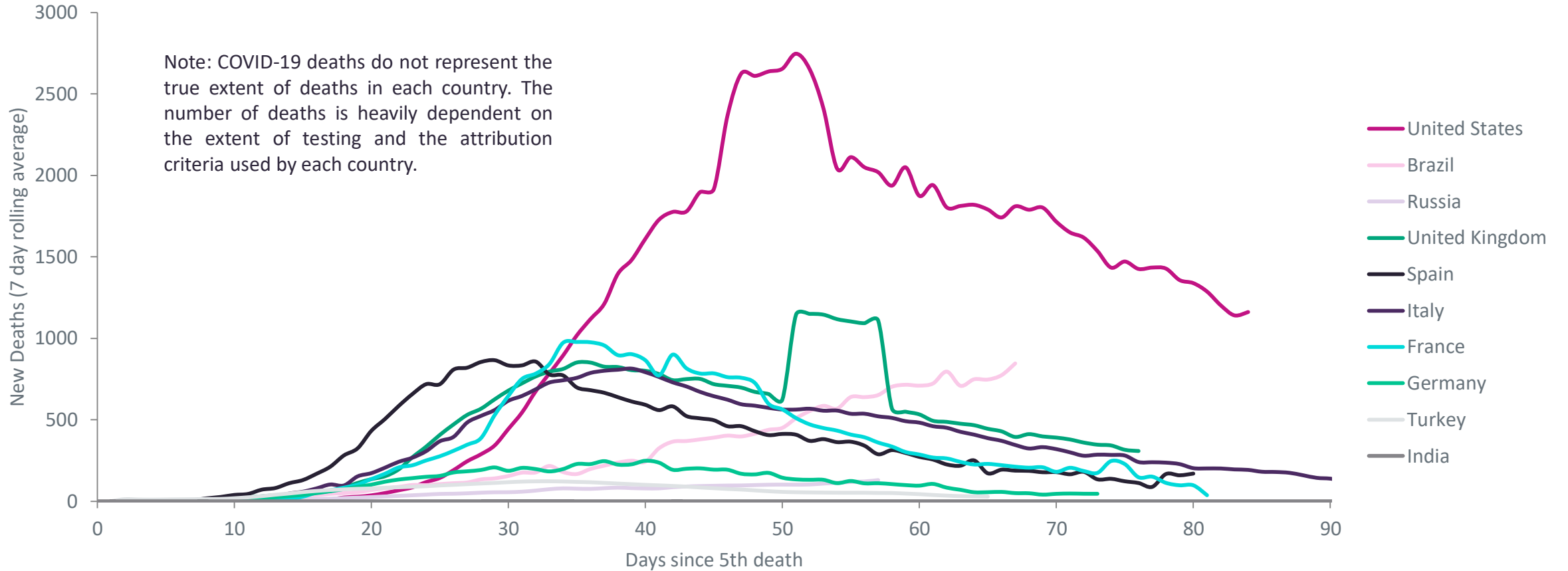


Recorded Deaths Decline



COVID-19 Death Trajectories for Select Countries

7 day rolling average of new deaths, by days since 5th death for top 10 countries by confirmed cases till the 90th day, as of 26 May 2020



Note: On 29 April, the UK changed its reporting policy to include COVID-19 deaths outside hospitals. The sudden spike is caused by the retrospective inclusion of all deaths prior to this date. The 7-day average figure used in this chart reflects this spike over a week-long period, before dropping to the long-term trend.

Infection Peak and Decline Forecasts for Select Countries



GlobalData Pharma Analysis

- Peak and recovery curves based on GD forecast models, details on next slide.
- Brazil move up in rank to second, peak yet to be reached.
- Russia: current data showed peak was reached in second week of May.
- EU trends remain relatively stable from last update, though recovery remains slow.
- Turkey's recovery slowed, expect delay until July.
- India moves up ahead of Iran, yet to reach peak.
- Iran's second peak continues to increase in intensity, Eid celebrations may further intensify the outbreak.

Estimated Peak Weeks and Decline to Zero New Cases Weeks for Top Infected Countries (Excluding China)
as of 26 May 2020

Date (Weeks)	MAR	APR					MAY					JUN					July			
	30	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27		
US		Peak	Peak	Peak														Decline	Decline	
Brazil										Peak	Peak									
Russia						Peak	Peak	Peak											Decline	
UK			Peak															Decline	Decline	
Spain	Peak	Peak										Decline	Decline	Decline						
Italy	Peak	Peak												Decline	Decline	Decline				
France		Peak	Peak									Decline	Decline							
Germany	Peak											Decline	Decline							
Turkey			Peak	Peak													Decline	Decline	Decline	
India										Peak	Peak	Peak								
Iran		Peak	Peak						Peak	Peak										

Note: Trends from China showed a steep drop after reaching peak. However, recent trends from US, UK, Italy, Spain, and other markets showed slower declines after peak than China, and in some markets, a long extended plateau without obvious peak or decline. Recovery forecast will now be trended along the new running average model taking into account the more drawn out recovery observed in recent weeks unless data suggests otherwise. Additional surges after initial peak are also likely due to countries opening up.

Peak weeks in pink; recovery weeks with decline in daily new cases close to 0 in green. Lighter shaded squares represent more uncertain estimates.

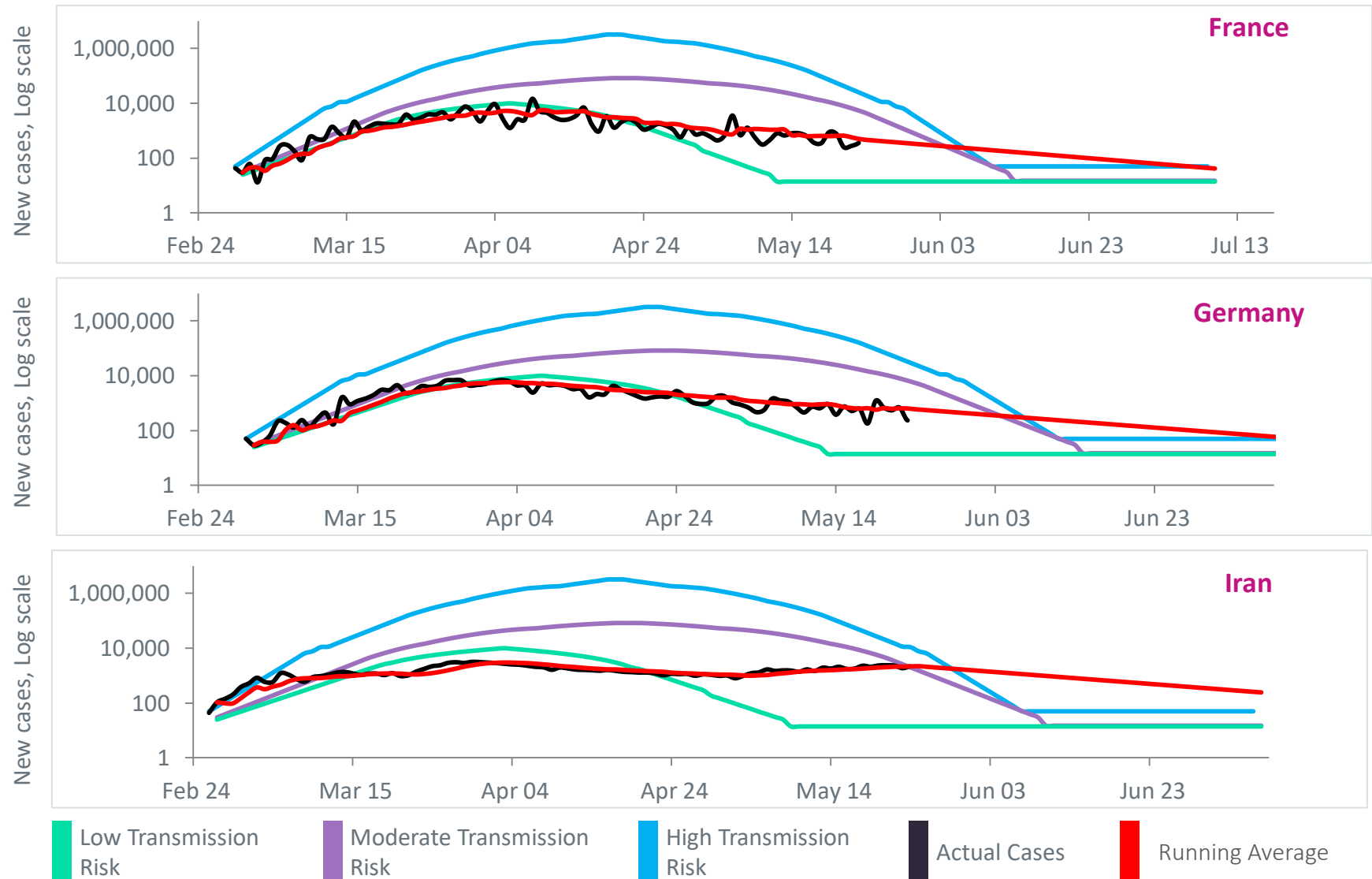


Infection Peak and Decline Forecasts for Select Countries

Projections of Daily New Confirmed Cases for Select Countries, Since 100th Confirmed Case as of 26 May 2020

GlobalData Pharma Analysis

- Peak transmissions & potential dates for return to normal in the countries are limited by the testing and reporting capabilities.
- Trajectory dependent on continued implementation of social-distancing, testing and contact tracing, isolation of infected patients, and prevention of travel-related second-wave transmissions.
- GlobalData will monitor the situation for second, third, or seasonal outbreaks, which can be expected based on global trends.
- New model Running Average (red line): potential COVID-19 outlook with slower decline rate observed in several markets such as Canada and Italy.



Forecast for Key Markets



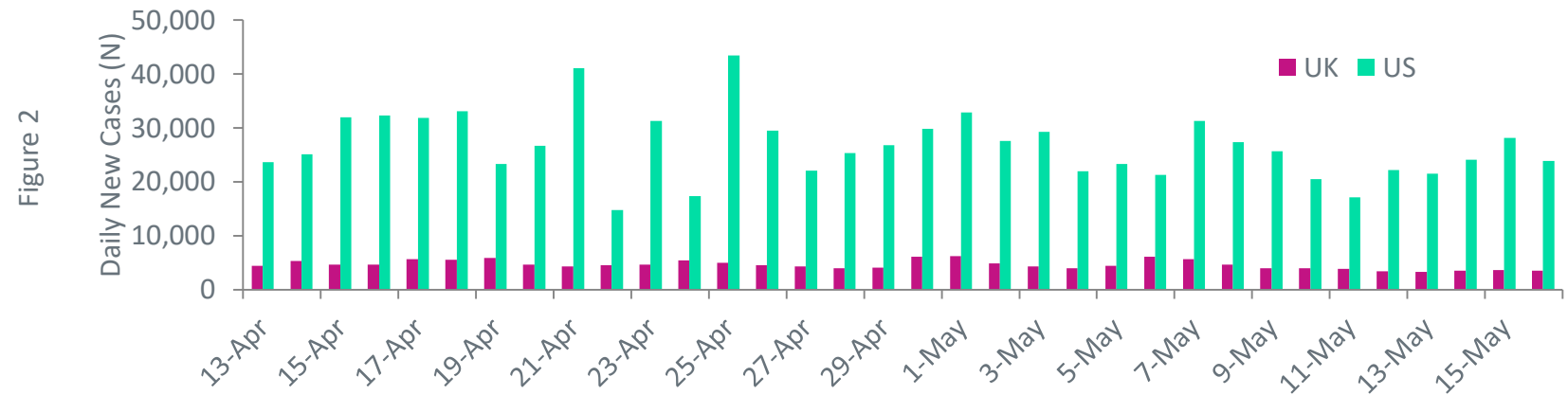
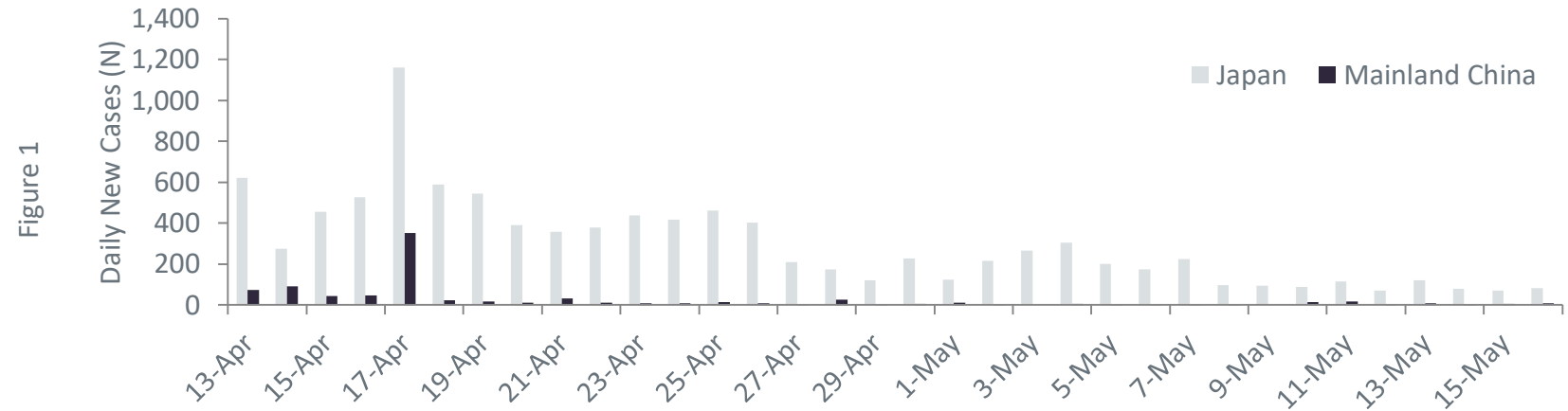
GlobalData Pharma Analysis

Resurgences in US and Europe Will Look Different From Asian Markets and Will Be Harder to Detect

Figure 1: Mainland China and Japan, COVID-19 Daily New Cases (N) in Past Month

Figure 2: US and UK, COVID-19 Daily New Cases (N) in Past Month

as of 26 May 2020



Source: GlobalData; Click2Houston.com, 2020; CNBC, 2020; Guardian, 2020b; additional sources in appendix

Special Populations

- China, Japan, and South Korea have controlled new daily COVID-19 cases to close to 0. US and European markets are already opening up when new daily cases are still in the thousands.
- Based on trends observed in Asia, GlobalData epidemiologists expect that there will be resurgences in the west, but they likely will look very different from what is happening in Asia.
- With high background infections in the US and EU, new hot spots are going to be difficult to detect and control.
- Increases in cases that are considered to be “resurgences” in Asia might not even register in the west. This could ultimately result in much larger secondary outbreaks and extend the overall recovery time.

A microscopic view of virus particles, likely SARS-CoV-2, showing their characteristic spherical shape and surface structure. The particles are rendered in a teal color against a dark background. The image is partially obscured by a white rectangular box on the left side, which contains the section header.

2. COVID-19 Testing and Management



Testing

- Rapid and Point of Care Testing now make up more than 50% and 30% of pipeline and marketed diagnostic tests, making the prospect of population level testing increasingly likely.
- Supply issues of test reagents continue to have an impact, particularly in countries reliant upon ad hoc test protocols that are dependent upon so-called home-brew reagents.
- Abbott's launch of the ID NOW molecular point of care test is a potential game changer, allowing a molecular test to detect the virus in as little as five minutes. Abbott is on track to initially provide 50,000 ID NOW COVID-19 tests per day, equating to less than 3 tests for each of the 18,000 ID NOW machines in use in the US.
- US PCR testing volumes appear to be plateauing at 140,000-150,000 tests per day.

Management

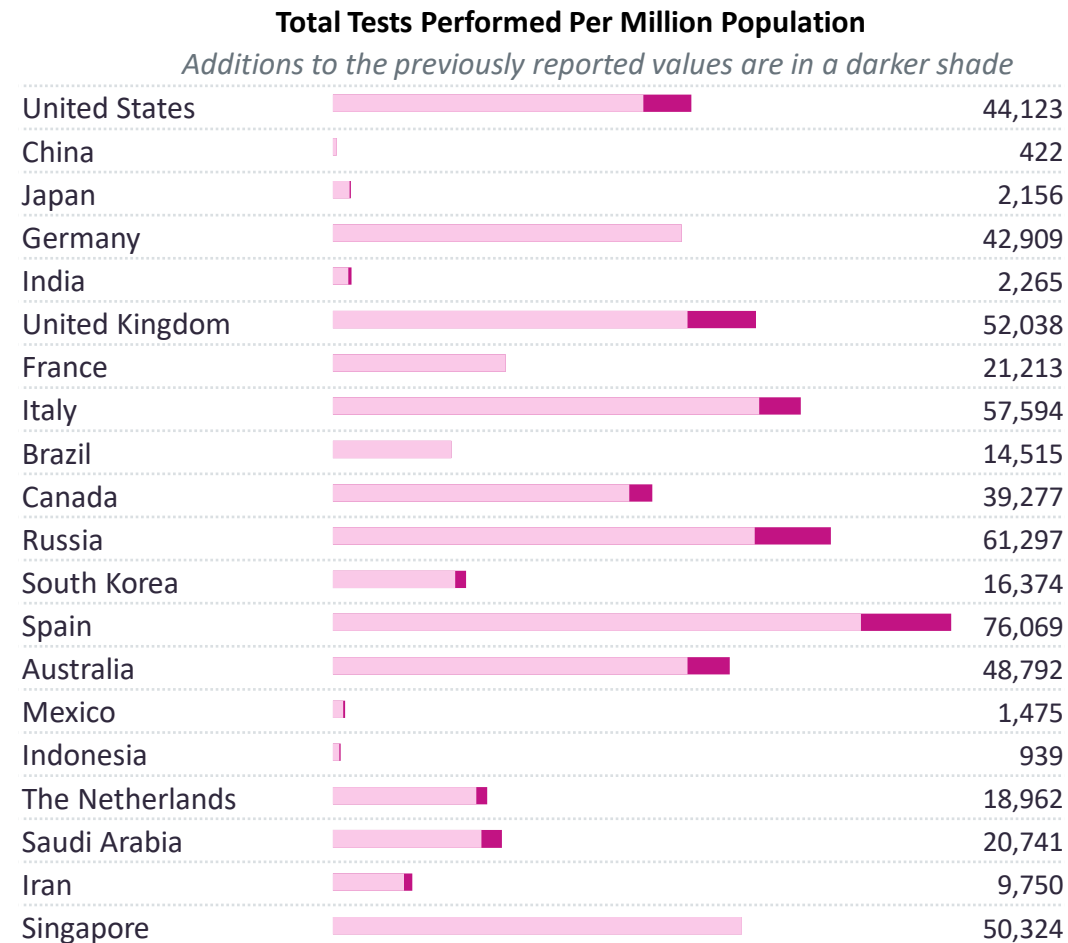
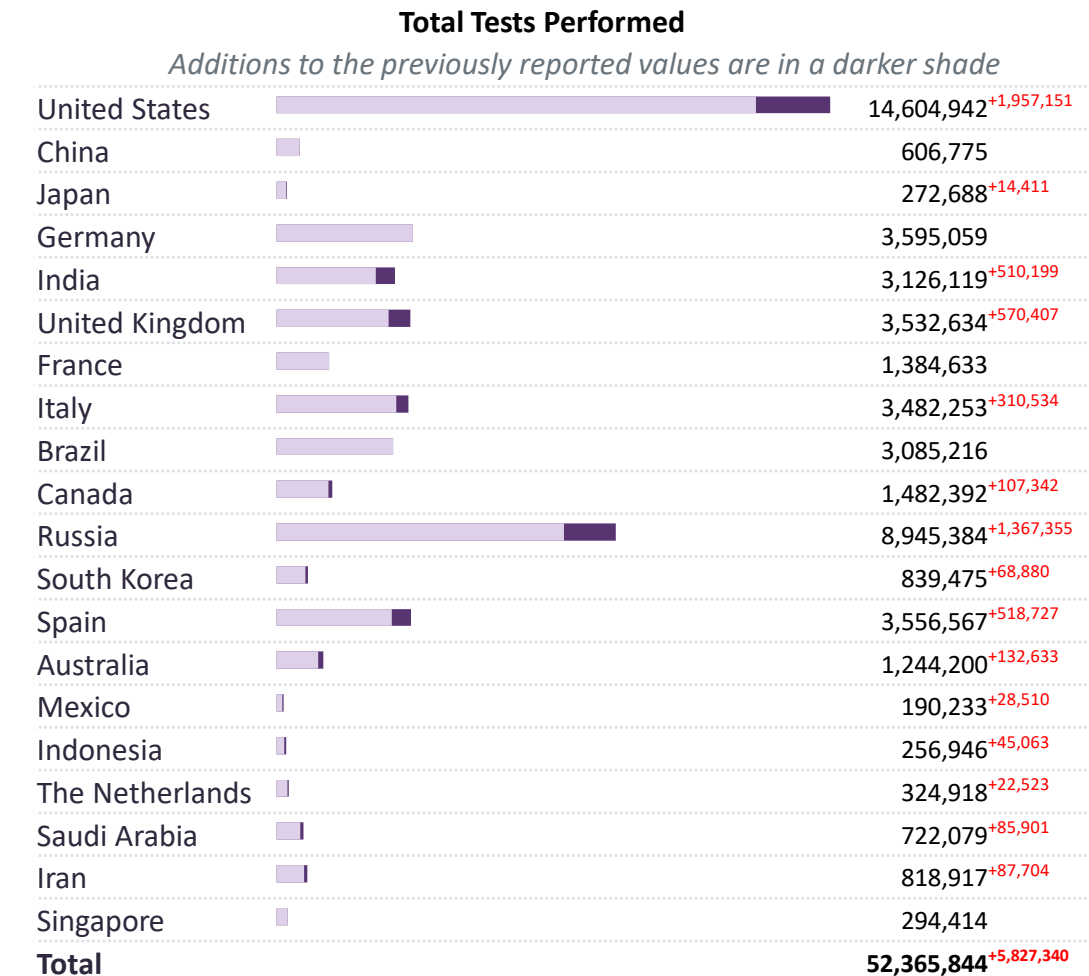
- Ventilator shortage became a critical issue after the COVID-19 outbreak, starting from China and Italy, now to the UK and US. According to GlobalData's analysis, approximately 880,000 more ventilators are in demand globally due to the COVID-19 outbreak.
- The Ventilator Challenge consortium, led by the High Value Manufacturing Catapult research group is best placed to deliver new ventilators soonest, as it is making use of spare production capacity to scale up production of Smiths Detection machines, that are already in use with the NHS, such as the Parapac transport ventilator.
- Non-medical companies globally are developing and building emergency ventilators, with rudimentary designs appearing in developing markets, as inventories of ventilators from established manufacturers are exhausted.
- Donald Trump has now invoked the Defense Production Act, a law stemming from the Korean War, to force General Motors to produce ventilators. GMs' deal with medical equipment maker Ventec Life is expected to result in shipments from next month.

Testing for COVID-19 is Gathering Pace In Many Countries



Total Tests and Per Million Population Tests for Top Economies

as of 26 May 2020



Note: The last known test counts taken for China (27-04-2020), Germany (20-05-2020), France (10-05-2020), Brazil (17-05-2020) and Singapore (19-05-2020). Other figures updated between 22-05-2020 and 25-05-2020.

Source: GlobalData Analysis; Government/Ministry of Health websites; Factly.in; Ourworldindata.org

A microscopic view of several virus particles, likely coronaviruses, showing their characteristic spherical shape and surface texture. The particles are rendered in a teal/cyan color against a dark background. One large particle is in the foreground, while others are scattered in the background, some appearing out of focus.

3. COVID-19 Vaccine and Therapeutic Development

No Therapeutic or Preventative Options are Available but the Pipeline is Crowded



Examples of Vaccines and Therapeutic Agents in Development for COVID-19

as of 25 May 2020

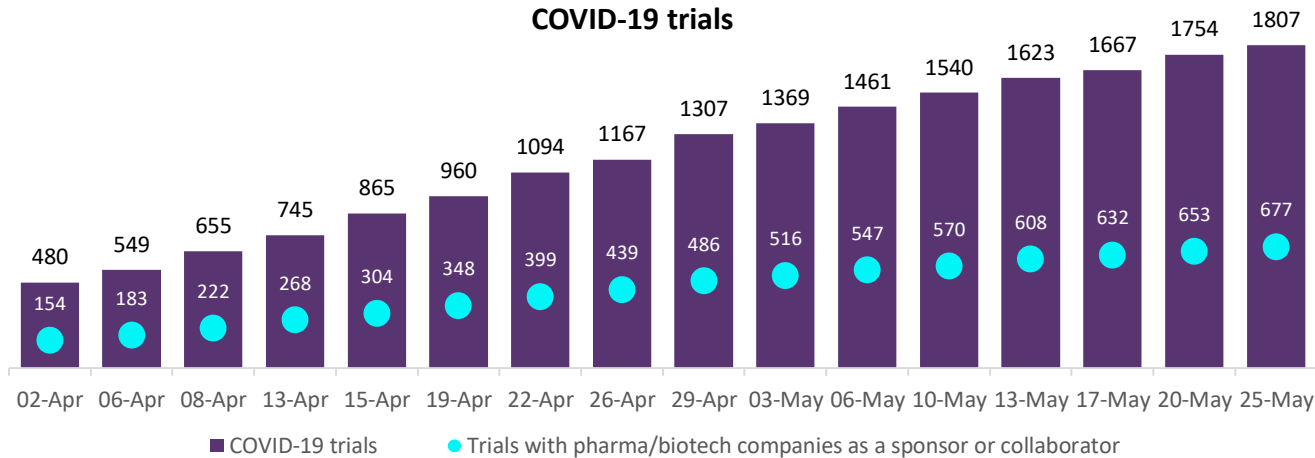
Intervention Type	Drug in Trial	Trial Title and Phase	Trial Status
Therapeutic	Pluristem Therapeutics' emiplacel	Clinical Study of Compassionate Use of Emiplacel (Phase I)	Ongoing, recruiting
	Cytodyn's leronlimab	Study to Evaluate the Efficacy and Safety of Leronlimab for Mild to Moderate COVID-19 (Phase II)	Ongoing, recruiting
	OncolImmune's CD24Fc	CD24Fc as a Non-antiviral Immunomodulator in COVID-19 Treatment (SAC-COVID) (Phase III)	Ongoing, recruiting
	Ascletis's ASC09 + ritonavir	A Randomized, Open, Controlled Clinical Study to Evaluate the Efficacy of ASC09F and Ritonavir for 2019-nCoV Pneumonia (Phase III)	Ongoing, recruiting
	Alexion's eculizumab (trial by Hudson Medical)	Eculizumab (Soliris) in COVID-19 Infected Patients (SOLID-C19) (Phase III)	Ongoing, recruiting
	Gilead's remdesivir	Study to Evaluate the Safety and Antiviral Activity of Remdesivir (GS-5734) in Participants With Severe Coronavirus Disease (COVID-19) (Phase III)	Ongoing, not recruiting
	Sanofi/Regeneron's sarilumab	Evaluation of the Efficacy and Safety of Sarilumab in Hospitalized Patients With COVID-19 (Phase II/III)	Ongoing, recruiting
Vaccine	F. Hoffman-La Roche's tocilizumab	Early Intervention with Tocilizumab in Patients with COVID-19 and Hypoxia (Phase II)	Ongoing, recruiting
	BioNTech's BNT-162a1, BNT-162b1, BNT-162b2, BNT-162c2	A Trial Investigating the Safety and Effects of Four BNT162 Vaccines Against COVID-2019 in Healthy Adults (Phase I/II)	Ongoing, recruiting
	Inovio Pharmaceuticals' INO-4800	Safety, Tolerability and Immunogenicity of INO-4800 for COVID-19 in Healthy Volunteers (Phase I)	Ongoing, not recruiting
	Moderna's mRNA-1273 (trial by NIAID)	Safety and Immunogenicity Study of 2019-nCoV Vaccine (mRNA-1273) for Prophylaxis of SARS CoV-2 Infection (COVID-19) (Phase I)	Ongoing, recruiting
	University of Oxford's ChAdOx1 nCoV-19	A Study of a Candidate COVID-19 Vaccine (COV001) (Phase I/II)	Ongoing, not recruiting
	Sinovac Biotech's Coronavirus Disease 2019 (COVID-19) vaccine, PiCoVacc	Safety and Immunogenicity Study of Inactivated Vaccine for Prophylaxis of SARS CoV-2 Infection (COVID-19) (Phase I/II)	Ongoing, recruiting

...With Clinical Investigations of Novel and Existing Drugs Growing Exponentially



Clinical Investigations for Therapeutics and Vaccines for COVID-19 by Numbers

as of 25 May 2020

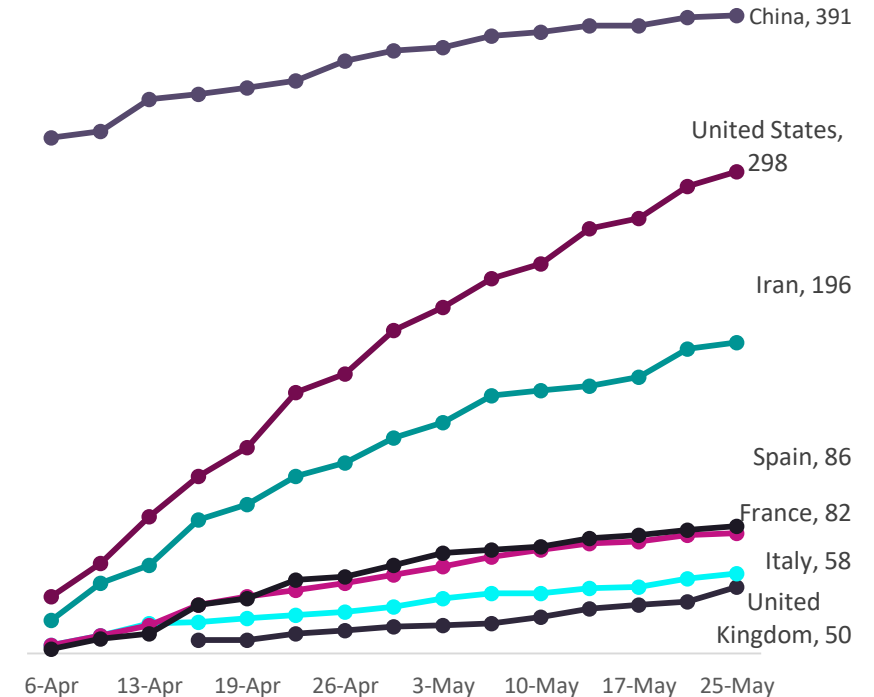


Where is the trials activity?

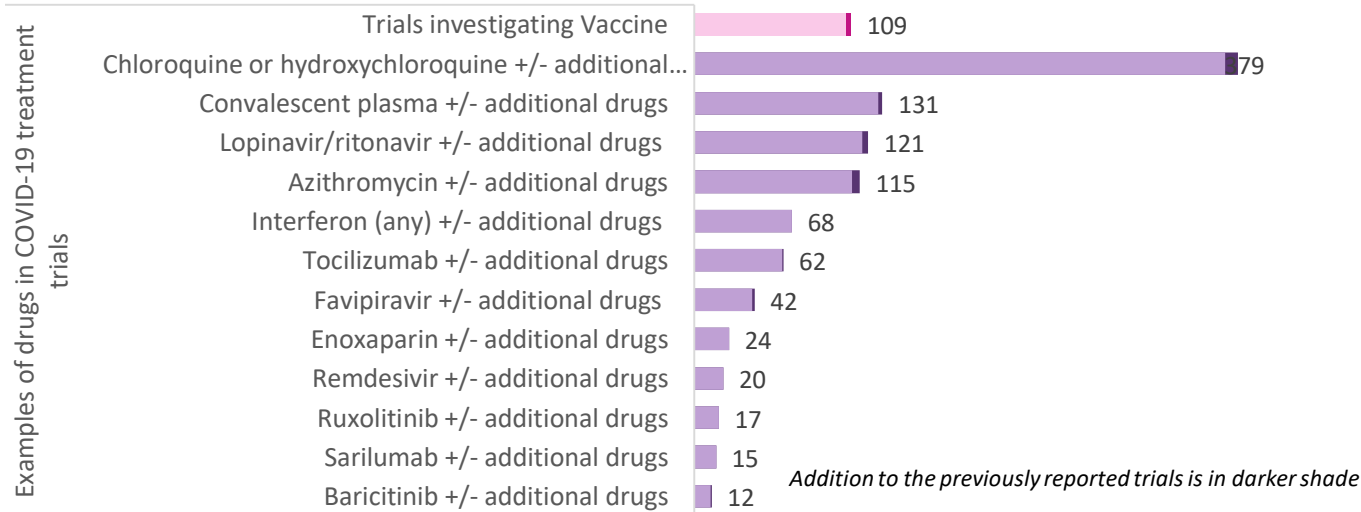
68 (+1) multinational trials, 1,449 (+46) single country trials (remaining trials have not disclosed locations)

Countries with more than 50 COVID-19 trials

Number of trials in the US and Iran are growing at a much higher rate than other countries



Investigational drugs in COVID-19 trials



SARS-CoV-2 Antivirals & Vaccines Are Being Developed Independently...



Independently Developed Antivirals

as of 11 May 2020



- Gilead is developing remdesivir, an antiviral in Phase III trials in China/Asia and the US; received Emergency Use Authorization (EUA) from the FDA on May 1, 2020. The drug was approved in Japan on May 7th.



- Innovation Pharmaceuticals announced that it is evaluating Brilacidin, a defensin-mimetic drug candidate, as a potential treatment for coronavirus. Brilacidin has shown antibacterial, anti-inflammatory, and immunomodulatory properties in several clinical trials.



- Novartis announced plans to initiate a Phase III clinical trial to study canakinumab in patients with COVID-19 pneumonia. The CAN-COVID trial will examine the efficacy of utilizing canakinumab, an interleukin (IL)-1 β blocker, to treat a type of severe immune overreaction called cytokine release syndrome (CRS).

Independently Developed Vaccines

as of 14 April 2020



- An intranasal COVID-19 vaccine is being developed by US-based clinical-stage biopharmaceutical company, Altimune.



- Vaxart is developing an oral recombinant vaccine in a tablet formulation using its proprietary oral vaccine platform, VAAST.



- The MIGAL Research Institute is modifying an Infectious Bronchitis Virus (IBV) vaccine for COVID-19. The vaccine has demonstrated efficacy in pre-clinical trials conducted by the Volcani Institute.



- Clover Biopharmaceuticals is developing a recombinant subunit vaccine using its patented Trimer-Tag technology, based on the trimeric S protein (S-Trimer) of the COVID-19 coronavirus, which is responsible for binding with the host cell.

“*The speed with which remdesivir has moved into clinical development for this coronavirus reflects the pressing need for treatment options and the shared commitment of industry, governments, global health organizations and healthcare providers to respond to this public health threat with the highest urgency.*”

Merdad Parsey, MD, PhD, Chief Medical Officer, Gilead Sciences

“*The results of our recently published influenza challenge study demonstrated that our oral tablet vaccine primarily protects through mucosal immunity, a potential key factor when targeting mucosal pathogens such as this new coronavirus.*”

Sean Tucker, PhD, Chief Scientific Officer of Vaxart

...and Through Partnerships Between Public and Private Sectors



Example Partnership

as of 26 May 2020

Description of Partnership Activity

Partner View



- US drug maker, Merck is entering the development of COVID-19 vaccines by acquiring the Austrian biotech, Themis and partnering with the nonprofit IAVI.
- Themis is developing a COVID-19 vaccine candidate based on a measles vaccine, while IAVI's vaccine is based on Merck's approved Ebola vaccine that uses a recombinant Vesicular Stomatitis Virus (rVSV) vector. IAVI's vaccine is set to start clinical trials in late 2020.
- Furthermore, by partnering up with Ridgeback Biotherapeutics, Merck is also adding a COVID-19 therapeutic to its portfolio. Ridgeback previously developed a monoclonal antibody treatment against Ebola that showed similar efficacy to Regeneron's antibody cocktail and improvement over Gilead's remdesivir.

“

We've got to immunize seven billion people on the planet. If you have a dose that gives you a high amount of neutralizing antibodies with a single dose, that's a much better, more simple to deploy vaccine, than one that requires multiple doses.

”

Ken Frazier, CEO, Merck



- Janssen Pharmaceuticals has entered into an agreement with Vibalogics for the manufacture of clinical trial material for Janssen's lead investigational COVID-19 vaccine.
- Vibalogics is a global contract development and manufacturing organization that will manufacture multiple batches from its facility in Cuxhaven, Germany, resulting in thousands of doses of Janssen's lead investigational COVID-19 vaccine.

“

This is a fantastic opportunity for the business and our employees to strengthen our position as a global leader in virotherapy manufacturing whilst also providing a key service to our valued customer in its mission to combat the SARS-CoV-2 virus.

”

Stefan Beyer, Managing Director and CEO of Vibalogics

Note: The majority of deals for COVID-19 are partnerships, and these are focused in North America, Europe, and Asia. There have been no associated M&A deals to date.

Source: GlobalData Analysis; Client & Subject Matter Expert Interviews; Press Articles; Company Announcements; Verdict Media

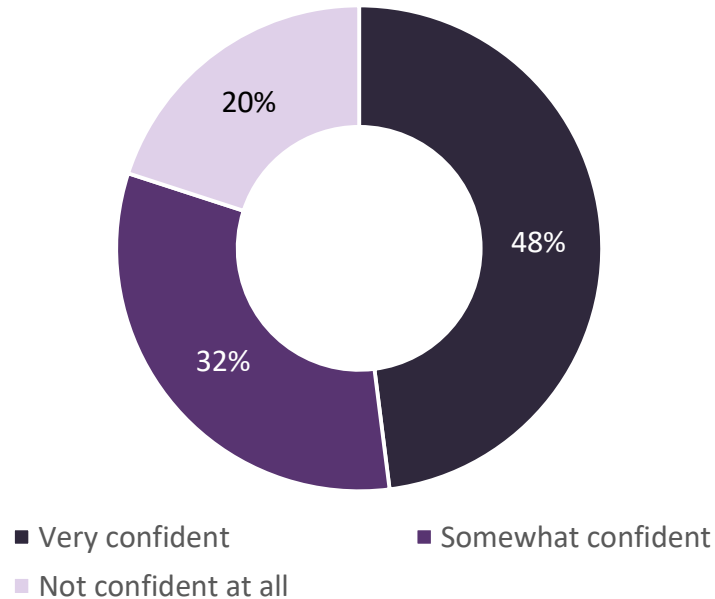
Industry is Confident that a Treatment or Vaccine will be Available Within a Year...



Summary of COVID-19 Clinical Trial Activity (changes since our last update)

as of 11 May 2020

Industry Perspective on Therapeutic Development

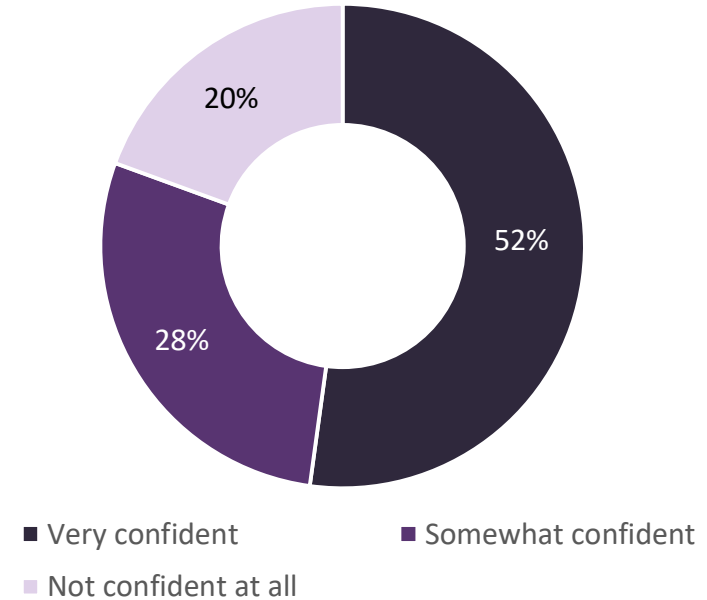


About 80% of respondents have some level of confidence that a therapeutic agent will be available within 12 months. Recent positive results for remdesivir over the past two weeks, put us one step closer to a treatment. Japan also approved remdesivir for COVID-19 treatment on May 7th making it the first approved drug for the disease.

Based on poll data collected from respondents who visited the Pharmaceutical Technology site between Mar 26-April 1, 2020 (n = 477)

Source: GlobalData Analysis

Industry Perspective on Vaccine Development



A similar level of confidence exists that a vaccine to protect against COVID-19 will be available within the next 12 months. This is a very aggressive timeline, but the US has launched “Operation Warp Speed” to fast track development and Moderna, Oxford University (partnered with AstraZeneca) and Pfizer have pledged to have millions of doses available by the end of 2020. Moderna also announced on May 7th that the company received FDA clearance to begin a 600 patient, Phase II trial for its mRNA vaccine candidate.

Based on poll data collected from respondents who visited the Pharmaceutical Technology site between Mar 26-April 1, 2020 (n = 1,561)

Remdesivir EUA Triggers Fast-track Approval in Japan and Early Access in the UK



Remdesivir is Now the First Drug Approved for COVID-19 Treatment

as of 26 May 2020

- Following remdesivir being labeled the new standard of care in the US on April 29, the FDA issued an Emergency Use Authorization (EUA) for emergency use of remdesivir for the treatment of hospitalized COVID-19 patients. This is the second such authorization after that for chloroquine phosphate; however, given that most data for chloroquine and its derivatives has been called into question. After receiving EUA, Gilead handed distribution rights for remdesivir to the US government. The distribution got off to a rocky start and many hospitals struggled to gain access to the drug. On May 8, the White House announced that Dr. Deborah Birx, the coronavirus response coordinator, will play a leading role in the remdesivir distribution effort.
- On May 7, the Japanese health minister announced that the government approved remdesivir (branded as Veklury) as a treatment for patients with severe COVID-19. Japan began a fast-track approval for remdesivir as a possible treatment for COVID-19 patients after the US FDA granted Emergency Use Authorization (EUA) for treatment of hospitalized COVID-19 patients. Gilead's distribution plan in Japan is unclear but this approval adds further pressure for the company to quickly ramp up its manufacturing efforts in order to meet demand. Japan is also considering approval of Fujifilm Toyama's favipiravir for COVID-19; the drug is in Phase III globally.
- On May 26, the British government announced that based on positive NIH data, remdesivir will be made available through the Early Access to Medicines Scheme (EAMS) program for patients with high unmet need.

“

Although a 31% improvement doesn't seem like a knockout 100%, it is very important proof of concept. What it has proven is that a drug can block this virus.

”

Anthony Fauci, MD, Director of National Institute of Allergy and Infectious Diseases

“

FDA's emergency authorization of remdesivir, two days after the National Institute of Health's clinical trial showed promising results, is a significant step forward in battling COVID-19.

”

Alex Azar, Secretary, US Health and Human Services

Making Remdesivir Available Worldwide and ICER Recommends a Price



Institute for Clinical and Economic Review (ICER) recommended guidance

as of 26 May 2020

- Now that the FDA has issued an Emergency Use Authorization (EUA) for use of remdesivir for the treatment of hospitalized COVID-19 patients, the next question is how to make the drug accessible to patients worldwide. For now, Gilead is donating remdesivir to the US government and the company plans to continue donating the drug until its current supply chain is depleted. No plans have been announced for donations outside of the US.
- Meanwhile in Bangladesh, Beximco Pharmaceuticals is starting to sell a generic version of remdesivir to private clinics while donating doses to state-run hospitals. The company is the first to produce a generic version of remdesivir, under the brand name Bemsivir. The launch comes after Bangladesh's Directorate General of Drug Administration (DGDA) granted emergency use authorization for Bemsivir IV injection on May 26.
- Pricing of remdesivir is another area of concern for stakeholders. Remdesivir is administered intravenously (IV) and historically IV drugs come with a large price tag. The Institute for Clinical and Economic Review (ICER) has now weighed in and estimated a price of \$4,460 per course of treatment based on the disease burden. At this estimate price, remdesivir could be a \$4-\$5 billion drug for Gilead if you consider the company's plan to have 500,000 treatment courses by October and a million by the end of the 2020. It is uncertain if Gilead will follow ICER's recommendation since in many cases, drug makers and ICER are at odds and there is no obligation to follow these guidelines. However, there will likely be considerable pressure to make the drug available at an affordable price.

“

We are releasing these estimates now, despite the fact that the evidence is highly uncertain and evolving, because now is the time when the public and policymakers should be actively debating how to link pricing to an overall platform to develop treatments for COVID-19.

”

Steven D. Pearson, MD, MSc, ICER's President

“

We deeply respect and appreciate the fact that, when we get into millions of doses, we have to have a sustainable economic model that works here and that achieves access to affordability to patients around the world

”

Daniel O'Day, Gilead CEO

Gilead Strikes Deal for Generic Companies to Make and Sell Remdesivir



Remdesivir Will be Available as a Generic in 127 Countries

as of 14 May 2020

- On May 12, 2020 Gilead signed non-exclusive voluntary licensing agreements with five generic pharmaceutical manufacturers based in India and Pakistan to further expand supply of remdesivir. The agreements allow the following companies: Cipla Ltd., Ferozsons Laboratories, Hetero Labs Ltd., Jubilant Lifesciences and Mylan to manufacture remdesivir for distribution in 127 countries. The countries are nearly all low-income and lower-middle income countries, as well as several upper-middle- and high-income regions facing significant obstacles to healthcare access.
- Under the licensing agreements, the companies may receive a technology transfer of the Gilead manufacturing process for remdesivir in order to rapidly scale up production. The licensees will determine their own prices for the generic product, and the licenses are royalty-free until the WHO declares the end of the Public Health Emergency of International Concern regarding COVID-19, or until a pharmaceutical product other than remdesivir or a vaccine is approved to treat or prevent COVID-19, whichever is earlier.
- Gilead employed a similar strategy for marketing several of its hepatitis C antivirals and will help ensure that economically challenged countries have adequate access to the drug. Additionally, allowing additional manufacturers to make remdesivir will alleviate potential supply shortages which are already being raised as concerns for the highly in demand antiviral.

“

Mylan and Gilead have partnered for 15 years to fight infectious diseases like HIV and hepatitis C, reaching nearly 10 million patients in more than 100 countries with affordable medicine.

”

Heather Bresch, CEO, Mylan

“

As a world leader in the supply of antiretroviral drugs upon which approximately 40% of those being treated for HIV/AIDs depend, we also understand supply chain complexities that must be overcome in order to ensure that the products we manufacture are able to reach the patients who need them.

”

Rajiv Malek, President, Mylan

Vaccines Make Slow But Steady Progress



Last week, Pharma CEOs commented on the ongoing COVID-19 vaccine development and Operation Warp Speed got a New Leader

as of 26 May 2020

- CanSino's Ad5 vectored COVID-19 vaccine was found to be tolerable and immunogenic at 28 days post-vaccination, with humoral responses against SARS-CoV-2 peaking at day 28 post-vaccination in healthy adults, and rapid specific T-cell responses were noted from day 14 post-vaccination.
- Moderna released interim data from Phase I trials of its mRNA vaccine on May 18, showing that mRNA-1273 elicited immune responses at various doses. In the NIAID run study, participants 18-55 years of age received two doses of either 25 µg or 100 µg or one 250 µg dose of the vaccine. After 15 days, participants across all doses showed seroconversion, meaning the body produced antibodies against the viral antigen. p. Based on the data, Moderna will continue with 50 µg and 100 µg doses for Phase II clinical trials. The released interim data was only from eight subjects, but raise optimism on Moderna's ambitious timeline.
- Pfizer's CEO, Albert Bourla, said that the vaccine candidate that his company is developing in collaboration with German biotech BioNTech will be tested in thousands of patients by September, and several million doses will be available by October if trials are successful.
- On May 15, Oxford University's adenovirus vector COVID-19 vaccine, ChAdOx1 nCoV-19, now being developed in partnership with AstraZeneca, passed an important animal study. Six rhesus monkeys were given a single shot of ChAdOx1 and challenged with SARS-CoV-2. All developed protective antibodies within 28 days, some already after 14 days, showing both a humoral and cellular immune response. The study has not been peer-reviewed, yet.
- The White House COVID-19 vaccine initiative 'Operation Warp Speed' has a new leader, ex-GSK head of vaccines Moncef Slaoui.

“

Billions of doses of an effective vaccine will be needed to protect the world from COVID-19, so no company alone will be able to provide them.

”

Stephane Bancelan, Moderna's CEO

“

The ability to manufacture hundreds of millions to billions of doses of vaccine requires the vaccine-manufacturing capacity of the entire world,... Although new technologies and factories can be developed to sustain production, there is an immediate need to fund the necessary biomanufacturing infrastructure, including the fill/finish steps that provide vialled vaccine products for distribution.

Bill Gates, Co-chair, Bill and Melinda Gates Foundation

Insights Exclusive Intel: COVID-19 Vaccine and Therapeutic Development



Exclusive COVID-19 Investigative Journalism Content from the Pharma Intelligence Center

as of 22 May 2020

Date	Headline	Drugs Mentioned	Experts Interviewed
22 May 2020	Senzer Pharmaceuticals' metered-dose inhaler COVID-19 study to begin by mid-to-late June, CEO says	<ul style="list-style-type: none"> ▪ Undisclosed drug combination delivered via metered-dose inhaler 	Senzer's executive
21 May 2020	OncoImmune's Phase III immunomodulator trial for severe COVID-19 recruits 25 out of 230-patient target as of yesterday, exec says	<ul style="list-style-type: none"> ▪ CD-24Fc 	OncoImmune's executive
20 May 2020	Anti-GM-CSF antibodies, such as by Roivant, Humanigen and I-Mab, expected to show better effect in COVID-19 than cytokine-specific targets, experts say	<ul style="list-style-type: none"> • lenzilumab • namilumab • TJM-2 • gimsilumab • mavrilimumab 	5
19 May 2020	Pharma and biotech companies turn to alternative investment strategies as external investors pull back due to COVID-19		6
18 May 2020	Human challenge design for COVID-19 vaccine trials attractive for speed but operational, ethical conundrums abound, most experts say	<ul style="list-style-type: none"> • mRNA-1273 • INO-4800 	8

The Race Is On, but With Hurdles Along the Way



GlobalData Analyst View

“

...solutions on the horizon are antivirals, with Gilead's remdesivir and Ascleptis's ASC09/ritonavir possibly reaching the market in late 2020 if the results of ongoing late-stage clinical trials are positive.

”

COVID-19 Impact Assessment

as of 26 May 2020

The pharmaceutical industry race to develop both preventive and therapeutic interventions

- The nearest solutions are antivirals such as Gilead's remdesivir, which has Emergency Use Authorization from the FDA for use in the treatment of hospitalized COVID-19 patients. The drug is also approved in Japan and will be available in the UK through the Early Access to Medicines Scheme (EAMS) program for patients with high unmet need. On May 22, data from the NIH remdesivir study were published in the 'New England Journal of Medicine' and added some more detail on the results NIAID Director, Dr. Fauci announced almost four weeks ago. The Phase III trial included 1,063 patients hospitalized with COVID-19, of which 538 received remdesivir and 521 received a placebo. The median recovery time was 11 days for subjects in the remdesivir arm and 15 days in the placebo arm. Furthermore, mortality after 14 days was 7.1% in the remdesivir vs. 11.9% in the placebo group, slightly improved numbers than what was announced before, but still not significant. Serious adverse events did not occur at a higher rate in patients treated with remdesivir than in the placebo group (21.1% vs. 27%). However, less severe COVID-19 patients benefited more from the drug, while patients on mechanical ventilation saw the smallest benefit, a result the study authors contributed to the small sample size in this group.
- Following data from the large chloroquine/hydroxychloroquine observational study with more than 96,000 subjects, the high incidence of side effects led the WHO to pause their studies using the anti-malaria drug. In the 'Lancet' study, nearly 14,888 COVID-19 patients who received chloroquine or hydroxychloroquine with or without antibiotics were compared to a control group of 81,144 hospitalized patients. No benefits of any drug combination could be shown, but increased in-hospital mortality and de-novo ventricular arrhythmias.
- Even though a vaccine typically takes years to develop, the US has fast-tracked development with the goal to have as many as 300 million doses by early 2021. According to Dr. Anthony Fauci, it is “in the realm of possibility” to have a potential vaccine ready for wide distribution by January.



Supply Chains in Northern Italy Are Impacted

Drugs Manufactured in Italy

as of 26 May 2020

- As of May 26, one of the worst COVID-19 outbreak in Europe is located in Italy, with over 230,000 confirmed cases and almost 33,000 deaths.
- On March 8, the Italian government implemented a lockdown/quarantine of the Northern regions to prevent the spread of infection to the rest of the country.
- GlobalData's Contract Service Provider database shows the majority of CMOs with Italian facilities are located in these same Northern regions of Italy and were impacted by general manufacturing and export restrictions.

Impacted Biopharma Companies with Associated Products and CMOs

Biopharma Company	Product	Contractor
Amgen Inc	Evenity	Patheon NV
Pfizer Inc	Zithromax	Aenova Holding GmbH
Takeda Pharmaceutical Co Ltd	Lialda	Cosmo Pharmaceuticals NV
Pfizer Inc	Zoloft	Aenova Holding GmbH
Teva Pharmaceutical Industries Ltd	Proair HFA	Cambrex Corp

“

We have not closed our operations in Italy, but we have been operating at a lower capacity due to high levels of absence among staff. This has started to improve gradually over the last week or so, but we find it far too early to conclude that the crisis would be over.

”

Erik Haeffler, Vice President
Manufacturing Services &
Head of Sustainability
at Recipharm

Supply Chains Inspection for the United States



New FDA Inspection Guidance for the COVID-19 Outbreak

as of 13 May 2020

- In accordance with the White House's guidelines, the FDA will continue to postpone domestic and foreign routine surveillance inspections of the products it regulates, with the exception of critical inspections.
- The global situation is constantly being monitored by the FDA and the agency says it stays in close contact with its domestic and foreign regulatory counterparts.
- In order to protect its workers and those of production facilities, the FDA will utilize alternative inspection tools while postponing all but mission critical on-site inspections.
- The FDA is collaborating with the CDC to develop a process to restart regular on-site inspections to help ensure that this is done as safely as possible.
- This will follow the criteria outlined in the "Guidelines for Opening Up America Again" recently unveiled by President Trump, after these guidelines saw a temporary disruption for one week.
- This delay will negatively affect the US pharmaceutical industry, as disruptions in inspections may result in a delay of these products being available for patient use.

“

In this unprecedented time, we are working hard to help ensure the safety and integrity of the products we all need, while striking an appropriate balance between a scaled back surveillance inspection program and the continuation of providing robust regulatory oversight.

”

Stephen Hahn, US FDA
Commissioner

Clinical Trials and Regulatory Delays



COVID-19 Impact Assessment

as of 25 May 2020

GlobalData Analyst View

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...Clinical trials irrespective of indication will likely be impacted, not just in terms of recruitment and immediate patient care but also in terms of data collection and analysis in the months to come. Pharma could see an uptick in virtual trials during and after the pandemic.

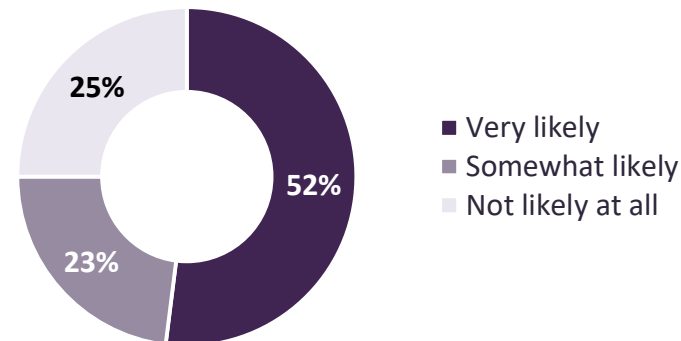
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Clinical trials and regulatory delays could impact future approvals and revenues

- Upward trends in clinical trial disruption continue with at least 1,229 trials (+12 from the last update) and 526 Pharma/Biotech companies and CROs (+9 from the last update) are associated with disrupted clinical trials.
- On May 11, the FDA announced that in order to protect its workers and those of production facilities, the agency will utilize alternative inspection tools while postponing all but mission critical on-site inspections.
- In a recent GlobalData poll, about 75% and 80% of respondents expressed some level of concern about clinical trial or regulatory delays respectively due to the coronavirus outbreak.

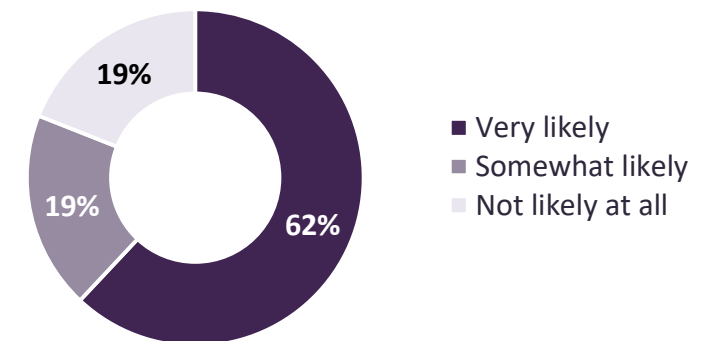
Respondents' Perspective Clinical Trial Delays

What is the likelihood that there will be clinical trials delays as a result of the coronavirus outbreak? (N = 527)



Respondents' Perspective Regulatory Delays

What is the likelihood that there will be regulatory delays as a result of the coronavirus outbreak? (N = 679)



Based on poll data collected from respondents who visited the Clinical Trials Arena site between Mar 26-April 2, 2020

Ongoing Disruption of Clinical Trials



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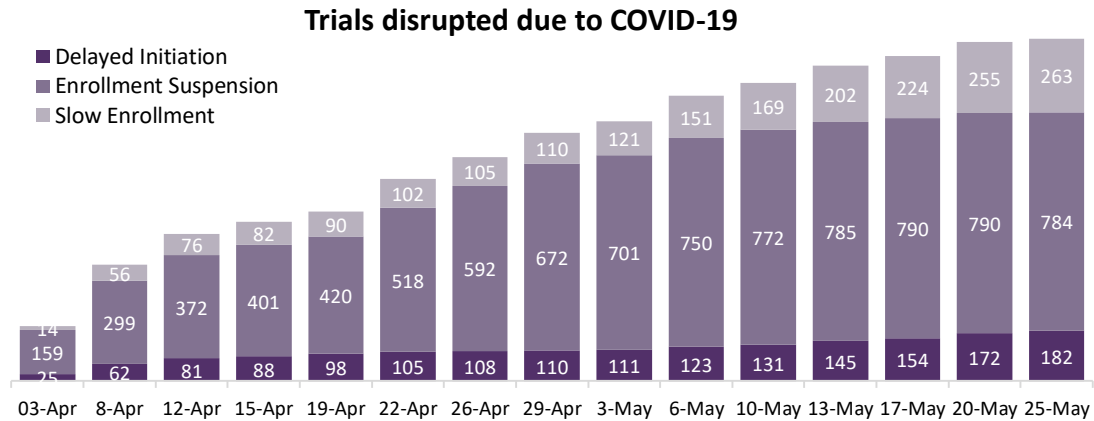
Eli Lilly was the first large global pharmaceutical company to announce clinical trial delays.

Additional large pharma companies, including Pfizer, Merck, Amgen and BMS, as well as smaller biotech companies, have followed suit in delaying start of planned trials and suspending recruitment of subjects in ongoing trials.

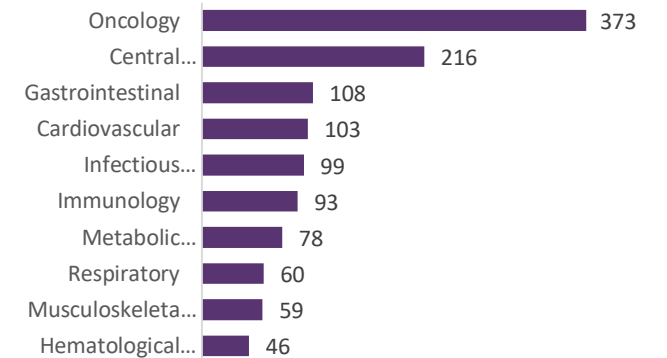
Oncology trials continue to suffer the most disruption followed by trials for CNS diseases due to the COVID-19 pandemic.

”

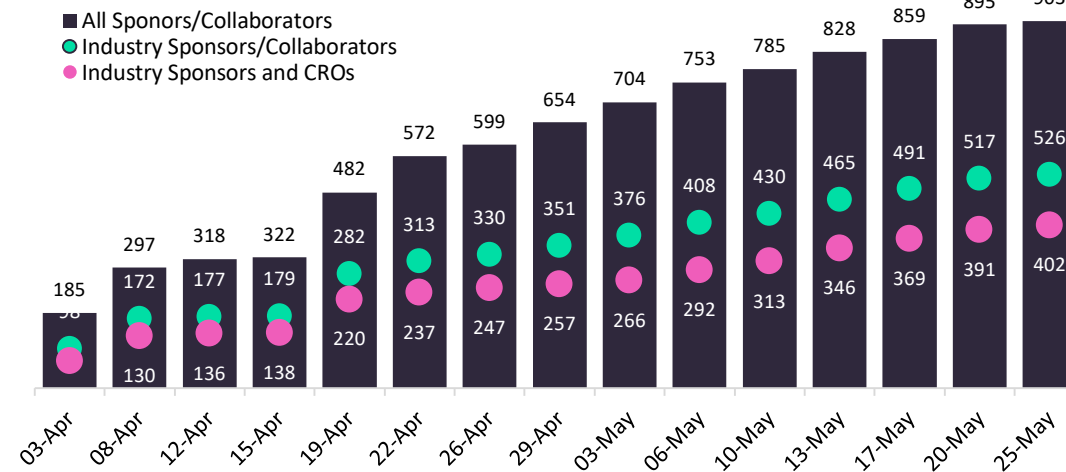
Disrupted Clinical Activities as of 25 May 2020



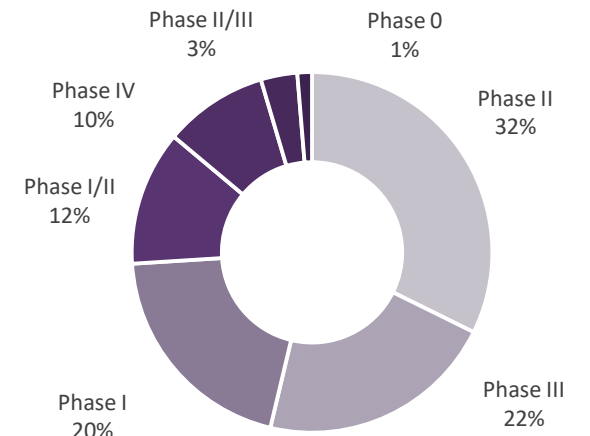
Disrupted Clinical Trials by Therapy Area



Organizations reporting trial disruption due to COVID-19



Disrupted Clinical Trials by Trial Phases



...Trial Activity Started to Resume After a Period of Disruption



GlobalData Analyst View

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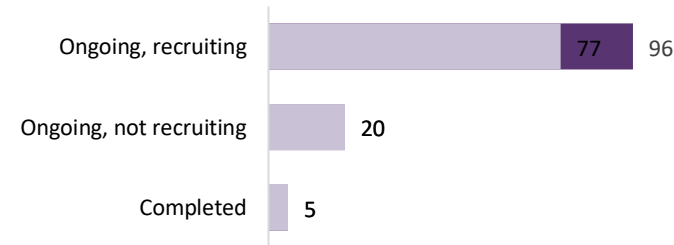
Clinical trial activity has slowly started to turn around from disruption due to COVID-19 and getting back on track.

Many trials have started recruiting subjects while some have completed recruitment and still ongoing for the trial readout after full treatment period is completed.

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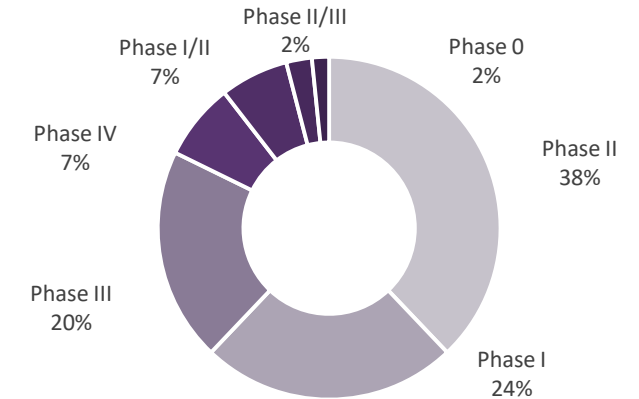
Clinical trials that were affected and now back on track as of 25 May 2020

Disrupted Clinical Trials Resumed Activity – by Trial Status

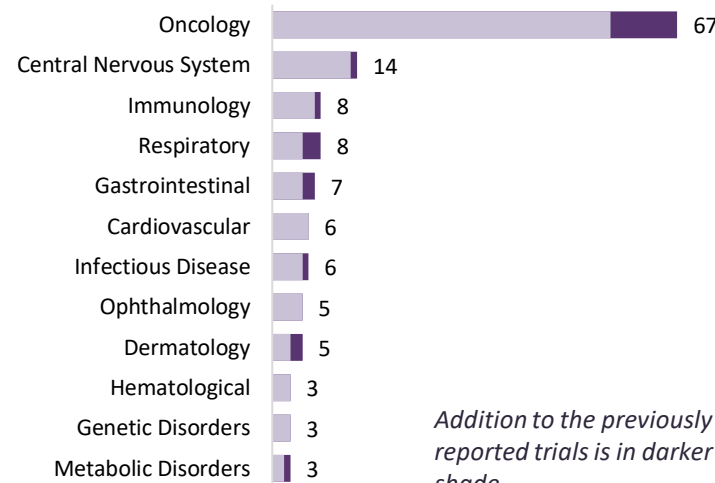


Addition to the previously reported trials is in darker shade

Disrupted Clinical Trials Resumed Activity – by Trial Phases

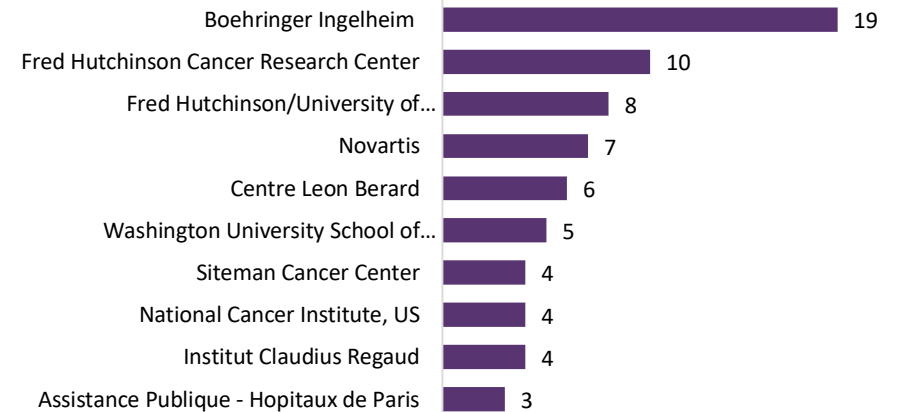


Disrupted Clinical Trials Resumed Activity - by Therapy Area



Addition to the previously reported trials is in darker shade

Examples of Sponsors Resuming Trial Activity After Disruption





4. Economic Impact



-
- The impact of COVID-19 on the world's top economies
 - Major market indices are improving
 - Oil price dips below zero but rebounds quickly
 - Many economists have cut their GDP forecasts; 2020 consensus forecast for GDP growth is currently -1.9%
 - Historic numbers of people apply for unemployment benefits in the US
 - Governments' responses and fiscal stimulus plans
 - Concern over the spread of COVID-19 increases, but so does business optimism
 - Hiring is picking up; marginal increase in layoffs announced

COVID-19 has Impacted the World's Top Economies



Countries	Confirmed Cases	Cases per Million Capita	Deaths	Case Fatality Rate	Stimulus (\$ Billion)	Stringency Index	Active Jobs (30 Day Change)	Market Index (YTD Change)	GDP Growth (2020 Estimate)
United States	1,662,302	5,022	98,220	5.9%	4,984	70	-3.5%	-7.4%	-5.3%
China	82,992	58	4,634	5.6%	873	75.95	-7.6%	-6.7%	0.8%
Japan	16,581	131	830	5.0%	1,098	51.43	-29.2%	-11.0%	-5.0%
Germany	180,600	2,156	8,309	4.6%	1,231	67.38	-9.8%	-14.8%	-6.5%
India	144,950	105	4,172	2.9%	266	77.62	-23.7%	-21.8%	2.1%
United Kingdom	262,547	3,868	36,996	14.1%	446	72.62	-5.7%	-21.2%	-8.7%
France	183,067	2,805	28,460	15.5%	475	85.24	-9.7%	-23.0%	-9.0%
Italy	230,158	3,807	32,877	14.3%	1,365	76.43	-25.9%	-26.9%	-10.8%
Brazil	374,898	1,764	23,473	6.3%	149	63.33	-13.7%	-45.0%	-4.3%
Canada	87,119	2,308	6,655	7.6%	142	68.1	-5.4%	-12.0%	-6.5%

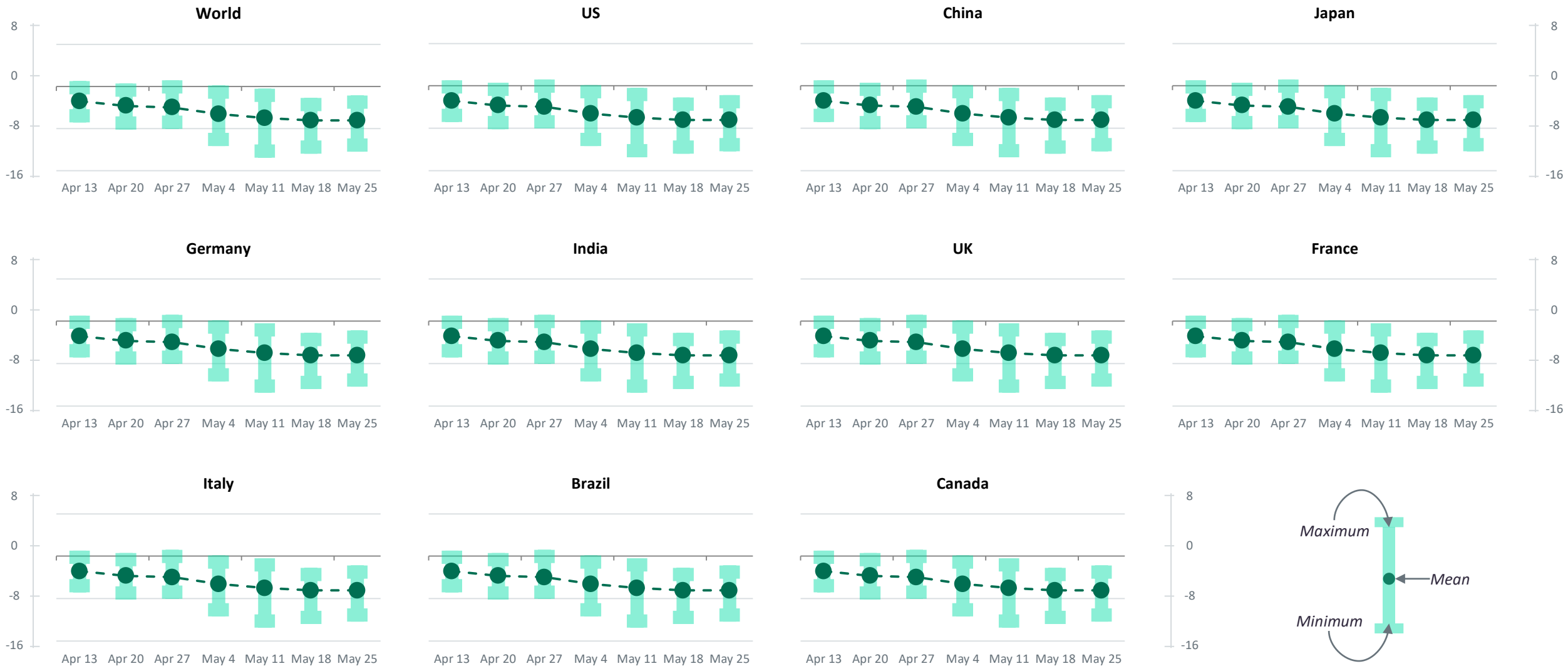
Note: Case Fatality Rate is the ratio of total death to total confirmed case. Market Index data is based on MSCI index of respective country. GDP growth estimates are based on consensus data from various analysts and firms.

Stringency index, created by Oxford COVID-19 Government Response Tracker (OxCGRT), is the aggregated score based on several different common policy responses governments have taken, such as school and workplace closures and restrictions on travel and gatherings etc.

GDP Estimates of Top Ten Economies All Trend Downwards



Maximum, Minimum and Mean of all new GDP growth estimates by week, as of 26 May 2020



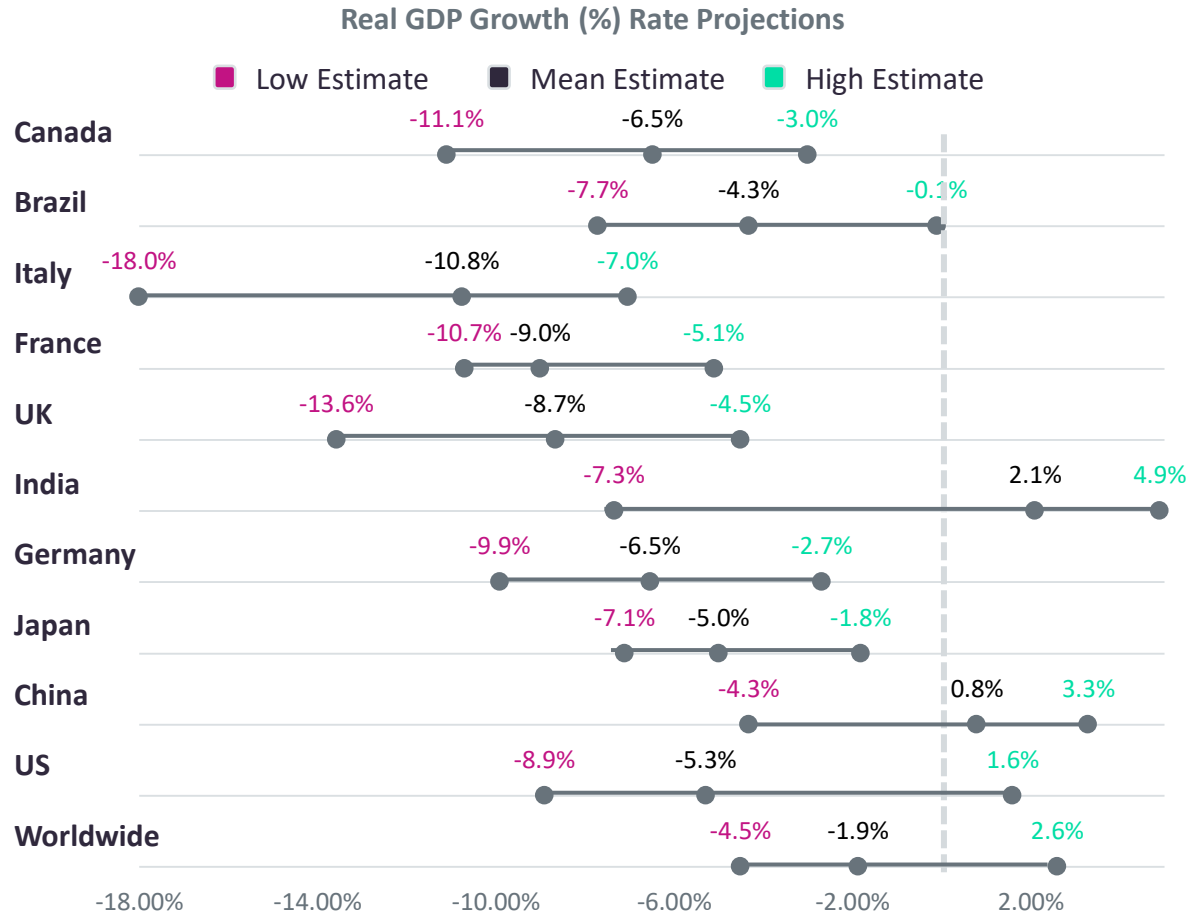
Source: GlobalData Analysis; Press Articles; Bloomberg

Consensus Expects a Global Recession



Estimated 2020 GDP Growth

GDP data as of 26 May 2020



Forecasters Sound the Alarm

- Finance Commission of India forecasts country's GDP growth to stay within a range of -6% to 1% in FY2020-2021. (May 22)
- The Congressional Budget Office of the US foresees economic growth to contract by 11% in Q2 2020 and deficit to swell to \$2 trillion in 2020. (May 19)
- Deloitte has downgraded its 2020 UK GDP forecast, with an expected contraction of 11.7% compared to its previous estimate of 6.8%. (May 19)
- Goldman Sachs revised its 2020 growth estimates downward for India to -3.6% in May, from -2.6% in April. (May 17)
- HSBC revised its global economic growth forecast for 2020 to -4.8% in May from -3.3% in April. The bank downgraded estimates for both developed (-7.1% from -5.9%) and emerging nations (-1.7% from 0.5%). It forecasts the US to contract by 7% and China to grow at a slower pace of 1.7%. (May 15)
- Goldman Sachs estimates the US economy to shrink by 39% in Q2 2020. (May 14)
- According to Bank Negara Malaysia, the country's economy grew by 0.7% YoY in Q1 2020. They forecast real GDP to shrink in the second quarter. (May 13)
- The European Commission predicts the EU economy will contract by 7.5% in 2020 but expects a recovery in 2021 despite exceptional uncertainty. (May 6, 2020)
- The Spanish government forecasts GDP to contract by 9.2% in 2020 expects 6.8% GDP growth next year. (May 2, 2020)

Note: Estimates on 2020 GDP growth based on multiple broker projections

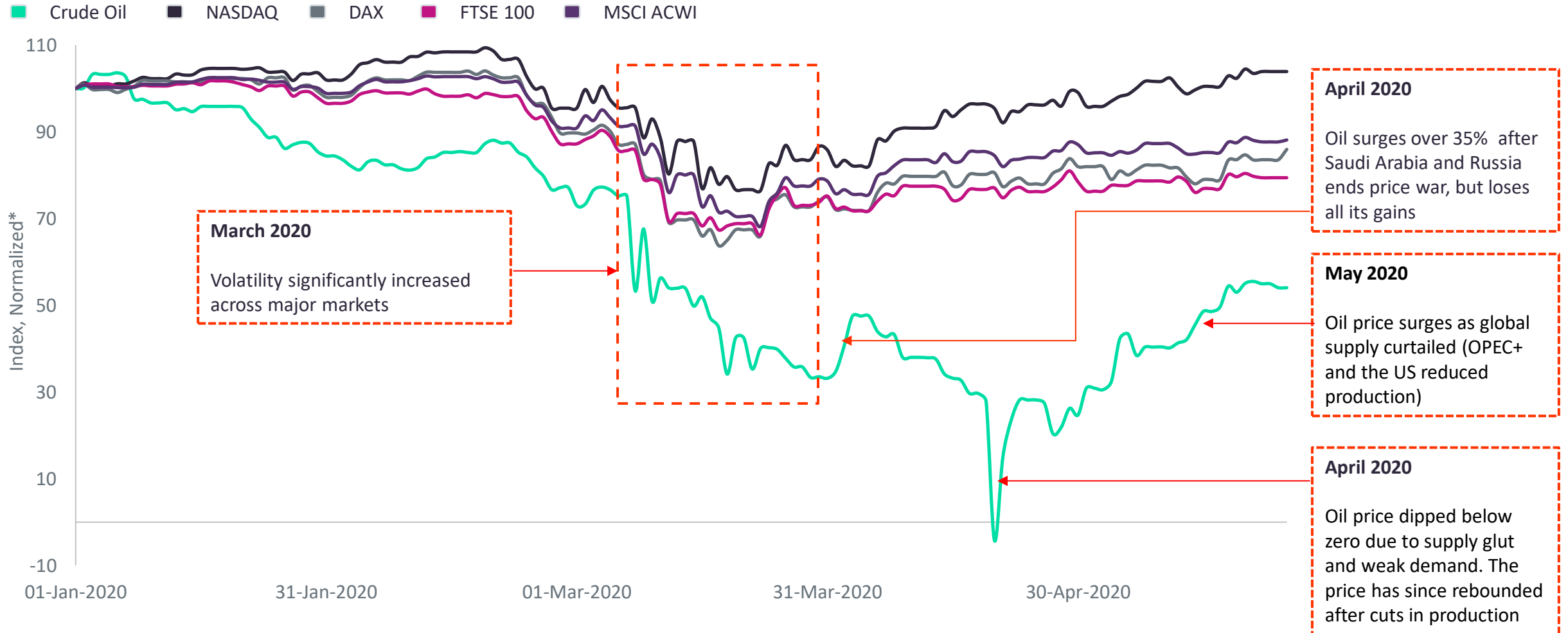
Source: GlobalData Analysis; National Statistics Office; The World Bank; Broker Estimates; BBC; Twitter; Reuters

Major Markets are Improving; Oil Price Dips Below Zero but Rebounds Quickly



Impact of COVID-19 on Asset Prices

Year-to-date performance, Indexed to 100 as of 26 May 2020



All indices rebased to 100 on 1 January 2020

Source: GlobalData Analysis; Yahoo Finance; Investing.com; Bloomberg

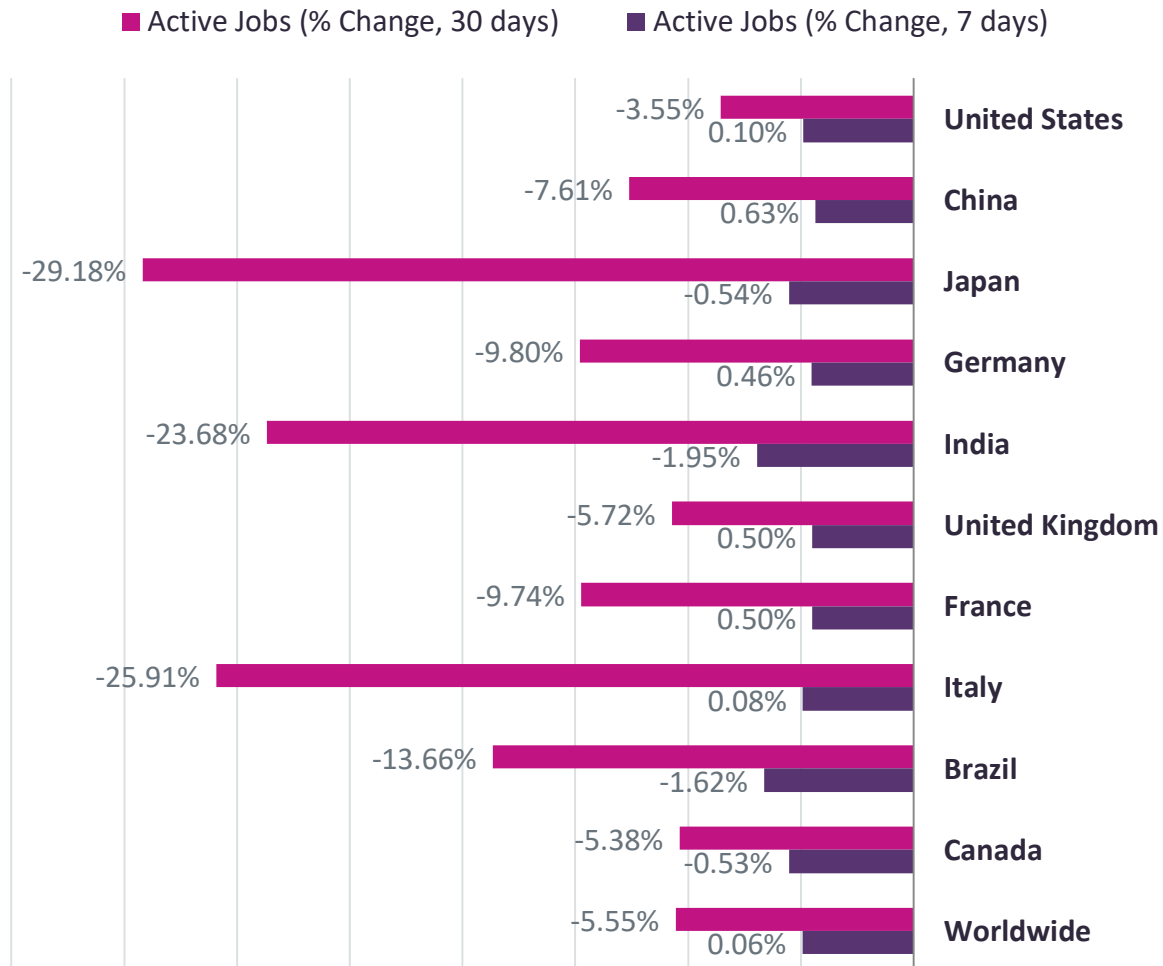
Active Job Vacancies Plummet, While Unemployment Rises



Job Trends

as of 26 May 2020

Change in Active Jobs by Country



Unemployment headlines

- US unemployment rate reached record high in 43 states and increased in all 50 states. (May 22)
- Additional 2.4 million Americans filed for unemployment insurance in the week ending May 16, bringing total initial claims over the past 9 weeks to more than 38 million. (May 21, 2020).
- According to Office for National Statistics, 856,500 people claimed for unemployment benefits in UK in April which is an increase of 69% in a single month. (May 20)
- Around 27 million youths (20-30 years age group) lost their jobs in India in April, according to CMIE. (May 14)
- Around 600,000 people lost their jobs in Australia; April unemployment rate is 6.2%. (May 14)
- Global economic output will fall by \$8.5 trillion over next two years, according to the United Nations World Economic Situation and Prospects report (May 13)
- Goldman Sachs forecasts US unemployment rate to peak 25% in Q2 2020, worse than the Great Depression. (May 13)
- According to Statistics Canada, around 2 million Canadians lost their jobs in April after 1 million lost theirs in March. Unemployment is now 13%. (May 8)
- According to National Statistical Office ISTAT, Italian unemployment was 9.3% and 8.4% in February and March 2020, respectively. (April 30)

Response to COVID-19: USA and China



United States

Confirmed cases	1,662,302
Deaths	98,220
Recovered	379,157

Managing lockdown

- US bans flights from Brazil. (May 24)
- All states opened partially. (May 19)
- US President urges state governors to reopen schools. (May 14)
- California and New York ease restrictions; however county level governments, such as Los Angeles, extend restrictions by three months. (May 13)
- Temporarily banned issuance of work-based visas due to unemployment. (May 9)
- Announced a 3-phase plan to lift the lockdown: re-open restaurants, theaters and places of worship followed by re-opening schools and resumption of non-essential travel, and finally lift all restrictions. (April 17)

Recovery measures

- A relief package worth \$484 billion was signed off (April 23)
- Trump announced a \$19 billion bailout package for ailing farmers. (April 17)
- Unveiled an additional stimulus measure worth \$2.3. (April 9)
- Approved a \$2.2 trillion fiscal stimulus package (cash payments to individuals, support to businesses, and strengthen public services). (March 27)



China

Confirmed cases	82,992
Deaths	4,634
Recovered	78,277

Managing lockdown

- Lockdown re-imposed in the province of northeast China near Russia, which is home to 25 million people. (May 19)
- Beijing eased travel restrictions on domestic travelers from April 30. (May 1)
- Promotes 'civilized behavior' by banning sneezing or coughing without covering nose or mouth, spitting in public, maintaining social distancing, and hygiene measures effective from June 1, 2020. (April 28)
- Lockdown lifted from the city of Wuhan, rail and road connectivity re-established. (April 7)

Recovery measures

- Unveils additional fiscal stimulus worth \$504.7 billion. (May 25)
- China will spend \$205 billion in 2020 on 5G network, power grid enhancement and upgrade of railways to revive economy. (May 14)
- Approved fiscal measures worth \$368 billion.
- People's Bank of China reduced its 7 days reverse repurchase rate to a record low of 2.2% and injected \$7 billion into the financial system. (March 30)

Response to COVID-19: Japan and Germany



Japan

Confirmed cases	16,581
Deaths	830
Recovered	13,612

Managing lockdown

- Expands entry ban to 13 more nations. Foreign travelers, including Japan residents who have been to any of these countries in last two weeks, will be denied entry. (May 16)
- Eased 'state of emergency' in 39 out of 47 prefectures with a decline in new infections. Tokyo, Osaka and northern island of Hokkaido still under restriction. (May 14)
- Japan opens businesses such as restaurants, cafes, sports clubs and bars. (May 8)
- Extended nationwide 'State of Emergency' with non-relaxation of physical distancing measures till May 31, 2020. (May 4)
- Parks, museums, and other recreational buildings to open in the coming weeks. (May 3)

Recovery measures

- Considering a new relief package worth \$929 billion to support companies and employees hit by COVID-19. (May 25)
- Bank of Japan decides to buy unlimited bonds to keep borrowing costs low. (April 27)
- Total stimulus package worth \$1.09 trillion has been approved by the Japanese government to support health measures and fight COVID-19.



Germany

Confirmed cases	180,600
Deaths	8,309
Recovered	161,199

Managing lockdown

- German government to extend social distancing rules until July 5. (May 25)
- German Chancellor urged all 16 states to gradually lift restrictions. (May 20)
- Plans to lift quarantine rules for travelers from neighboring countries; restarts football league. (May 15)
- Plans to open borders by June 15. (May 13)
- Regional government of North Rhine-Westphalia postponed plan to reopen business and public venues that was scheduled for May 11, amid a spike in cases. (May 8)
- Allowed reopening of all shops. Schools for older children reopened. (May 6)
- Larger events such as football matches, festivals and concerts to be allowed after August 31. (May 5)
- German government reopens playgrounds, churches and museums from May 4. (April 30)
- Extends ban on tourists until mid-June. (April 29)

Recovery measures

- Approved a stimulus package worth \$1.23 trillion.

Response to COVID-19: India and UK



India	
Confirmed cases	144,950
Deaths	4,172
Recovered	60,706

Managing lockdown

- Hundreds of students and migrants in other states boarded flights home when India resumed domestic services on May 25. (May 25)
- 200 non-AC passenger trains to start from June 1. (May 20)
- Extended lockdown until May 31. Inter-state movement of vehicles to resume with consent of states. However, public gatherings, schools, malls and restaurants remain prohibited, flights are suspended and trains cancelled till end of July. (May 17)
- Relaxed measures for financial services, commercial services (print media, e-commerce companies, courier services, cold storage and others), agricultural activities, health services, cargo and essential services. (April 20)

Recovery measures

- The RBI further reduced the report rate by 40 bps to 4% and extended moratorium on loan repayments by three more months till August 31. (May 23)
- Structural reforms announced for 8 key sectors including airports, MROs, power, coal, mineral, defense, space and atomic energy. (May 16)
- Stimulus package worth \$266.4 billion (9.2% of GDP) to support businesses and revive the economy. (May 12)



United Kingdom	
Confirmed cases	162,547
Deaths	36,996
Recovered	1,161

Managing lockdown

- UK government in its stage two guidelines allows close contact training for elite athletes. (May 25)
- Allows furniture stores to restart trade. (May 20). Tourist attractions, holiday parks, hotels and campsites to reopen in July. (May 17)
- Housing market reopens. (May 13)
- Unveiled 'conditional plan' to ease lockdown and allow workers to return to work (who could not work from home) from May 13 onwards. Also plans to reopen primary schools and shops on June 1. (May 11)
- New COVID-19 Alert System launched, with a scale of one to five. (May 11)
- Government hints at plans to ease lockdown from May 11 onwards and to issue public statement on the strategy on May 10. (May 6)
- PM imposed a three-week lockdown to prevent the spread of coronavirus. British nationals were advised against all but essential international travel. (March 23)

Recovery measures

- Stimulus package worth \$446 billion (15.94% of GDP) has been approved by the government for tax cuts and business loan grants.
- Bank of England has slashed interest rates to all time low of 0.1% and increased holding of bonds (government and corporate) by £200 billion. (March 19)

Response to COVID-19: France and Italy



France

Confirmed cases	183,067
Deaths	28,460
Recovered	65,317

Managing lockdown

- Churches and mosques reopened across France after two months. (May 24)
- France's highest administrative court ordered government to lift ban on religious meetings. (May 19)
- After easing of restrictions on May 11, beaches were opened in green zones of the country (May 16). Government opens borders to European agricultural workers with a valid work contract. (May 12)
- Reopens shops and schools. People allowed to leave home without travel certificates. However, Paris and some other parts remain under tighter lockdown restrictions. (May 11)
- Imposed a 'State of Health Emergency' for two months till July 24. (May 2)

Recovery measures

- \$19.4 billion stimulus announced for the tourism and hospitality sector. (May 14)
- The French government's overall stimulus package worth \$474.6 billion (17.5% of GDP) to revive the economy.
- Schemes will enable public investment banks to provide State guarantees on commercial loans for companies having up to 5000 employees. (Mar 21)



Italy

Confirmed cases	230,158
Deaths	32,877
Recovered	141,981

Managing lockdown

- Begins to reopen museums and churches maintaining social distancing. (May 21)
- Shops, restaurants, cafes, bars, hair salons and churches reopened in Italy. (May 18)
- To reopen borders for European travelers from June 3. (May 16)
- Plans to reopen schools from September onwards. (May 13)
- Resumption of construction and manufacturing from May 4; shops and museums to reopen from May 18; restaurants and bars to reopen from June 1. (May 5)
- The Italian government allowed a few shops and businesses to re-open from April 14 onwards as it seeks to ease restrictions. (April 14)

Recovery measures

- Italian government announced stimulus package worth \$1,365 billion (68.8% of GDP) to support small businesses and revive economy.
- A moratorium on loan repayments for some households and SMEs, including mortgages and overdrafts; state guarantees on loans to SMEs; incentives for financial and non-financial companies in the form of Deferred Tax Activities. (March 10)

Response to COVID-19: Brazil and Canada



Brazil

Confirmed cases	374,898
Deaths	23,473
Recovered	153,833

Managing lockdown

- Essential services such as gyms and hair salons were allowed to reopen. (May 11)
- Sao Luis and three other municipalities in Maranhao state announced a complete lockdown amid growing number of cases. (May 6)
- Malls and stores resumes activities in some cities (April 24)
- Sao Paulo lockdown extended through May 10. (April 17)
- Banned foreigners from entering Brazil until April 30. (March 30)
- Churches exempted from coronavirus-related lockdowns. (March 27)

Recovery measures

- Plans additional measures to support business including tax exemptions. (May 12)
- Central bank policy rate (Selic) has been further reduced to 3% from its previous historic low of 3.75%. (May 6)
- Central excise tax and import duty reduced to zero until September 30 on transactions on medical products. Taxes on any financial transaction during April 3 to July 3 have been reduced to zero. (April 16)
- Announced stimulus package worth \$149.4 billion.



Canada

Confirmed cases	87,119
Deaths	6,655
Recovered	44,651

Managing lockdown

- Greater Montreal area reopens retail stores. (May 25)
- Ontario, British Columbia and Saskatchewan reopen more businesses. (May 19)
- Ontario announced easing of lockdown with reopening of retail stores except in malls, pet services, and household maintenance on May 19. (May 14)
- National parks and historical sites to reopen partially from June 1. (May 14)
- Canada-US border to remain closed until June 21. (May 13)
- 520 Ontario parks to reopen on May 11 and the remaining 115 to reopen on May 15 for limited day use. (May 9)
- Some provinces have reopened garden centers, nurseries, auto dealerships, service centers and lawn care & landscaping. (May 1)

Recovery measures

- Announced total stimulus package worth \$142.3 billion (8.26% of GDP).
- Announced support to farmers and agri-food businesses by an emergency fund, launching AgriRecovery initiatives and Surplus Food Purchase Program. (May 5)
- Introduced 75% wage-subsidy to employers for up to 12 weeks. (March 27)

Response to COVID-19: Russia and Spain



Russia

Confirmed cases	353,427
Deaths	3,633
Recovered	118,798

Managing lockdown

- With spike in cases, the Saratov region in Southern Russia has re-imposed ban on outdoor activities. (May 19)
- Eases business restrictions. (May 13)
- Lockdown in Moscow extended till May 31. (May 7)
- Restriction on movement and certain industries to gradually ease. (May 6)
- Ban on foreigners entering Russia extended. (April 30)
- Citizens are allowed to leave home for work, medical care and facilities, nearest grocery store, and to take out their garbage. (April 25)

Recovery measures

- Earmarked \$329 million for domestic air carriers to compensate losses. (May 14)
- Russian government's overall stimulus package worth \$50.1 billion (3% of GDP).
- Russian government adopted a stimulus package worth \$49.8 billion.
- Central Bank of Russia has cut its policy rate to 5.5% from 6.0%. (April 24)
- Tax holidays to provide relief to the country's aviation and tourism industries and a moratorium on tax audits until June 1 is provided. (April 2)



Spain

Confirmed cases	235,400
Deaths	26,834
Recovered	150,376

Managing lockdown

- Football league restarts on June 8 and international tourism from July. (May 24)
- Eased lockdown in Madrid and Barcelona from May 25. (May 23)
- State of Emergency extended for the fifth time by two more weeks. (May 21)
- Introduces 14-day quarantine for foreign travelers, from May 15. (May 12)
- Four islands in Canaries and Balearics transit to phase one, lockdown easing from May 4 with lifting of restriction on movement. (May 3)
- Announced to lift lockdown in phases (Preparatory: 4-11 May, Phase 1: two weeks from May 11, Phase 2: two weeks from late May, Phase 3: end of June). (April 29)
- Children below 14 years of age were allowed to play (April 26). Relaxed measures that will allow outdoor exercise and walks from May 2 onwards. (April 25)

Recovery measures

- SMEs and the self-employed allowed to delay tax payment over the next six months. (April 23)
- Announced a stimulus of \$220 billion equivalent to one-fifth of the country's GDP. (March 18)

Response to COVID-19: Turkey



Turkey

Confirmed cases	157,814
Deaths	4,369
Recovered	120,015

Managing lockdown

- Imposed 24 hour nationwide curfew in 81 cities, people banned from leaving home from May 23 to May 26. (May 23)
- Automotive industry resumes production; full capacity expected by mid-July. (May 17)
- Travel restrictions relaxed for nine provinces. (May 12)
- Shopping malls and barbershops reopened. (May 11)
- Announced relaxation of confinement rules for young and aged people. (May 5)
- To continue imposing curfews on weekends in 31 provinces until end of May. (May 3)

Recovery measures

- Key policy rate (one week repo rate) reduced by 50 bps to 8.25%. (May 21)
- \$28.7 billion stimulus package has been adopted by the government that will include working allowance, minimum wage support, tax postponement and preservation of commercial life. (April 26)
- Central Bank of Turkey lowered the policy rate by 100bps to 9.75% and a package of financial measures was introduced. (March 17)

Concern Over the Spread of COVID-19 Follows a Downward Trend , But So Does Business Optimism



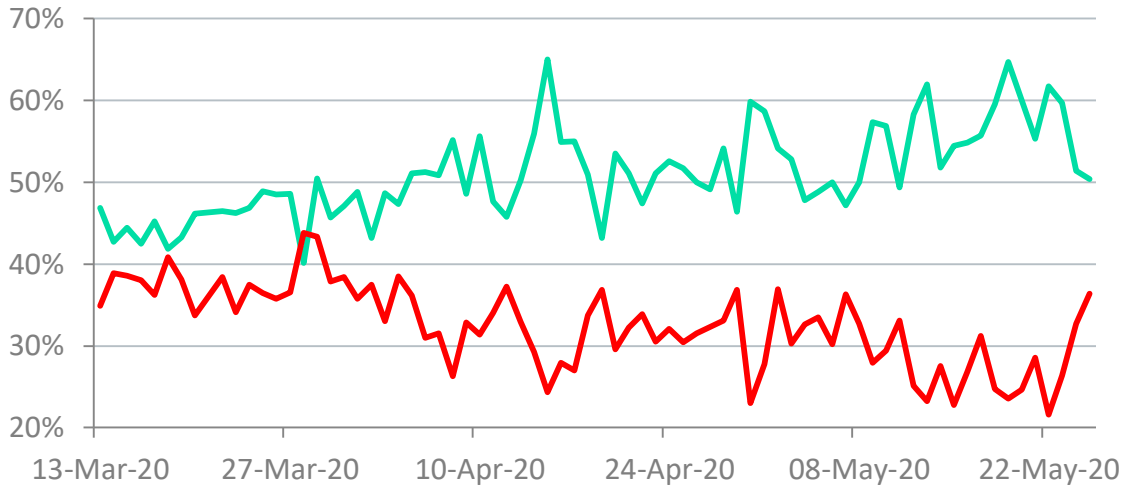
Poll to Assess Business Sentiment
as of 25 May 2020

How optimistic are you about your company's growth prospects?

- Very optimistic
- Optimistic
- Neither optimistic or pessimistic
- Pessimistic
- Very pessimistic

Companies' View on Future Growth Prospects

— Optimistic — Pessimistic



Note: Optimistic includes respondents with response as “very optimistic” and “optimistic”. Pessimistic includes respondents with response as “pessimistic” and “very pessimistic”. Neutral respondents were discounted from the analysis. 22,736 responses were received.

Source: GlobalData Analysis

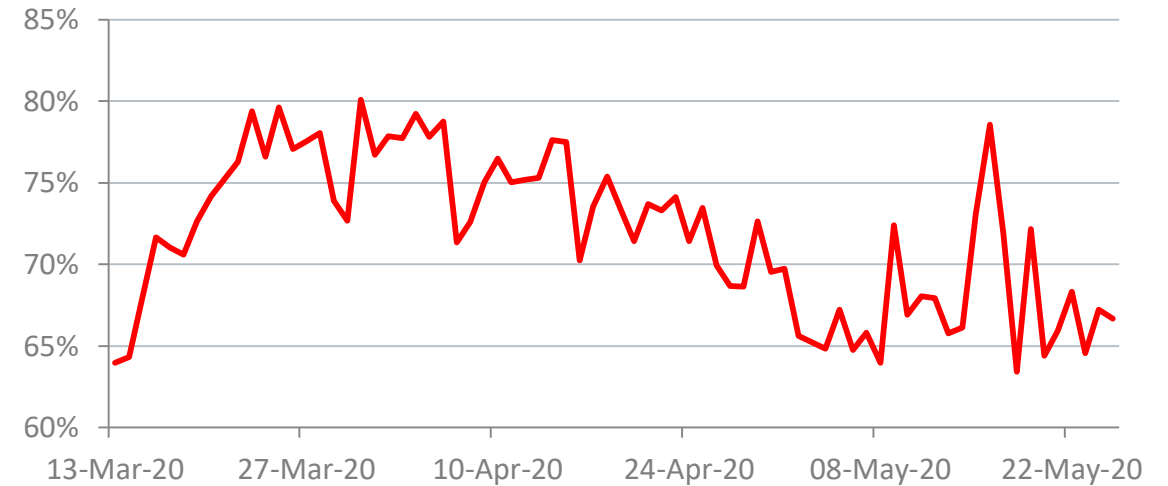
Poll to Assess Concern Related to Spread of COVID-19
as of 25 May 2020

How concerned are you about the spread of coronavirus?

- Very concerned
- Slightly concerned
- Neither concerned nor unconcerned
- Not very concerned
- Not concerned

COVID-19 Concern Index

— Very Concerned

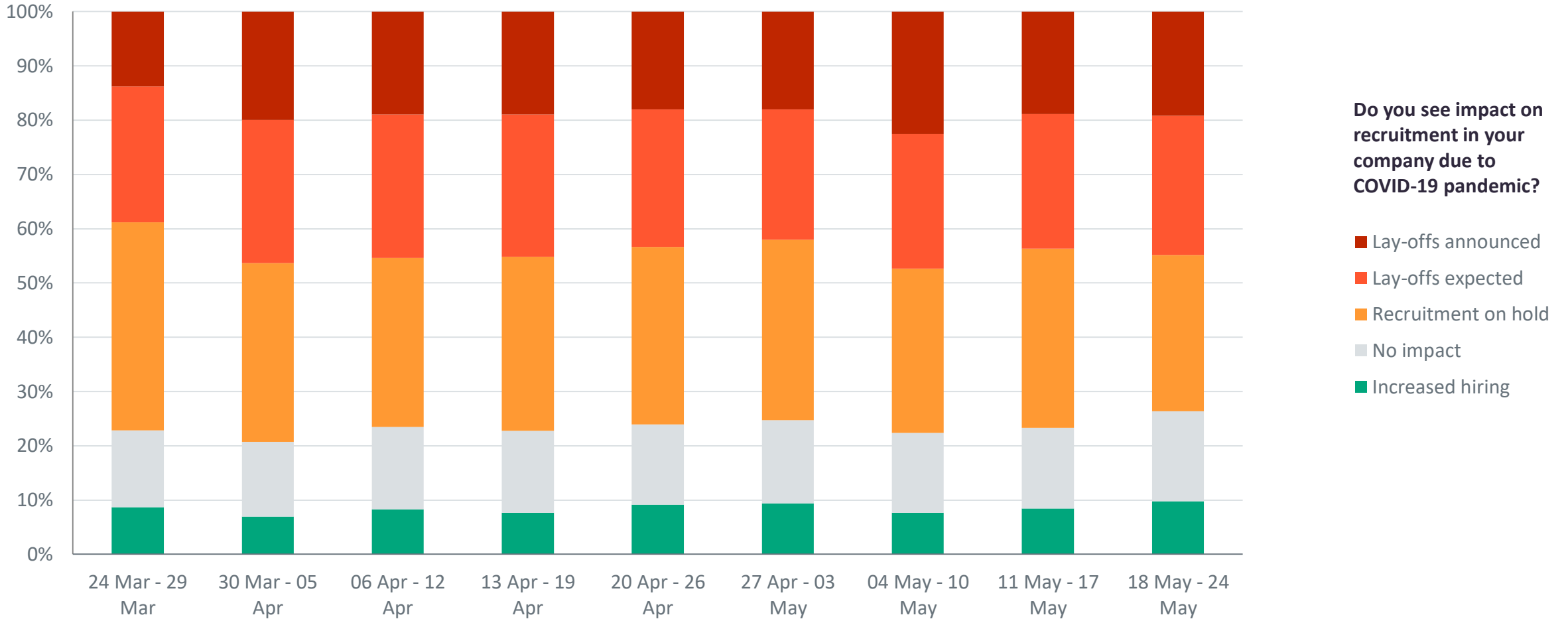


Note: Concern index is based on respondents who answered that they are “very concerned” about the spread of COVID-19. The index is based on a total of 140,733 responses.

Hiring is Picking Up; Marginal Increase in Lays Offs Announced



There has been 9.6 percentage points decrease in recruitment on hold during week ended 18 May-24 May as compared to week 24 Mar-29 Mar as of 24 May 2020



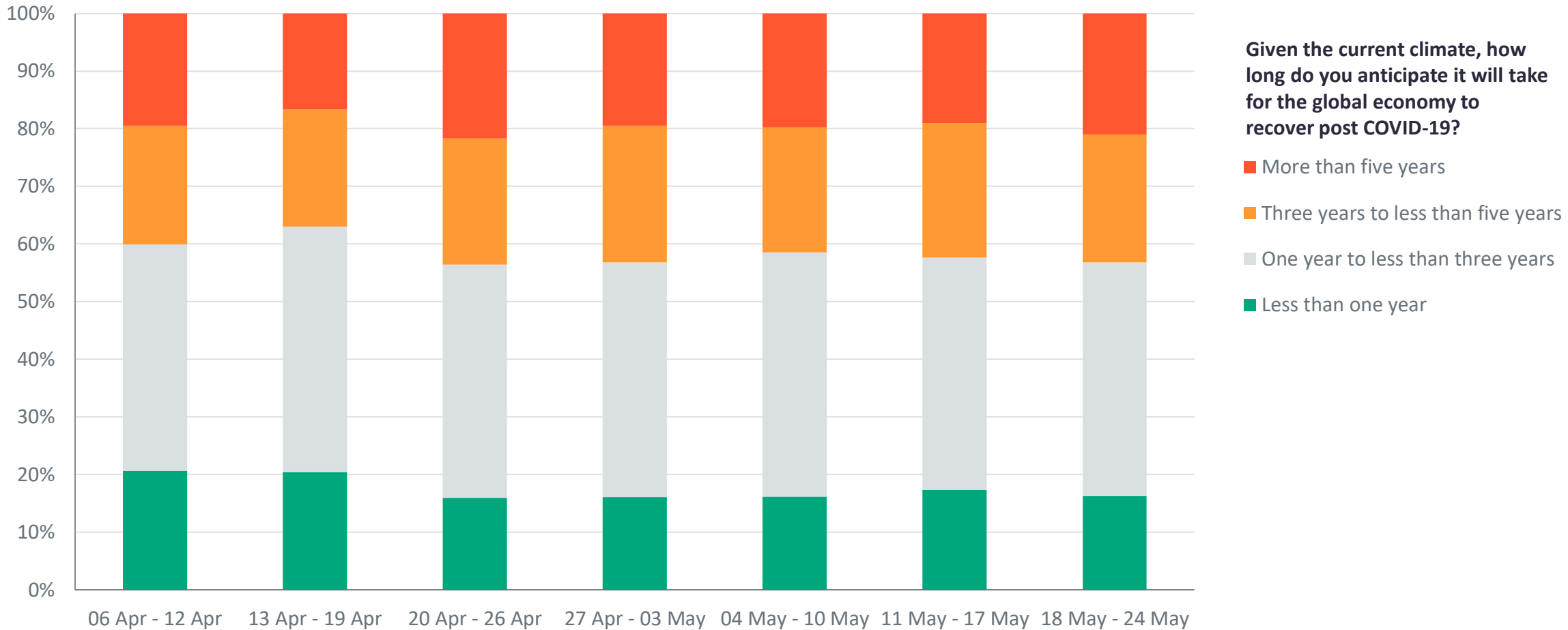
Note: Analysis based on 19,147 responses received till 24 May 2020. Data represents weekly average responses

Source: GlobalData Analysis

Global Economic Recovery Post COVID-19



40.6% of respondents report one year to less than three years for the global economic recovery
as of 24 May 2020



Note: Analysis based on 41,958 responses received till 24 May 2020. Data represents weekly average responses.

Source: GlobalData Analysis



5. Sectoral Impact



Interdependent and complex relationship between Aerospace and Defense will spread the damage

Revenue Predictions

- Aerospace faces a 50% drop in revenue for 2020, and prospects of a V-shaped recovery now appear slim.
- Boeing & Airbus announce have already announced losses of \$641 million and \$522 million in Q1 respectively and have cut output between 35 to 50%.
- IATA's estimate of lost airline revenue for 2020 now stands at \$315bn, a 55% reduction. Recently released figures for March show worldwide passenger numbers reduced 52% from last year.
- Defense is being used as a stimulus measure in markets with large domestic capacity, but there will be medium term constraint due to fiscal pressures.

Unemployment

- GKN announced a voluntary redundancy program; broader cuts expected thereafter. Rolls-Royce confirmed of at least 9,000 job losses.
- Boeing has announced plans to lay off 10% of its workforce following Q1 results. Airbus discusses permanent layoffs with unions, with around 10,000 jobs at risk. Safran cuts 3000 workers in Mexico.
- Defense has yet to be majorly impacted. A small number of pureplay defense primes, notably Lockheed Martin, have added to headcount during the crisis.

Source: GlobalData Analysis

Supply Chain & Demand Disruption

- Proposals for the 7-year EU budget from the executive were expected on 20th May, but will now form part of an announcement on the 27th along with stimulus measures. Cuts on pan-EU defense programs were already expected prior to the outbreak. EU foreign policy chief, Joseph Borrell, warns member states not to slash defense budgets, due to the security challenges the pandemic will create.
- US DoD expects 3-month delays to major defense acquisition programs (MDAPs). It notes specific vulnerability within aerospace, shipbuilding and small space launch markets.
- South Korea & Thailand have announced defense budget cuts relating to deferred programs and payments, not outright cancellations.

Sector-specific Stimulus Programs

- US Senators table the "Private-Public Partnership to Preserve Jobs in the Aviation Manufacturing Industry Act of 2020", a furlough scheme to retain skilled workers.
- The largest measure passed so far is the US CARES act, providing \$17bn in specific funding for businesses critical to national security, along with \$61bn in aviation and broader aerospace support.
- Governments are implementing prompt payment measures to their defense supply chains with a particular focus on supporting SMEs and identifying weak points, specifically on civil aerospace exposure.

Aerospace, Defense & Security COVID-19 mitigation strategies



Short term liquidity, medium term mitigation, long term adjustment

Short-term strategies 6-12 months

- Focus on mantra of liquidity, liquidity, liquidity.
- Prepare balance sheets to endure pain for at least the next two years in the most exposed subsectors.
- Implement hiring freezes, reduction of non-essential spend, reduction in executive compensation, furloughs.
- Audit immediate supply chain risk.
- Review force majeure clauses.
- Identify current losers from client and supplier base.
- Engage with trade or government initiatives to support rapid medical equipment production.

Mid-term strategies 1-3 years

- Mitigate supply chain risks, start long term movements away from single sourcing where possible, full financial and commercial audits of supply chain, and ERP refresh.
- Position for aftermarket parts boost to extend service life of older models as well as long term drawn down in wide body demand, particularly if oil price still depressed.
- For defense primes, future budgetary impact should be extant by this point, allowing positioning to occur.

Long-term strategies 3-5 years

- Expect higher levels of long-term government involvement and state ownership in key areas.
- Prepare for future overproduction caused by government support to aerospace pulling forward demand.
- Confront rebooted Defense-Industrial policies – a broader definition of strategic industry may emerge. Governments will pick winners in this crisis and may get used to it.
- Address regional and subsector variation in defense austerity.
- Expect increased localised production demand for export orders.

Aerospace, Defense & Security COVID-19 thematic scores



Exposure to civil markets defines current prospects, but disruption is widespread

	1	Boeing: Despite federal support, Boeing remains acutely exposed and ongoing issues with the 737 MAX exacerbate problems		3	BAE Systems: Limited commercial exposure across markets and will benefit from further DoD largesse
	1	Airbus: Higher exposure to civil markets than Boeing		2	Thales: Air traffic control and IFE market hit, but broadly diversified
	3	Lockheed Martin: Defense-focus and strategic importance mitigates impact, but a shift in US Airforce modernization strategy would hurt		3	Northrop Grumman: Key player on strategic projects, close to pure-play defense
	2	General Dynamics : Exposure via Gulfstream aircraft		2	Leonardo : Short-term hit on helicopter revenues, but oil price arguably more instrumental than coronavirus
	2	Raytheon Technologies : UTC now shielded from the worst impacts of the crisis in the newly created conglomerate		2	Naval Group: Potential hit to offshore engineering but minimal impact overall and strategically critical
	1	GE Aviation: 10% of workforce already shed, 50% of MRO staff furloughed		2	Fincantieri: Europe's largest shipbuilder in the worst affected region, with considerable civil exposure. Operations in the US also disrupted.
	1	Safran Group: Key engine and subsystems exposure across OEMs		1	AAR Corp: Immediate hit to revenue but possible mitigation in the medium term from aftermarket parts demand boost versus new builds
	1	Rolls-Royce: Highly exposed to wide-body market in particular		1	ST Engineering: World's largest provider of maintenance and repair services for civil airframes, limited defense exposure
	2	Honeywell: Leader in avionics and flight control systems but government/civil split in aerospace and high levels of diversification		2	Leidos: Civil exposure but IT, Simulation, Health, Logistics and US DoD-focus will position Leidos well for the medium term.
	2	Textron: Most exposed via Cessna & Beechcraft		3	Huntington Ingalls: Production challenges, but negligible impact in medium-term given assured programs

■ Significant negative impact
 ■ Moderate negative impact
 ■ No impact
 ■ Moderate positive impact
 ■ Significant positive impact

Automotive COVID-19 impact assessment



Nearly \$180 billion in lost revenue for North American and European industry alone

As production restarts and lockdowns are tentatively lifted, a truer picture of demand will emerge

Revenue Predictions

- The hit to the market will be greater than in the 2007/8 financial crisis.
- Our base COVID-19 light vehicle sales scenario forecasts a fall of 17.6% on 2019 to 74 million.
 - Declines heavily weighted to Q2; measures to suppress the virus allow for recovery from Q3 onwards.
- Plants in Europe and North America now starting to reopen with new safety protocols in place. Due to COVID-19 closures, 5.77 million light vehicles will have been removed from production.
- Revenue cost of \$180 billion to the OEMs here alone.
- For the aftermarket there will be some income loss from extended service intervals and lower annual distances travelled.

Unemployment

- Demand decimation and production stoppages damaging all parts of the value chain.
- Furloughing of staff is widespread: dealers, suppliers and OEMs all applying measures to try and conserve cash.

Supply Chain & Demand Disruption

- Complexity of supply chains revealed early on as production at FCA and Hyundai plants in Europe and Korea was disrupted due to Wuhan's shutdown.
- Concern now moved from supply chain disruption to the demand side. Suppliers contribute ~60% of a vehicle translating to \$108 billion in lost revenue in Europe and North America alone up until 11 May. Profit hit at an average 3% margin is nearly \$3.3 billion.

Sector-specific Stimulus Programs

- The tools to stimulate demand, such as scrappage from the last crisis, are not viable just yet.
- Will be required once the public health risk subsides, with emphasis on green vehicles.
- German industry now beginning lobbying. Wants existing €6k subsidy for EVs increased to €10k for all car types.

Being A Force For Good

- Sector at forefront of manufacturing ventilators and masks. Vehicles have been donated and payments made to help communities.
- OEMs extending warranties and offering payment holidays to customers.

Automotive COVID-19 mitigation strategies



The recession will bite deep into Automotive, declines heavily weighted to Q2; measures to suppress the virus allow for recovery from Q3 onwards
End game for the industry over EVs probably the same but the pathway re-routed

Short-term strategies 6-12 months

- Cut costs; conserve cash; secure credit.
- Stratify product development:
 - Focus on high IRR products; no time for niche or vanity products – such as autonomous – that have no clear route to consumer acceptance or profitability.
- Suppliers: identify winners and losers among the OEMs.
- OEMs: mitigate supply chain risk, move away from single sourcing, conduct financial and commercial audits of supply chain. Respond with agility to possible mix changes.
- Dealers: retune and strengthen digital marketing capabilities.

Mid-term strategies 1-3 years

- Address oversupply in the market: M&A, footprint and product rationalization.
- Understand customer sentiment: has there been a shift in attitudes as to how people see the world? Are they more altruistic? Adjust product and volume strategies accordingly.
- Shared mobility competitive threat has been disrupted - now to seize back lost ground; are there distressed technology companies with attractive assets?
- Build on aftermarket presence to exploit extended car ownership cycles.

Long-term strategies 3-5 years

- Prepare for a market rebound that might require a very different product mix to that needed now with different competitive environment:
 - Possible long-term shift to fewer unnecessary journeys; more remote working->more utility in vehicles for more one-car households->more SUVs: profit sources and fit the remit.
 - Public transport and shared viewed very differently, boosting volumes?
- Market crash may see timelines for GHG and fuel economy compliance shifted.
- Re-evaluate technology and product roadmaps.

Automotive COVID-19 thematic scores



Negative sum game for the auto sector

Case of separating those who will lose least

	2	Tesla: More inelastic demand than mainstream brands		2	Suzuki: Japan a bit of a safe haven, but India an increasing worry
	2	Toyota: Diverse global footprint		2	Mahindra: India no longer the safe haven it was once considered, and concerns over possible SsangYong bailout
	2	Tata Motors: Small OEM with less to lose		2	Ford: Small player in China and on periphery in Europe. US exposure
	2	BYD: Few exports, China recovering ahead of RoW		2	Peugeot: Lack of presence in US and China saves PSA from a one rating
	1	Geely: Due to Volvo's equal exposure to US, China and Europe		1	GM: Highly reliant on US and China for sales and profits
	1	Honda: Exposed to North America and China		2	Renault: Lack of presence in US and China saves PSA from a one rating
	1	BMW: Equal exposure to China, US and Europe		1	Volkswagen: Sizeable reliance on Europe and China puts risk at one
	2	Mitsubishi: small OEM with less to lose and Japan a bit of a safe haven...		1	Daimler: Presence in Europe, China and US the company's three-pronged strategy
	1	Nio: start-up in China exposed due to economic fallout		1	Nissan: Exposed in US and China with governance battles on top
	2	Subaru: Exposed in US, but Japan a bit of a safe haven		1	Changan: China only presence

■ Significant negative impact
 ■ Moderate negative impact
 ■ No impact
 ■ Moderate positive impact
 ■ Significant positive impact

COVID-19 is creating conditions of acute economic stress and disruption worldwide

Retail banks will play a critical operational and strategic role in helping absorb the first-round adjustment costs

Revenue predictions

- In the near term, COVID-19 will be analogous to the credit crisis, creating a period of economic paralysis and leaving a massive hole in banks' balance sheets.
- Fee and interest income will fall, driven by the reduced use of cards (interchange fees) and the obligation to provide payment holidays and waive interest and overdraft charges.
- Non-performing loan (NPL) ratios will increase, particularly across SMEs operating in sectors that offer non-essential products/services.
- New mortgage lending will freeze. Net interest margins will remain low and/or be compressed further by rate changes as well as extended payment holidays.
- Short-term costs will increase amid lost productivity from increased work from home, as well as scenario analysis and stress testing of possible COVID-19 impacts.

Unemployment

- The IMF expects all G7 countries to enter recession in 2020. Furlough and partial work schemes in countries such as the UK and Germany have mitigated the large increases in unemployment witnessed in the US, but it remains to be seen whether these are truly a preventative measure or simply a delaying tactic.

Supply chain and demand disruption

- Massive increases in digital activity, both from employees working from home and customers using mobile apps/websites, will drive increased risk of performance disruption.
- Much longer than normal lead times for infrastructure components (such as servers, storage, parts, and networking gear).

Sector-specific stimulus programs

- Various measures are being implemented including fiscal stimulus steps, rate decreases, liquidity measures, and a relaxation of capital rules.
- Operational challenges and lack of policy clarity have left some banks fearful of writing blank cheques when providing emergency finance.

Consumers take stock

- The pandemic has raised consumer awareness of the negative implications of globalization. Consequently, sustainability, climate change, and inclusiveness will all be pushed further up the agenda. This is likely to increase the emphasis consumers place on environmental, social, and governance issues.

Retail Banking COVID-19 Mitigation Strategies



The recession will bite deep into banking in the short term but ultimately create more productive conditions for innovation

Endgame for the industry is a more flexible and agile tech platform, enabling deep personalization at scale

Short-term strategies

Six to 12 months

- Immediate load balancing through customer and employee communications.
- Optimize digital experience for ‘first-time users’ through simplified UX and contextual help.
- Implement operational workarounds to render service requests digitally and support various payment/fee changes.
- Triage customer enquiries, optimize chatbots for critical COVID enquiries.
- Repurpose branch networks for high-value one-to-one interaction (in-person and virtual agents).
- Use outbound financial ‘wellness’ campaigns, with stress tests and customer action plans.

Mid-term strategies

One to three years

- Close channel gaps and optimize all sales and service pathways for digital touchpoints.
- Increase the use of open banking-enabled data for affordability assessments, eKYC, and credit risks.
- Improve personalization in customer interaction across price, place, product (3Ps).
- Increase product flexibility, with the ability to expand and contract based on changing requirements.
- Relax tactical time-to-market priorities in order to realize more long-term strategic change around core system modernization.

Long-term strategies

Three to five years





















- Implement digital transformation to create new digital capabilities rather than digitize existing processes.
- Adopt a cloud-native approach to reduce startup costs, runtime costs, and time to market, while enabling plug-and-play partnership at scale.
- Deploy an API-enabled microservices infrastructure to deliver heightened flexibility and agility responding to market changes.
- Adopt an approach of hyper-personalized, “segment-of-one” banking across channels, products, and processes.
- Adopt a mobile-first design across all sales and service pathways.

Retail Banking COVID-19 Thematic Scores



COVID-19 has disrupted the financial service industry

Firms across the board will lose out, with only a few benefiting from the crisis

	3	BBVA: Diversified geographic coverage combined with strong digital offering minimizes disruption to revenue and customer support.		4	Yolt: Demand for money management will be higher and will benefit from cross-product sales, as consumers seek better deals.
	3	DBS: Moderate impact on revenue. Digital prowess positions it to acquire a greater share of digitally savvy customers.		2	China Merchants Bank: Despite gains from digital transformation pre-COVID-19 the bank is highly exposed to unsecured lending.
	2	TSB (UK): Underinvestment in digital channels, botched IT system migration, and branch-heavy operation.		2	Zopa: Prime borrowers and targeted repayment freezes will limit the adverse impact on revenue.
	4	USAA: Proven digital process for serving customers remotely under conditions of acute stress (deployed military personnel).		3	Lending Club: Sales and service pathways optimized for digital needs of SMEs.
	1	Monzo: Highly dependent on interchange revenue, which will drop substantially as retail spending collapses.		3	Funding Circle: Search volume for new business loans reportedly up 150% week on week.
	1	N26: Sales of distributed products will fall. Interchange income will be hit in the short term.		4	Habito: Greater demand from customers to reduce housing payments and difficulties with existing banks could drive new business.
	2	MYbank: Higher NPLs in next two quarters but will benefit from swift Chinese action, digital reach, and non-traditional credit risk techniques.		5	Thought Machine: Positioned to support new entrants and incumbents with cloud-native digital banking transformation.
	4	Plaid: Its proven API infrastructure is critical to enabling new digital services from incumbents and fintechns alike.		4	Robinhood: Consumers looking to capitalize on market volatility and lockdown limits traditional spending activity.
	1	Capital One: Large exposure to unsecured credit and portfolio tied to retailers. Economic uncertainty will reduce spending on credit cards.		1	Intesa Sanpaolo: Highly exposed to the Italian market; critical services process not digitized, exacerbated by reduced branch capacity.
	1	Klarna: Adversely affected by higher default rates among customer base.		2	RBS: Less able to deliver cost-cutting targets and over-exposed to sectors and businesses that are vulnerable to COVID-19.



Global construction output to fall 2.2% in 2020

Sharp declines in activity expected in Europe and North America

Output predictions

- The construction industry will be subdued beyond the immediate period of lockdowns and other containment measures despite huge government stimulus packages.
- GlobalData predicts that global construction output will contract by 2.2% in 2020, a sharp downward revision compared to the forecast increase of 3.1% pre-COVID-19.
 - Western Europe output will contract by 5.2%.
 - North America output is expected to drop by 6.6%.
 - North-East Asia output will grow by just 1.0%.
- There is still an assumption that the outbreak will be contained across most major markets by the end of the second quarter, following which, conditions would allow for a steady return to normalcy in terms of economic activity and freedom of movement in the second half of the year.
- In the event that the spread of the virus continues into the second half of 2020, further downward revisions to the growth outlook are likely.

Sector specific stimulus

- Governments and public authorities will advance spending on infrastructure projects as soon as normality returns to reinvigorate the industry.
- This will be spread across all areas of transport infrastructure and energy and utilities.

Supply chain & demand disruption

- The construction industry will be heavily affected by the economic downturn. Planned projects are at a high risk of being delayed or cancelled.
- In the short term there is a high risk of projects in execution being halted because of lockdowns, a lack of materials, and other supply chain disruption.
- Projects at pre-construction stages will be severely delayed, given disruption processing building permits, tendering, and awarding contracts.

Unemployment

- While European governments are still permitting construction sites to remain open, contractors have laid off workers and used government support programs.

Construction COVID-19 mitigation strategies



The immediate recession will be deep, and the recovery in most buildings sectors will be slow

Government investment programs will be vital in driving an upturn

Short-term strategies

6-12 months

- Cut costs; conserve cash; secure credit.
- Invest in collaboration tools.
- Use time to upskill workforce for digital future.
- Work closely with municipal, state and federal governments to coordinate plans for worker and consumer safety, while keeping mission-critical projects running.
- Work closely with subcontractors and governments to consider emergency measures to assist them during a period of widespread construction site shutdowns.
- Cancel non-essential projects and divest from underperforming assets.

Mid-term strategies

1-3 years

- To help assess labour costs, implement workforce contingency planning scenarios, including during a period of diminished demand and activity.
- Reschedule debt with lenders.
- Prepare for government stimulus packages.
- Prepare for a market rebound that requires a different product mix and a different competitive environment.

Long-term strategies

3-5 years





















- Create a flexible supply chain that can quickly engage alternative suppliers.
- Ensure cybersecurity is fit for purpose.
- Use automation to reduce the number of workers on sites. Focus on autonomous materials movement (e.g., autonomous forklifts and cranes and high-payload drones) and the automation of repetitive tasks.

Construction COVID-19 thematic scores



Negative sum game for the construction sector in the short term

Opportunities for those that can secure major contracts in large-scale infrastructure works

	2	China State Construction Engineering: Impacted in short term, but to benefit from infrastructure boost in China		2	China Communications Construction: Impacted in short term, but to benefit from infrastructure boost in China
	1	Larsen & Toubro: High exposure to India, facing an extensive lockdown and damage to the economy		1	Kiewit Corp: Not overly exposed to US downturn, but will be an impact in key industrial and energy sectors
	1	Hyundai Engineering & Construction: Heavily involved in oil and gas sector, with high risk of project delays and cancellations		1	Salini Impregilo: High exposure to weakness in Europe, but to benefit from expected upturn in infrastructure investment
	1	China National Machinery Industry: High exposure to China		1	Vinci: Focus on infrastructure will provide support, but core markets will be weak
	1	Petrofac: Heavily exposed to oil markets		1	McDermott International: Amid restructuring process, will face challenges given its focus on oil and gas sector.
	2	Actividades de Construcción y Servicios SA: Geographically diversified through subsidiaries that are key players in major markets		1	Saipem: Heavily exposed to oil markets
	1	Stroytransgaz: Heavily exposed to oil markets		1	Shimizu: Japan focused and will take a hit from renewed containment measures
	2	Power Construction Corporation of China: Impacted in short term, but to benefit from infrastructure boost in China		1	PCL Constructors: Weak outlook for Canada's energy market will take its toll
	1	Samsung Group: Well-diversified contractor arm in terms of markets, but many of these set for weak performance		2	Skanska: Diversified in sectors and markets, but to face short-term disruption
	1	Bechtel Group: Exposed in sharp downturn in the US, where unemployment levels have risen sharply		1	Balfour Beatty: Sector diversification, but key markets to suffer weakness

Furloughs, lay-offs and job insecurity continues to affect consumers' willingness to spend, with the greatest impact on high-end or 'non-essential' products

Revenue predictions

- GlobalData's latest forecasts (which are currently updated weekly), show a decline of 3.9% in consumer products for 2020 compared to baseline predictions, equivalent to \$354.9 billion in lost revenue.
- Alcoholic and soft drinks, and cosmetics and toiletries are the major drivers of losses. Many categories in the food sector will see gains against the 2020 baseline as consumer spend is diverted from foodservice and discretionary items to essentials.
- Asia and Australasia are set for the fastest decline in percentage terms, with a 4.7% loss vs baseline, based on current slowdown estimates.

Unemployment

- Unemployment and job insecurity will lead to consumers' focus on essential goods, with premiums and non-essentials falling by the wayside.
- US meat plants are shutting down operations, due to the growing number of COVID-19 cases among workers. Concerns have been raised of constrained supplies in the coming weeks.

Source: GlobalData Analysis

Supply chain & demand disruption

- Demand for online delivery is high during lockdowns. Retailers are adapting to demand through click and collect as well as increased home delivery services by partnering with existing delivery platforms.
- Several supermarkets have unveiled new ways to shop in-store, using their own proprietary apps. They are also implementing new social distancing measures in-store with clear screens and easy store check-outs to avoid potential spread.
- In its annual report on 22 May, China's National Development and Reform Commission presented plans for the country to ensure its food supply, including bolstering measures to protect the country's pig herds from disease; encouraging farmers to produce more rice; diversifying imports of agricultural products; and guaranteeing stable supply of grains, edible oils, meat, eggs, fruits, and vegetables.

Being a force for good

- While Corporate Social Responsibility continues to be in the spotlight, some local organizations, such as Feed Britain are taking it one step further and developing social business models. These companies run at-cost distributing meals and ingredients from local suppliers, and profits go to charity to ensure key workers get hot meals.

Consumer COVID-19 mitigation strategies



The immediate recession will be moderate, the bottom will last for a couple of years, the recovery will also be moderate

However, within different sectors and countries the performance will vary; the average industry curve consists of winners and losers

Short-term strategies 6-12 months

- Manufacturers of non-essential goods retool to optimize the productivity of existing resources.
- Manage cybersecurity risk for staff working at home.
- Focus on, and increase production of, the best placed products to survive immediate market shocks.
- Understand rapidly changing consumer behaviour to best understand how to reposition existing products' marketing and consumer offers.
- Focus on managing supply chain disruption and be prepared to be flexible in operational arrangements.

Mid-term strategies 1-3 years

- Diversify or revise supply chain arrangements to add resilience to shocks to the system.
- Automate manufacturing processes to avoid further disruption.
- Develop alternative distribution strategies to overcome delays in logistics and distribution.
- Develop new channel management strategies to reflect greater channel complexity.
- Seek to add, where appropriate, value for money ranges to account for tightened consumer budgets.

Long-term strategies 3-5 years

- Monitor carefully changing consumer consumption patterns and rebalance product portfolios to best match the areas you decide to play in.
- Revise consumer engagement strategies to account for likely permanent changes in the occasions and locations of consumption patterns.
- Develop product portfolios and strategies that provide greater flexibility when future major disruption occurs. Consider having shelved plans that are "ready to go" if need be.

Consumer COVID-19 thematic score



Producers of alcohol, cosmetics and tobacco products will be worst hit by COVID-19, producers of essentials will fare better

	3	Procter and Gamble: Q1 revenue hit by supply chain disruption		1	Heineken: Closure of restaurants and a 2% decline in beer sales
	3	Nestlé: Experiencing disruption sourcing raw and packaging materials		4	Colgate-Palmolive: Predicting a negative impact to its Q1 earnings
	2	Coca-Cola: Does not expect to achieve 2020 financial targets		4	Danone: Estimates around €100m in lost sales in Q1 2020
	3	PepsiCo: Donated \$45m support package to help communities hit by virus		5	Reckitt Benckiser: Sales increased 13.3% to \$3.5bn in the first quarter
	2	L'Oréal: The company is expecting a 5% decrease in first-quarter sales		1	Philip Morris: Working with biotech firms to make a tobacco-based vaccine
	1	AB InBev: Lost profits of \$170m (EBITDA) in the first two months of 2020		5	Kraft Heinz: The company is projecting net sales increases of 3%
	4	Unilever: The company will co-fund a £50bn hand washing initiative		1	British American Tobacco: Working to make a tobacco based COVID-19 vaccine
	1	Diageo: with Bars and restaurants closed, Diageo will see £200m profit hit		4	Kimberly Clark: Personal care products are doing well during COVID-19
	2	Mondelēz: factory closures will impact Q1 revenue		4	Kellogg Co: Share price and earnings have risen due to stockpiling
	3	Estée Lauder: Estée Lauder has cut its earnings forecast for 2020		4	General Mills: Closure of Haagen Daz's stores in China mitigated by stockpiling sales

Foodservice COVID-19 impact assessment



The global slowdown in foodservice will result in a net loss of market value of US\$904 bn

Revenue predictions

- GlobalData's latest forecasts (which are currently updated weekly), show a decline of 24.9% in profit sector operator sales for 2020 relative to 2019, equivalent to \$904 billion in lost revenue.
- The African market is set for the fastest decline in percentage terms, with a 27.1% loss vs 2019, based on current slowdown estimates.
- The East European market is set to decline by 26.8% and the Latin American Market will decline by 26.7%.

Unemployment

- A survey has found that the US restaurant industry has lost eight million employees, approximately two-thirds of the total workforce, due to COVID-19.
- The ONS reported that the accommodation and foodservice sector in the UK had the second-highest closure of all sectors, with 82% of respondents claiming that they had temporarily closed.
- Companies are likely to experience staffing shortages as the recovery begins.

Supply chain & demand disruption

- Manufacturers are forced to close production or alter scale of production due to increased infection of employees.
- GlobalData's week eight consumer survey found that 32% of respondents are ordering food deliveries/takeaways from restaurants more often.
- Foodservice is expected to become more automated with the use of robotics and automated systems. Furthermore, contactless delivery operations will become the norm as consumers continue to self-isolate and perform social distancing.
- As lockdown restrictions are eased, food chains are opening for take-aways, deliveries and drive-throughs and trialling new measures for in-house dining services like touchless menus etc.
- Suppliers who have lost their primary market are turning to direct-to-consumer models.

Being a force for good

- Starbucks has announced that it will be providing all its employees with catastrophe pay. Employees choosing to work will receive an additional \$3 per hour.
- Sodexo is establishing a €30 million relief fund, funded by the company and senior executives.

Foodservice COVID-19 mitigation strategies



The immediate recession will be moderate, the bottom will last for a couple of years, the recovery will also be moderate

However, within different sectors and countries the performance will vary; the average industry curve consists of winners and losers

Short-term strategies 6-12 months

- Restaurants need to focus on promoting sales through their takeaway and drive-through channels.
- Full-service restaurants should develop a relationship with third-party delivery partners.
- Companies should cut down on non-essential spending such as advertising and new restaurant openings.
- Generate long term reputational gains by supporting staff and local communities.
- Restaurants have been engaging customers by sharing recipes from their menus.
- Securing PPE for appropriate sites.

Mid-term strategies 1-3 years

- Advance developments in drone and contact-free delivery options, dealing with partners as appropriate.
- Divert capital expenditure to ensure business recovery.
- Adopt expanded food safety and sanitization practices and ensuring customers with greater supply chain transparency and tracking.











Long-term strategies 3-5 years

- Companies operating in the foodservice sector should look to automating processes.
- Brands will need to be innovative, developing new ranges and products to suit customers' changing preferences and price points.
- Exploring new sales channels.
- Remodelling businesses and selling experiences for customers e.g. cooking experiences.

Foodservice COVID-19 thematic score



To go and delivery options offer a way for companies to mitigate the impacts of COVID-19

- 
2
McDonald's: Since mid-March, McDonald's has had a significant decline in results
- 
2
Starbucks: Temporary café closures and modified operations until 3rd May
- 
2
Restaurant Brands Int: Sending \$70m in cash advances to restaurant owners
- 
2
Yum! Brands: Closing 7000 restaurants worldwide
- 
5
Domino's Pizza: first-quarter sales were up 4.9% in the U.S., while international stores were up 6.8%
- 
4
The Wendy's Company: Sales increased by 2.8% and there has been significant increase in drive thru sales
- 
2
Dine Brands Global: The company has withdrawn its 2020 financial performance guidance issued on February 24
- 
2
Darden Restaurants: Darden's ongoing weekly cash burn rate is about \$20 million and relies on its to goo operations
- 
2
Brinker Intl: Restaurants remain open for to go and delivery
- 
1
Jollibee: Jollibee shares have dived almost 25% this year

- 
2
Dunkin' Brands: Restaurants remain open for to go and delivery
- 
2
Chipotle: Same-store sales down 35% in the last two weeks of March, the number recovered to the negative high teens in the second week of April
- 
1
Sodexo: Reduction in revenues in H2 of between €2.4 and €2.8 bn compared to the previous year,
- 
2
CFA Properties: The company has closed all dine-in operations
- 
2
Roark Holdings: The company has closed all dine-in operations
- 
2
Aramark: The Company believes revenue declines would have a drop through of approximately 15%-20% on operating income
- 
1
Whitbread: The company has closed its restaurants and put staff on a furlough scheme
- 
1
Compass Group: With just over half of the business closed, operating profits will be around 28-29% lower than expected
- 
1
Autogrill: Sales dented by €190m, shares have also plunged 18.2%
- 
1
J D Wetherspoon: All pubs are hotels have been closed due to COVID-19

Economic instability will have the longest impact on the industry

Premium impacts

- S&P has downgraded its outlook for the reinsurance sector to negative. With the sector expected to be adversely impacted by capital market volatility, losses are linked to COVID-19 and lower returns on investments.
- Premiums relating to Term Life products are expected to rise 20% - 40% in the next 3 to 6 months in India.

Changing claims landscape

- Lloyd's estimates COVID-19 will cost the global P&C industry \$203bn, stemming from insured losses as well as investment exposure. Lloyd's anticipates total claims to be \$4.3bn, but this may rise further depending on lockdown restrictions.
- Fitch Ratings expects commercial insurers to post considerable losses in 2020 and the first half of 2021 due to claims linked to event cancellation and credit and surety policies.
- Legal challenges relating to business interruption policies continue with Aviva and QBE becoming the latest providers to come into focus. The outcome of such lawsuits has the potential to set a precedent in the claims landscape moving forward.

Economic instability

- A global recession would initially be felt in commercial lines with business closures reducing demand. This will trickle through to personal lines as consumers' disposable incomes fall.
- Insurtech funding in Q1 2020 declined in excess of 50%, yet the volume of deals has increased. The participation of reinsurers has fallen as they focus on ensuring business continuity.
- COVID-19 is expected to push the global economy into recession. With Swiss Re Institute indicating the cost could amount to \$12tn over the next 1 – 2 years.

Being a force for good

- Insurers and brokers based in the UK have donated \$183m towards COVID-19 relief efforts, in a bid to address the growing criticism faced by the industry in its response to the pandemic.
- Insurance regulators are extending the premium payment grace period, policy term periods and expiry dates in markets impacted by the pandemic.
- Metlife medical professionals in the US will receive paid leave for volunteering to help in the fight against COVID-19.

Insurance COVID-19 mitigation strategies



The industry will experience a sharp initial decline but recover relatively quickly as economies bounce back

Short-term strategies 6-12 months

- Reduce unnecessary expenditure to ensure unexpected claims costs can be met.
- Reduce development of new policies to focus on existing core product offering.
- Brokers – work with customers to understand how their business has changed to ensure new risks are covered.
- Insurers – communicate with customers to ensure changes to policies are clear and highlight benefits of cover.
- Offer policyholders refunds/credit on future renewals on policies where exposure has fallen considerably.

Mid-term strategies 1-3 years

- Identify and develop policies for growth opportunities in both new lines of business and specific demographics.
- Assess how business models have changed their operating models as a result of changes in consumer behaviour.
- Revise policy wordings to ensure clarity of exclusions.
- Invest in digitalization to reduce overheads and reduce the need for human interaction following changes in consumer behaviour.
- Review and update crisis management and business continuity plans.

Long-term strategies 3-5 years











- Develop events coverage incorporating pandemic coverage for smaller scale events.
- Review insurtech partnerships following changing customer behaviour.
- Review investment strategies to establish exposure to unforeseen events and continually monitor solvency ratios.
- Diversify product offering to minimise exposure to vulnerable lines of business.
- Identify M&A opportunities as a way to further strengthen and diversify.











Insurance COVID-19 thematic score



The short term impact will be detrimental to the insurance industry

With claims expected to occur throughout the year the impact will be drawn out as different countries reach their peaks

-  **1** **Ageas:** Largest exposure is in Belgium where COVID-19 cases are proportionately higher than other countries.
-  **2** **AIA Group:** Premium generation is diversified across Asia.
-  **1** **Allianz:** Exposed to multiple lines of business which will be impacted.
-  **1** **AIG:** Reliant on the US market and exposed to multiple lines of business which will be impacted.
-  **1** **Generali:** Premium generation mainly from Italian, German and French markets.
-  **1** **Aviva:** Premium generation mainly from UK, French and Italian markets.
-  **1** **AXA:** Premium generation in French and US markets as well as exposure to reinsurance market.
-  **2** **Berkshire Hathaway:** Reliant on the US market but exposure is limited due to line of business activity.
-  **1** **Chubb:** Exposure to the reinsurance and liability markets.
-  **1** **Manulife:** Premium generation reliant on the US.

-  **1** **MetLife:** Premium generation reliant on the US.
-  **1** **Prudential:** Premium generation mainly from the US and UK markets.
-  **2** **QBE:** Strong presence in Australia mitigates exposure from other markets.
-  **2** **RSA:** Although presence in the UK is a risk this is mitigated by strong presence in the Nordic markets.
-  **2** **Travelers:** Diversified book provides relief from reliance on the US market.
-  **2** **Tokio Marine:** Present across numerous countries and holds a diversified book.
-  **1** **Zurich:** Strong presence in multiple counties heavily impacted by COVID-19.
-  **4** **Zego:** Demand for gig economy coverage is expected to rise.
-  **4** **Bdeo:** The need for social distancing will increase demand for virtual claims technology.
-  **4** **By Miles:** Usage based insurance will come into focus as traditional policies fail to meet flexibility needs.

Governments around the world are approving stimulus packages to ensure hospitals can continue to operate during the crisis

Heavy losses reported at companies dependent on ophthalmic and hearing aid devices, but Danaher signals a switch to more digital healthcare, through recent recruitment

Revenue predictions

- Glaukos Corporation, a medical device and pharmaceutical company focused on the treatment of glaucoma, corneal disorders and retinal diseases, reported net sales of \$44.1M in Q1 2020, a drop from \$54M in Q1 2019, reflecting the downturn in elective procedures.
- Cochlear Ltd., a major provider of hearing implants, indicated that sales declined 60% in April 2020 compared to the same period in 2019.
- Dentsply Sirona, a leading dental devices manufacturer, reported flat Q1 2020 sales, compared with Q1 2019, for technology and equipment, but a 17% fall in consumables, almost entirely due to COVID-19 impacting dentistry.

Unemployment

- Danaher Corporation job postings indicate a strategic shift to exploit telemedicine opportunities during COVID-19, while overall recruitment falls by 3.7%. Danaher Digital experienced a surge in job postings between January and February due to the demand for digitally enabled business models, indicating that the company is shifting towards increased use of technology platforms, reflecting the likely increased role for telemedicine post-COVID-19.

Supply chain & demand disruption

- Intuitive Surgical reported a decline in demand surgical robot placements due to postponed surgeries during March.
- An order of 10 million protective masks, ordered through the EU's common procurement process, was suspended after significant certification irregularities were found within the first 1.5 million delivered to the Dutch and Netherland authorities by Chinese suppliers.

Sector-specific stimulus programs

- US Congress approved a \$100B stimulus package for US hospitals to help address the pandemic.
- US government actions to simplify CPT coding and improve reimbursement increase patient access to telemedicine.
- US Government "Opening up America Again" envisages 3 phases. The Phase 3 stimulus bill that passed Congress in March paired coverage guarantees for coronavirus tests with an obligation that healthcare providers publish prices for tests.

Medical COVID-19 Sub-sector impact



Expectations increase for elective surgery volumes to recover during Q3 and Q4 2020

Ventilator demand has not matched original expectations

Cardiovascular

Some cardiology companies are shifting their business strategy to better suit the new needs of hospitals. Abiomed, known for Impella (a percutaneous heart pump), announced the acquisition of Breethe, a manufacturer of extracorporeal membrane oxygenation (ECMO) systems. The increased need for ECMO may offset losses.

Orthopedics

OrtoWay AB, has launched an improved OrtoWell Distractor, a hydraulically powered device for spinal surgery, enabling the use of hydraulic power for safer separation of vertebral bodies, compared with manual alternatives. Despite the COVID-19 situation, elective spine surgeries are likely to quickly bounce back, due to the pent-up demand.

In Vitro Diagnostics

In plans presented to the Association of British Healthtech Industries, and others, the UK government presented plans to increase COVID-19 testing to 150-200,000 tests per day, using the presently tasked laboratories, but believed that testing capacity could be pushed to 250,000 tests per day by co-opting veterinary and agricultural testing laboratories.

General Surgery

In expectation of US surgeries ramping up during May, a joint commission, led by the American Society of Breast Surgeons, revised its guidelines on prioritizing patients for breast surgery. The commission indicates that physicians will need to consider local conditions when determining patient categories.

Anesthesia / Respiratory

As knowledge of the virus increases and the effectiveness of lockdown efforts to reduce hospitalizations has been realized, the demand for ventilators is significantly lower than originally feared. Unusually high fatalities for COVID-19 patients on mechanical ventilators, have resulted in use being only as a last resort. Many hospitals try to use CPAP machines as an alternative for ventilators.























Medical COVID-19 thematic score



Companies in PPE and COVID – 19 testing are faring well

Companies that are involved in surgical procedures face declines in revenue

	2	Medtronic: Exposure to elective procedures brings company down		1	Zimmer Biomet: Expects a 1 st quarter decline of about 9%
	2	Johnson & Johnson: Medical Devices declined 4.8% in Q1 2020		3	Philips: Increase in ventilator production helping to increase profits
	3	Abbott / St. Jude: New COVID testing machine improves outlook		1	Smith & Nephew: Expects a 1 st quarter decline of about 8%
	1	Biotronik: focus on devices for elective procedures		3	GE Healthcare: Working with Ford to build ventilators
	1	Stryker: focus on devices for elective procedures		2	Coloplast: Revised FY growth expectations from 7-8% to 4-6%
	5	Roche: Leader in IVD will grow due to testing requirements		1	Intuitive Surgical: Surgical procedures down significantly
	3	Siemens: New COVID-19 test will help to minimize decline		2	Edwards: Halting enrollment in key clinical trials
	1	Boston Scientific: has withdrawn Q1 guidance based on COVID-19		2	Terumo: minimal disruption to supply chain, but procedures down
	4	Danaher: Stock jumping on approval of POC COVID test		5	3M: Expected to see growth driven by the need for N95 face masks
	3	Becton Dickinson: COVID-19 test will help to minimize decline		5	Thermo Fisher: Growth driven by COVID-19 test production and sales

COVID-19 is impacting both the demand and supply side of the mining sector

Demand side

- The latest forecast for global construction output growth is a decline of 2.3%, versus initial expectations of 3.1% for 2020.
- A slowdown in construction has impacted copper and steel demand, with copper demand forecast to be down by 3% in 2020.
- Lower automotive manufacturing will also impact demand for steel, aluminium, platinum and palladium. Platinum demand is forecast to decline by 7% in 2020.

Capital expenditure

- Original guidance for 20 leading miners' capex growth was 11% in 2020. However, there is now set to be a fall in 2020 with several majors making significant reductions, including:
- Rio Tinto, whose capex for the full year is expected to be between US\$5-6 billion, down from the previous guidance of \$7 billion;
- Anglo American is cutting its 2020 capex by US\$1bn to US\$4-4.5bn;
- Glencore, which is making a reduction from US\$5.5bn to between US\$4-4.5bn;
- Freeport-McMoRan, which announced a cut in capex from US\$2.8bn to US\$2.0bn.

Supply side

- Suspensions of mining have ended in most countries with mining in Mexico now permitted to resume on 1 June.
- The number of mines on hold due to COVID-19 was 234 as of 26 May, down from 1542 on 14 April.

Operations

- Mining companies are undertaking a range of measures to minimize the potential for infections and the impact of the virus on mining operations.
- However, despite efforts to minimize the spread of the virus, some mines are identifying large numbers of cases as high numbers of tests are carried out.
- For example, on 24 May, AngloGold Ashanti announced that 164 workers had tested positive at its Mponeng mine in South Africa, which has now been temporarily closed. The company had conducted 650 tests since detecting the first case. Meanwhile 89 cases were detected within Polyus' Krasnoyarsk business unit, which operates the Olimpiada, Blagodatnoye and Titimukhta mines in Russia.

Mining COVID-19 mitigation strategies



The immediate impact will be hardest for those in commodities most tied to economic growth, such as construction and transport, with the recovery dependent on the bounce back of the global economy

Short-term strategies 6-12 months

- Limit the number of people on mine sites to just the essential workforce.
- Split the workforce to reduce non-essential contact.
- Have FIFO workers stay on site for longer periods of time.
- Pause or reduce mining operations in weaker commodities.
- Set up a cross-functional COVID-19 response team.
- Extensively test workers to detect all cases including asymptomatic
- Cut costs and postpone capex.
- Invest in collaboration tools.

Mid-term strategies 1-3 years

- Reschedule debt and address financing issues.
- Consolidate market position in growth commodities.
- Acquire assets to enhance operational economies of scale.
- Consider divesting assets in weaker commodities.
- Use downtime to greatest advantage through upskilling workforce and upgrading assets.











Long-term strategies 3-5 years

- Ensure that liquidity is sufficient to weather the storm in the future.
- Ensure cybersecurity is fit for purpose.
- Put in place effective collaboration tools.
- Focus on autonomous materials movement (e.g. autonomous trucks) and the automation of repetitive tasks to reduce the number of workers on sites.

Mining COVID-19 thematic score



Producers of precious metals in countries that do not suffer lockdowns will emerge best from the situation

	3	Coal India: Coal mines in India largely kept open		3	Barrick Gold: High weighting of gold a positive, as is limited exposure to countries enforcing lockdown. More prepared due to Ebola experience.
	3	BHP: Operations primarily in Australia and largest part of portfolio is iron ore, where prices are holding up		2	Shaanxi Coal & Chemical: Exposed to Chinese market which had significant operational disruption in Q1. However, balanced by focus on coal and gold
	3	Rio Tinto: Construction of new projects remains on track. Production steady. Capex down by US\$1bn+ due to Covid-19 constraints and strong US\$		2	Sibanye Gold: Focused on gold, which has seen price increases; exposed to operationally-affected South Africa
	2	Vale: Production lower due to heavy rain, regulatory delays stemming from dam failure. Cut capex from US\$5bn to US\$4.6bn		2	South 32: Some impact to South African and Colombian operations, and Australian Manganese, but otherwise relatively unaffected. Cut sustaining capex from US\$580m to US\$500m for FY20.
	2	Glencore: Presence in South Africa and high share of revenues from copper, but marginally offset by Australia and precious metals operations		1	Freeport-McMoRan: Heavily weighted towards copper, which impacted Q1 results, with Q1 2020 net loss of US\$491m versus profit of US\$31m in Q1 2019
	2	China Shenhua Energy: Exposed to China, experienced significant, early operational disruption		1	Teck Resources: Hit by copper and zinc prices, and exposure to lockdowns in South America. 55% drop in EBITDA to US\$454m in Q1 2020
	3	Anglo American: Based in high exposure areas such as the UK and South Africa. But the price of platinum has vastly increased.		2	Impala Platinum: High exposure to South African market, which is locked down. Primarily PGMs where prices are recovering.
	3	Fortescue Metals Group: Maintained guidance; projects progressing, although Australian and international exploration activities are suspended		1	Grupo Mexico: Very heavily weighted towards copper and Mexico, which has undergone extensive lockdown. Loss of US\$369m in Q1 2020.
	2	MMC Norilsk Nickel: Nickel and copper both adversely impacted, but operationally less affected as primarily in Russia		3	AngloGold Ashanti: exposure to gold and limited activities in countries with lockdowns
	2	Newmont: Exposure to gold positive; four mines on care and maintenance		3	Polyus: Focused on gold and in Russia which has not been impacted by lockdowns

Oil & Gas COVID-19 impact assessment



The oil & gas industry is heavily impacted on all fronts as falling demand and geopolitical ambitions are greatly impacting company finances

Upstream sector will bear the brunt of the COVID-19 outbreak as the falling oil prices will impact production economics.

Revenue predictions

- Lockdown measures have brought a sharp drop in global oil and gas demand, with the IEA estimating that global oil demand could fall by approximately 26% in May 2020.
- The crash in prices - aggravated by a rapid build in liquids storage that caused lower utilization at the production end - will significantly impact revenue and profit margins.

Capex realignment

- IOCs, NOCs, and independents are cutting capex and opex in tune with low oil prices.
- Announced cuts to capex guidance for 2020 now exceed US\$130 billion as of 20 May 2020, considering 190+ companies.
- Capex cuts are primarily being felt in drilling in the US shale plays, in postponement of project FIDs, and reductions to exploration budgets.
- As of 20 May 2020, around 280 upcoming projects have been impacted across the value chain.
- Major FID postponements to date include Woodfibre LNG, Rovuma LNG, and the Scarborough gas field and Pluto LNG expansion.

Supply chain disruption

- Production shutdowns in China have disrupted raw material and equipment supply chains across all industries, especially those that are heavily dependent on China.
- Restrictions aimed at limiting the spread of COVID-19 are hampering progress for some ongoing projects, with a major example being the Tortue LNG project in Mauritania and Senegal, delayed for around 1 year.

Government policy responses

- OPEC and other major producers collectively agreed over 9.7 million bpd of oil production cuts in order to offset reduced demand.
- Saudi Arabia, Kuwait and the UAE will voluntarily cut oil output by 1.18 million bpd from June 2020, over and above the cuts agreed under the OPEC+ policy.
- Norway announced oil production cuts of 250,000 bpd for June 2020 and 134,000 bpd for the rest of the year to stabilize the markets.

Unemployment

- Shrinking E&P activity and closing oil and gas plants are leading to layoffs in the services industry.
 - Halliburton announced job cuts in Texas and Oklahoma.

Oil & Gas COVID-19 mitigation strategies



The immediate recession will be deep, the bottom will be long, the recovery will be drawn out

Some sub-segments may respond more positively than others in medium to long term

Short-term strategies 6-12 months

- Manage costs.
- Optimise use of available active assets.
- Maintain operational readiness in post-recession demand surge scenario to meet customer requirements.
- Reassess portfolios.
- Reallocate capital.
- Review high cost projects.
- Re-align available skilled manpower.

Mid-term strategies 1-3 years

- Improve margins.
- Re-align production with demand.
- Review delayed/stalled projects based on demand, prices and profitability.
- Maintain liquidity/Strong balance sheet.
- Consider sectoral consolidation.

Long-term strategies 3-5 years





















- Restructure business to evaluate diverse opportunities.
- Capture new business opportunities, such as alternative energy.
- Maintain operational readiness for new business opportunities.

Oil & Gas COVID-19 thematic score



Several companies are cutting capex and deferring investment decisions to sustain through the downturn

IOCs as well as independents are staring at uncertain future as the COVID-19 pandemic continues to hamper global energy demand

	2	Saudi Arabian Oil Co: Reported a 25 percent dip in Q1 profits due to crash in oil prices		2	Total SA: Refining and petrochemical operations facing slowdown, potential delays in upcoming upstream and LNG projects
	2	Gazprom: Probable drop in earnings, potential project delays		1	Marathon Petroleum Corp: Idling refinery or reducing output, leading to lower utilization; net income fell by US\$9.2 billion in Q1
	2	Rosneft Oil Co: The fate of new projects will depend on oil price recovery. Reported first quarterly loss in nearly eight years		3	Cheniere Energy Inc: Reported a 20 percent rise in Q1 revenues, expects to achieve its original revenue guidance for the full year
	1	China National Petroleum Corp: Suppressed demand in China led to a fall in net income for Q1		3	Kinder Morgan Inc: Due to its exposure to natural gas business, it is less affected by oil price collapse. Dividend increased by 5 percent
	1	Exxon Mobil Corp: Q1 2020 results revealed first quarterly loss since 1988. Scaling down drilling activity in the Permian Basin		4	Koninklijke Vopak NV: Storage terminals are in demand as producers seek to store their products until the global demand recovers
	2	Royal Dutch Shell Plc: Share buybacks suspended; dividend reduced by 66 percent to maintain liquidity after Q1 results		1	China Petrochemical Corp.: Lockdowns and workforce restrictions have attributed to over drop in refinery utilization and revenues in Q1
	2	Chevron Corp: 2020 capex guidance revised down further after Q1 results; worldwide Q2 production to fall by 400,000 bpd		3	Ineos AG: Realigned its workforce to adopt social distancing, otherwise its operations remain largely unaffected
	2	Abu Dhabi National Oil Co: Plans to reduce oil production beyond the OPEC+ mandated levels from June 1, 2020 to stabilize oil markets		1	Schlumberger: 5 percent dip in Q1 revenues; announced 75 percent cut in dividend among other measures to maintain free cash flow
	1	Petroleo Brasileiro SA: Exports rebounded in April amid recovering demand in China. Plan to divest downstream business delayed		1	Halliburton: Proposes to reduce opex and improve working capital to sustain through the downturn after a drop in Q1 earnings
	2	BP Plc: Considerable impact on downstream business, profits fall in Q1 2020		2	TechnipFMC: 30 percent reduction in CAPEX, deferral of the plan to split business operations in two separate companies



Pockets of the packaging sector are experiencing growth, fueled by customer demands

Revenue predictions

- E-commerce packaging providers are scaling up production and benefitting from the increased demand for online retail - corrugated cardboard is performing well.
- There is a heightened demand for food packaging, more specifically shelf-stable packaging for the grocery industry.
- Demand for luxury goods packaging expected to fall significantly as discretionary spending is reduced.
- Diversified product portfolios will offer some mitigation.
- Industrial and transportation packaging which is closely related to GDP will fall.
- Demand for healthcare packaging materials continues to increase globally.

Unemployment

- Packaging factories largely remain open during the outbreak.
- However, some companies are being heavily affected; Berry Global has furloughed 600 members of staff.

Supply chain & demand disruption

- Consumers prefer larger pack sizes. Lockdowns have reduced demand for smaller packaging for on-the-go lifestyles. Consumers also want to restrict visits to shops during the pandemic.
- Luminer, a labelling solutions provider, has seen a significant rise in demand for extended content labels for clinical trials – several of which deal with ongoing development for COVID-19 related drugs.
- As crude-oil prices have fallen, the cost of oil-based raw materials, such as plastic resins for the packaging industry, is likely to fall.

Being a force for good

- Global player, BIC, is producing 2,000 medical-grade face shields per day at its Connecticut facility, using plastic packaging materials and scrap plastic from its lighter products to help the front-line workers.
- Private-label paper products manufacturer AJM Packaging is offering up to \$1,000 in bonus to eligible Detroit-area manufacturing employees to appreciate their presence during these tough times.

Sector Specific Stimulus

- Governments have deemed the packaging sector essential, allowing companies in the sector to continue operations, green lanes are aiding smooth transportation.

Packaging COVID-19 mitigation strategies



The immediate recession will be moderate, the bottom will last for a couple of years, the recovery will also be moderate

However, within different sectors and countries the performance will vary; the average industry curve consists of winners and losers

Short-term strategies 6-12 months

- Repurposing production line to cater for personal protective equipment (PPE).
- The first shock in the supply chain will be caused by the scarcity of supply, companies should immediately review their inventory levels.
- Relocate supply chains away from the worst-affected areas.
- Altering production to suit products that are in high demand e.g. flexible plastic packaging.
- Developing products that will boost consumer confidence e.g. tamper proof packaging and antibacterial solutions.

Mid-term strategies 1-3 years

- Diversify or revise supply chain arrangements to add resilience.
- Develop alternative distribution strategies to overcome delays.
- Acquire potential M&A targets to strengthen position in the market post COVID-19.
- Identify areas that will experience the strongest rebound and alter portfolio to cater for these.
- Identify materials and substrates that have grown as a result of COVID-19 and incorporate these into packaging solutions.





















Long-term strategies 3-5 years

- Sustainability will become increasingly important post COVID-19, companies will need to incorporate this into their business by looking into alternatives for plastics.
- COVID-19 has demonstrated how dependent companies are on long global supply chains. Companies should look towards a more localised and diversified supply.

Packaging COVID-19 thematic score



Producers of flexible packaging and aseptic products will benefit in the short-term

	3	International Paper Co: Mills continue to operate, producing packaging for pharmaceutical and food products		4	Reynolds Group: The company will benefit from its aseptic products and falling price of aluminium
	2	Westrock Co: Share price has dropped to the lowest point in years		3	Avery Dennison: The company released a statement saying that the company did not foresee any supply chain disruption
	3	Tetra Laval : Operations are still running; the company is donating €10m towards COVID-19 relief		4	Ampcor: Ampcor will benefit from boost in demand for flexible plastic packaging
	3	Oji Holdings: the company released a statement stating that COVID-19 will have an immaterial impact		2	Mondi: The group reported underlying EBITDA of €385m was 18% below the comparable prior year period of €471m
	1	Stora Enso Oyj: Reported a 46% drop in first-quarter profit		3	Veritiv Corp: Factories remain operational throughout the pandemic
	2	UPM-Kymmene Corp: Has withdrawn its 2020 outlook and does not provide a new outlook until further notice		4	Berry Global: Benefits from increased demand of plastics, nonwoven materials. Products for foodservice industry have fallen
	4	Ball Corp: Lower aluminium prices will help profit, also benefits from stable end-demand		2	DS Smith: scrapped its interim dividend amid other cost saving measures, citing uncertainty created by the Covid-19 crisis.
	3	Crown Holdings: Crown has identified potential backup supply sources and is confident the company can meet demand		4	Packaging Corp of America: Containerboard and corrugated products still in demand, office paper products demand decreased significantly
	3	Smurfit Kappa: The company has remained operational and produced promising Q1 results		3	Owens-Illinois: Demand for higher end products will fall, shift towards sustainable packaging will benefit glass packaging vendors
	2	Domtar: Temporarily idled some operations as demand for paper has fallen significantly		3	Verallia: The company has maintained operations and stated that it will meet the demand but has withdrawn its 2020 annual guidance

Payments COVID-19 impact assessment



The long-term prospects for payments look bright as consumers shift to electronic tools over cash

COVID-19 may be the trigger that finally heralds the long-awaited “cashless society”

Revenue Predictions

- Decline in electronic payments growth to at least 2023 will hit projected electronic payments revenue.
- Long-term revenue will grow as consumers move away from cash.
- Regulators will take aim at card fees once the dust settles – if merchants take less cash, they will resume interchange challenges.
- E-commerce revenue growth will sharply accelerate worldwide.

Unemployment

- Payments will be less affected than other sectors.
- Working remotely is feasible for almost all payments companies.
- Banks will see furloughs and layoffs as the recession bites.

Cash On A Sharp Decline

- Cash is shunned as a disease vector. Central banks, card schemes and other industry players rush to push consumers away from it.
- Contactless limits rise, account fees drop to push digital payments.
- ATM network operators will see their business shrink rapidly.

Growth Prospects

- E-commerce is already performing more strongly than forecast and will continue to do well as consumers move from physical to online.
- Mobile payments have a major growth opportunity at the POS.
- P2P and instant payments also have major growth opportunities.

Being A Force For Good

- Banks offering repayment holidays on credit card debt to support those hit financially.
- Card schemes roll out increases to contactless payment limits to reduce consumer exposure to disease vectors.

Supply Chain Impact

- Many payments companies are software based – lower impact.
- Terminal manufacturers, card manufacturers and ATM manufacturers will all see a hit as trade slows.

Fraud On the Rise

- The influx of inexperienced new e-commerce, mobile, and contactless users, are ripe targets for fraudsters.
- The industry may not be ready for fraud surge.

Payments COVID-19 mitigation strategies



Consumer spending will crash, putting pressure on the industry in the short term – push for a fast cashless transformation

Short-term pain, if managed well enough, will give way to long-term growth

Short-term strategies

6-12 months

- Cut costs, support consumers and merchant partners with fee reductions and repayment holidays wherever possible.
- Maintain access to liquidity.
- Push electronic payment options hard:
 - Contactless – raise limits even higher to move consumers away from cash.
 - Mobile – big marketing opportunity to drive initial use – mobile allows for low exposure to disease vectors.
- Pivot to focus on e-commerce business and remote solutions generally.
- Invest in fraud management.

Mid-term strategies

1-3 years

- As consumers return to physical stores, keep contactless limits high to encourage continued use of electronic tools.
- Prepare for a surge in electronic payment fraud – two types:
 - E-commerce card fraud. Strong customer authentication and smart fraud recognition rollout should be stepped up.
 - Social engineering. Consumers need to be educated about risks of phishing etc. (particularly those who shifted to electronic payment as a result of COVID).
- Anticipate negative regulatory and merchant sentiment on card fees.

Long-term strategies

3-5 years





















- Market recovery will be positive in general for payments, but risks to incumbents must be managed:
 - Fraud will continue to surge upward, especially online.
 - Real-time payments systems will pose a challenge to card-based payments.
 - Mobile payments may also challenge, but this can be managed by supporting card-based wallets such as Apple Pay.
- Market crash may realign consumer spending priorities – travel and tourism may not recover as fast as other industries.

Payments COVID-19 thematic score



Major opportunities exist for e-commerce and for electronic payments more generally

Overall consumer spending reduction will hit the industry hard even despite a shift away from cash

	4	Amazon: E-commerce will do very well as a result of lockdowns and social distancing, and Amazon is a pre-eminent e-commerce company.		3	Paytm: India is pushing electronic payments hard in general, but Paytm gets a lot of business from restricted in-person payments market.
	4	Alibaba: China is already seeing recovery from the crisis, and its e-commerce industry is performing strongly.		4	Adyen: E-commerce specialist, likely to do well especially due to eBay partnership if recession prompts more P2P goods sales.
	4	Tencent: Mobile payments in general are up in China even compared to their high base.		4	Secure Pay: E-commerce specialist, though smaller scale than others on the list.
	3	Google: Heavily software-based but some of its more hardware-based innovations will struggle with supply chain issues.		4	Stripe: US e-commerce is expected to grow strongly as pre-COVID, e-commerce was proportionally small. Strong US presence.
	1	Apple: Core business will suffer from supply chain issues and lower overall consumer spending power. Payments is low-profit for Apple.		2	Ingenico: Very exposed to in-store payments and has took a big price hit due to COVID just after Worldline merger announcement.
	4	PayPal: Strong global e-commerce position ripe for growth.		2	American Express: As a card scheme, will see growth but less than Visa or Mastercard as mass affluent cut back spending in recession.
	3	Visa: Stands to benefit from more cashless payments worldwide, but lose out due to lower overall spending.		2	Worldpay: E-commerce business will do well, though in-store payments will suffer. Still in mid-FIS merger, which may stall a bit.
	3	Mastercard: Stands to benefit from more cashless payments worldwide, but lose out due to lower overall spending.		3	JCB: As per other card schemes, JCB stand to benefit from less cash but its international expansion will suffer in the short to medium term.
	3	UnionPay: Chinese easing of lockdown is good news, but international expansion will suffer.		3	Wirecard: Strong position in e-commerce, but in-person payments side of business will contract.
	3	Square: Too exposed to in-person payments to do well in the short term, but long term will benefit from small merchants taking less cash.		3	Worldline: Ingenico acquisition and integration will be slow to fully complete, but long-term outlook is likely positive.

■ Significant negative impact
 ■ Moderate negative impact
 ■ No impact
 ■ Moderate positive impact
 ■ Significant positive impact

Pharma COVID-19 impact assessment



The COVID-19 pandemic has propelled the pharmaceutical industry into action to develop both preventive and therapeutic interventions

The industry is in a period of uncertainty but companies that are investing in R&D for COVID-19 drugs and vaccines are likely to fare better than their counterparts...

Product Development

- The pharmaceutical industry is racing to develop both preventive and therapeutic interventions.
- There are currently 1807 clinical trials for COVID-19.

Clinical Trials and Regulatory

- Upward trends in clinical trial delays continue.
- At least 1229 trials and 526 Pharma/Biotech companies and CROs are associated with disrupted trials. Disrupted clinical trials have slowly started to resume activity.
- The FDA is collaborating with the CDC to develop a process to restart regular on-site inspections to help ensure that this is done as safely as possible. This will follow the criteria outlined in the “Guidelines for Opening Up America Again” recently unveiled by President Trump, after these guidelines saw a temporary disruption for one week.

Supply Chain

- Companies with facilities in China closed manufacturing plants at the height of the outbreak. Operations are resuming in areas such as Wuhan so supply chains are being restored.

Finance and Business Development & Licensing

- Drop in completed venture capital (VC deals) in Feb 2020 vs Feb 2019 (54% in value, 90% in volume); followed in increase in March.
- Infectious Diseases VC deals are 2nd most funded vs. 5th position in 2019.
- \$63B takeover of Allergan by Abbvie shifted from Q1 to Q2.

Marketing and Commercial Activities

- Cancellation of clinical events and restricted physician detailing have limited face time with physicians.
- Sales of antidepressants, anti-anxiety and anti-insomnia drugs increased ~20% post-COVID-19 (Express Scripts, *America's State of Mind report*).
- Q1 2020 sales of Roche's Actemra (tocilizumab) jumped 30% amid testing in severe COVID-19 patients.

Patient Access to Services

- Telemedicine is becoming a critical tool for patient management as patient office visits have declined.
- Hospitals are also seeing a significant drop in visits for illnesses such as heart attacks, severe abdominal pain and strokes; likely due to patient fears of contracting COVID-19.

Pharmaceutical COVID-19 mitigation strategies



Mitigation of the COVID-19 outbreak will initially rely on containment, with long-term strategies will involve prevention of future crises

Developing an effective vaccine or therapeutic against COVID-19 is only part of the equation for addressing this and future outbreaks

Short-term strategies

6-12 months

- Employ virtual physician detailing and conferences.
- Mitigate spread of disease through social distancing, quarantine measures, and shut down of non-essential businesses.
- Virtual trial implementation to help circumvent current disruptions.
- Price controls on APIs and medicines to help avoid local shortages.
- Increase production of ventilators and respirators to help combat shortages of critical equipment.

Mid-term strategies

1-3 years

- Continue to trace isolated pockets of the disease to control future outbreaks.
- Continue shift towards virtual for physician detailing, select conferences, and clinical trials to minimize future disruptions.
- Widespread distribution of a vaccine or a therapeutic, to stem current and future outbreaks, and improve patient outcomes following infection.
- Reduce dependency on a single entity or region for supply chain and manufacturing.
- China will remain a major source for manufacturing due to cost constraints to shift process.

Long-term strategies

3-5 years

- Prepare for healthcare emergencies.
- Re-examine current manufacturing capabilities for critical supplies.
- Replenish stockpiles.
- Develop plans for rapid assessment and implementation of risks to general population and infrastructure.
- Continue to monitor coronaviruses, as this family has now been associated with three known outbreaks associated with significant morbidity and mortality.

Pharma COVID-19 thematic score



Developers with COVID-19 therapies and vaccines will benefit in the short-term

Stalled clinical trials could create a work vacuum for CROs; companies investing in AI and telemedicine could see long term success

Winners

	5	Teladoc: since the COVID-19 outbreak, demand for the company's telehealth services have more than doubled.
	5	Moderna: potential validation of their platform and business model; recent BARDA investment; positive interim Phase I results
	5	Gilead: remdesivir named new standard of care in US and approved in Japan; manufacturing agreement for remdesivir in 127 countries
	4	Roche: has a diagnostic and is developing a therapeutic for COVID-19; large company but investment in testing and treatment bodes well.
	4	Inovio: potential validation of its DNA vaccine platform; drug being developed in conjunction with CEPI; one trial recruiting.
	4	BenevolentAI: used AI to discover 6 kinase inhibitors that are likely to work against COVID-19, including baricitinib (already marketed drug).
	3	BioNTech SE: Partnered with Pfizer to bring vaccine to market.
	3	CanSino Biologics: Trials only in China but new collaboration with Canadian company Precision NanoSystems; no marketed products.
	3	Sanofi: partnering to use GSK's pandemic vaccine adjuvant; testing a COVID-19 treatment with Regeneron; large size limits revenue impact.
	3	GlaxoSmithKline: allowing multiple companies to use its pandemic vaccine adjuvant; large company, will have limited revenue impact.

Losers

	2	Abbvie: may affect immunology franchise and has already affected Allergan merger.
	2	Alexion: Alexion's Soliris could be first to market as a COVID-19 treatment but reimbursement will be a major issue (cost:>\$500k/year).
	2	RedHill Biopharma: Phase I ongoing for COVID-19 therapeutic; potential non-target effects from kinase inhibitors (phase II across cancers).
	1	IQVIA: CRO company with no manufacturing to fall back on as a buffer.
	1	Syneos: CRO company with no manufacturing to fall back on as a buffer.
	1	Parexel: CRO company with no manufacturing and engaged in sales training – both areas negatively impacted by COVID-19.

New capacity auctions and contract awards are deferred

Several under-construction projects are experiencing delays due to supply-chain disruption and manpower shortage

Revenue predictions

- The Mexican government announced new rules to reduce the role of renewable energy, impacting USD6.4 bn of investment.
- Germany's federal grid regulator, BNetzA, received no bids for onshore wind in the country's latest joint auction with solar capacity.
- There has been a sharp decline in British renewable generator revenues due to extremely low wholesale power prices.
- According to the IEA, 167GW of new renewable power capacity is planned this year, a 13% decrease from 2019

Unemployment

- In March, US clean energy sector job losses are estimated at 106k, while the AWEA reports coronavirus threatens 35k US jobs.

Sector-specific stimulus programs

- The Indian government offered INR 900bn to revive the financial health of ailing power distribution companies.
- UK Energy Department BEIS extended the closing date on the consultation for the fourth CfD round by a week.

Supply chain & demand disruption

- India's solar power capacity additions in Q1 2020 declined 39% year-on-year to 1,080 MW, the lowest in a quarter since 2016.
- Brazil's Energy Ministry has unconditionally postponed generation and transmission project auctions, planned for May 2020.
- Chile has postponed auctions in generation and transmission.
- According to the IEA, worldwide energy demand will fall by 6%, seven times greater than the decline following the 2008 financial crisis.
- Thermal power plants in India are likely to be cash-strapped as power demand continues to fall while surplus coal lies unused at their sites.
- State-run auctions in Europe have been altered and implementation deadlines have been extended to help both authorities and bidders.

Being a force for good

- The Duke Energy Foundation gave \$200,000 in grants to Indiana economic development organizations to relieve small businesses.
- ANEEL and CCEE release R \$ 207 million to distributors and free consumers.
- PG&E's CARE program is helping customers who have been financially impacted by COVID-19.

Power COVID-19 mitigation strategies



The slowdown in industrial demand will have larger implications on electricity consumption and new capacity additions.

Q2 and Q3 to see decline in capacity addition; Q4 will catch-up if the virus spread is restricted.

Short-term strategies 6-12 months

- Optimise the generation mix to reduce generation cost.
- Prepare for temporary regulations, such as flexible payments and loaning electricity.
- Plan for supply chain challenges such as production delays.
- Restrict non-essential travel and promote flexible working.
- Incentivize timely payments; digitalize billing-payment methods.
- Optimize workforce allocation to critical functions.
- Production scheduling agility.
- Focus on cash flows.

Mid-term strategies 1-3 years

- Set up taskforce to study supplier diversity; find local supply options.
- Acquire stressed assets/ businesses, specifically aiming at clean energy expansion.
- Hedge fuel risks through portfolio diversification.
- Develop local sources for equipment supply.
- Develop resilient business continuity plans.
- Explore new financing options for new projects.
- Enhance research & development for new energy options such as hydrogen.

Long-term strategies 3-5 years





















- Focus on new business models in clean energy and storage.
- Change the business model through increased use of technology.
- Increase the pace of research and development and become more innovative.
- Make the business model more flexible and resilient.

Power COVID-19 thematic score



Companies across power value chain are feeling the pain

Lower demand, decline in prices and supply chain issues are troubling the sector

	2	EDF: Nuclear output target revised down for 2020, new build projects slowing down		1	RWE: Affected by lower electricity prices; and customer bad debts
	3	ENEL: Strong cash position and visible earning horizon; limited impact		2	Centrica: Foresees increase working capital outflows; plans to cut CAPEX
	3	Iberdola: Carrying out investments aggressively in renewable energy		3	RusHydro: Increase in revenue by 19% in Q1 2020, no significant impact
	2	Xcel Energy: The impact of COVID-19 did not significantly affect Q1 results, but could have a material impact on future financial results		1	Schneider Electric: Impact in Q1 revenue USD 325mn due to COVID
	1	Origin Energy: Planned CAPEX cut 5-10% in 2020 & 25-30% in 2021		3	First Energy: T&D investments will continue to provide stable and predictable earnings
	1	GE: Production at two LM blade production plants in Spain stopped		3	Orsted: 33% increase in operating profits in Q1 2020
	2	AES Corp: Reducing 2020 Adjusted EPS by 5%		1	ElectroBras: Decline in share prices as privatisation plan postponed
	3	Nextera Energy: Pandemic has not impacted performance of the generation fleet or T&D system		2	EON: Group guidance for EBITDA and Capex remains intact
	2	CanadianSolar: 3GW capacity-add will depend on new market conditions		1	Northwestern Energy: 30% decline in net income in Q1, lowered EPS guidance
	1	Gamesa: Spain blade factory representing 10% global output is closed		1	Statkraft: Q1 2020 EBIT down by 40%; being hit by lower power prices

■ Significant negative impact
 ■ Moderate negative impact
 ■ No impact
 ■ Moderate positive impact
 ■ Significant positive impact



Impact on retail will be devastating, increasing the shift online and shaking out weaker operators even faster

Global recession will limit the bounce-back in spend in some sectors

Industry predictions

- Retailers must accommodate fast-changing shifts in behaviour, away from experience and indulgence to convenience, safety and necessities.
- Retailers should prepare for online penetration to remain raised in the aftermath of the crisis as consumers have become accustomed to purchasing online and many will not want to go to shops.
- Home delivery will remain popular, and collection fulfilment options may move outside of retail stores through the use of lockers or curb side collection, likely to be more appealing than instore collection points which would involve human interaction.
- Retailers must make the physical shopping experience safe and easy to navigate – and use new merchandising methods to encourage higher volumes.
- Previously anticipated to take centre stage in retail in 2020, sustainability is likely to slip down the agenda for companies and marketing will focus more on personal health and wellbeing.

Supply chain & demand disruption

- Both retailers and suppliers have been exposed to the woes of COVID-19, as cancellations, gaps in assortment and a limited workforce have heightened cash flow issues throughout the supply chain.
- Consumers may bear the burden of increased supply chain costs through localized manufacture, and demand to replenish stores quickly when normal trading resumes.
- As retailers prioritize core and bestselling products for airfreight, margins will be squeezed for the retailers and potentially suppliers, some of which may be passed on to consumers

Being a force for good

- Retailers must prioritize the wellbeing of their staff and shoppers when stores re-open. The sanitizing stations used in supermarkets may become permanent fixtures across retail stores, with staff allowed more regular breaks for hand washing and shoppers required to use hand sanitizer when entering the store.
- More retailers may mandate the use of face masks and gloves amongst staff for greater protection, as well as those who wish to shop at their stores. Though this may incur some backlash from consumers not wishing to wear protective equipment, attitudes may shift if the pandemic continues and it becomes normalized.



The immediate recession will be deep, the bottom will be short, and the recovery will be drawn-out

Short-term strategies 6-12 months

- Focus on cash preservation, cut costs, capital expenditure.
- Support non-working employees financially, and where retail operations continue, such as in supermarkets and warehouses, apply recommended policies on safeguarding.
- Maintain engagement with customers through websites, social media and live streaming.
- Generate long-term reputational gains to brand by quickly embracing latest regulations and supporting community projects.
- Maintain good relationships with suppliers where possible.

Mid-term strategies 1-3 years

- Devise longer term strategies to deal with social distancing, both operationally and in stores.
- Divert planned capital expenditure to business recovery where necessary.
- Accelerate investment and development of digital transformation across the business.
- Advance research into accelerated changes in consumer behaviour.
- Reviewing store presence and reinforcing multichannel alignment between physical and online where applicable.

Long-term strategies 3-5 years





















- Develop new products that better suit altered consumer attitudes.
- Stress testing of business mobility in preparation of potential further black swan events.
- Reviewing viability of low-capital operating models and assess importance of stronger balance sheets.

Retail COVID-19 thematic score



Grocers will benefit from closure of foodservice, cafés and restaurants

But clothing retailers, especially those reliant on physical stores in highly impacted countries such as Spain and Italy, will be hit hard

	2	Adeo: Hard hit home sales across Europe		1	Inditex: Large physical store network in highly impacted geographies
	4	Aldi: Increased sales of grocery as it gains foodservice sales		2	IKEA: Highly reliant on destination stores, and hard-hit furniture sector
	4	Amazon: Isolation plays to functional product and delivery strengths		4	JD.com: Protected by strong online focus
	2	Apple: High dependence on flagship stores and discretionary spend		3	Loblaw: Protected by focus on food and pharmacy
	2	Best Buy: Boost to electricals will fade in H2 2020		2	Lowe's Companies: North American home sales to be hit
	4	Carrefour: Gaining sales in the short term on isolation		4	Schwarz Beteiligungs: Increased sales of grocery as it gains foodservice sales
	2	CK Hutchison: Reliant on store sales, and hard-hit beauty sector		2	Home Depot: North American home sales to be hit
	3	CVS Health: Reliant on pharmacy which has avoided lockdowns		1	The TJX Companies: Exposure to hardest hit sector, geography and channel
	1	Fast Retailing: High exposure to clothing and impacted geographies		2	Walgreens Boots Alliance: Health sales will not counter lost beauty sales
	1	H&M: Large physical store network in impacted geographies		4	Wal-Mart: Strong online, food focus and value offer will protect it

1 Significant negative impact
 2 Moderate negative impact
 3 No impact
 4 Moderate positive impact
 5 Significant positive impact

Sports COVID-19 impact assessment



Over \$100 billion in lost revenue for North American and European industry alone

That's assuming a return to production by May. No guarantees that's the cap on losses...

Revenue Impact

- \$4bn hit to the sponsorship economy in 2020.
- The IOC expects the cost of rescheduling the Olympic Games to 2021 to cost in the region of \$800m.
- Esports global gambling revenue is set to double to \$14 billion in 2020 following news Nevada has relented and is accepting bets on esports events.
- The hosting fee for the Formula One Chinese Grand Prix is estimated to be \$33.1 million, while a further \$5.1 million was spent on corporate hospitality ticket sales.
- Local economies for the European Championships stand to miss out on similar revenues recorded in 2016, for which ten cities the event added \$1.445 billion to local economy.
- The League of Legends World Championships generated over \$17m in sponsorship revenue for the last edition, a significant threat for the 2020 edition.

Unemployment

- The restrictions on international travel will present organizational challenges for global sports such as Tennis and Golf.

Supply Chain & Demand Disruption

- Analysis by Sportcal of 2,394 active sponsorship deals by apparel brands in December 2019 returned 364 (15.2%) deals from brands in the fashion sector. These agreements returned an annual value of just under \$250 million.
- 456 deals (89.2% of total betting sponsorships) with renewals or expiry dates by the end of 2021, worth an estimated total of \$511.31 million to rights holders, have been put under pressure considering the dire economic conditions currently facing betting operators.
- 61.3% of financial services sport sponsorships are up for renewal or are set to expire by the end of 2020, worth a total estimated value of \$661.36 million. Events moved to 2021 would thus be outside of contractual commitments for these sponsors.
- COVID-19 will see an acceleration in the trend of more pay-for performance deals, which was marked by Nike's agreement with Liverpool.

Being A Force For Good

- Brooks Koepka donated \$100,000 to a relief fund in his hometown.
- Spanish athletes donated \$260,000 to the Red Cross of Spain.

Sports COVID-19 mitigation strategies



The recession will bite deep into Sport, with further declines expected running into Q2; but expect a steady re-growth of the sector once scheduling resumes, with the demand for sport remaining high thanks to it still being 'appointment viewing'.

Short-term strategies 6-12 months

- Cut costs; conserve cash; reorganise finance distribution.
- Introduce a new rebuilding strategy:
 - Focus on affordable opportunities to encourage fans back.
 - Rescue finances from current deals, through completion of unfinished seasons.
- Attempt to appease any rights holders settling confusion around overlapping deals.
- Support postponed events to minimise the size of disruption.
- Introduce new measures to save most affected properties.

Mid-term strategies 1-3 years

- Develop new markets such as esports.
- Understand potential change in consumer spending and react to how fans are re-engaging with sport.
- Introduce new creative marketing campaigns that encourage mass audiences.
- Continue to exploit influencer marketing.
- Position as a force for good, highlighting positive impact made on local communities during crisis.
- Improve lines of communication with fans and supporters.

Long-term strategies 3-5 years





















- Following potential de-valuation of rights, place focus on highlighting potential return on investments.
- Sports such as F1 will explore new eco and financial friendly innovations, focused on cost reduction.
- Continue investment into new areas of technology which can enhance viewer experiences – AR and VR.

Sports COVID-19 thematic score



Damage limitation is key for the Sports industry.

With every sporting event currently cancelled or postponed, the Sports industry will be looking at minimizing the potential impact.

	3	Olympic Games: Some local disruption in Tokyo but Games should not be impacted overall.		1	F1: F1 calendar has been decimated, with events in China, Canada, Netherlands cancelled outright.
	2	The Masters: One of golf's most prestigious events, the 2020 event was initially cancelled but looks to go ahead in November.		1	Chinese Super League: China's domestic soccer league was first league to be cancelled and will not restart.
	2	French Open: Scheduled to go ahead later in the year, the event will suffer reputational damage due to the actions of the FFT.		2	NBA: Will see a reputational bounce thanks to being the first major sports league to suspend operations. Will suffer in the short term.
	1	The Open: Cancelled outright in 2020, will have an impact on media rights and sponsorship deals with the R&A		2	MLB: Baseball is declining in popularity in the US and will be forced to compete for airtime with more popular leagues post-shutdown.
	1	Wimbledon: Cancelled in 2020, the lack of Wimbledon will have an impact beyond sport - \$500k+ spent on strawberries and cream!		1	NHL: 2020 season was postponed
	2	English Premier League: Popular globally, the English Premier League will be keen to restart in order to protect lucrative media contracts.		3	Tour De France: Organisers claim that race will continue as scheduled, but crowds are unlikely to be able to attend, reducing the spectacle.
	2	Bundesliga: Major European league postponed until further notice.		1	IndyCar: racing series unlikely to take place this year.
	2	LaLiga: Shutdown may adversely impact LaLiga's US expansion plans.		1	MLS: 2020 season was postponed
	3	Ryder Cup: Currently scheduled to go ahead as planned		2	Uefa Champions League: Competition postponed at crucial stage – unlikely to resume in order to fulfil domestic fixtures
	2	European Championships (Soccer): Due to the pan-European nature of this edition, host country losses should be minimized.		3	NFL: Next season is not due to begin until Sept/Oct

■ Significant negative impact
 ■ Moderate negative impact
 ■ No impact
 ■ Moderate positive impact
 ■ Significant positive impact



Royal Caribbean's results show the hardship facing the cruise industry

Requests for cash refunds could be a drain on travel companies' resources

Revenue Predictions

- Marriott reported net earnings of \$31m, Hilton turned a profit of \$18m and Wyndham announced a net income of \$22m for Q1.
- On the surface these figures may look positive but Marriott's adjusted earnings of 26 cents per share severely lagged estimates and its system-wide RevPAR plunged 22.5%, which is very similar to the declines experienced by Hilton (22.6%), Wyndham (23%) and IHG (25%).
- Royal Caribbean's results show just how hard hit the cruise industry has been. Compared to Q1 2019, revenues fell 16.7% to \$2.03bn. The company's operating loss was \$1.3bn, compared to a profit of \$1.3bn in 2019. Further issues may lie ahead with the company confirming that as of April 30, 2020, approximately 45% of the guests booked on cancelled sailings have requested cash refunds. This will put stress on already depleted cash reserves.

Unemployment

- British Airways has put 12,000 jobs at risk, while Ryanair and TUI have warned of the potential for 3,000 and 8,000 job losses respectively.
- In the lodging space, Airbnb has set out plans to make 1,900 staff redundant, approximately 25% of its global workforce.

Demand Disruption

- Demand remains extremely subdued but companies are looking to China as the first phase of recovery.
- 98% of IHG hotels in China have reopened, while most construction work on IHG hotels in the country has also restarted. Other multi-national chains such as Marriott have seen an uptick in occupancy in China. Over the April holiday, some of its hotels reached 60% occupancy.
- United Airlines is pushing hard for a resumption of flights from the US to China. "We are working with Washington, D.C. and China to figure out when we can reinstate passenger flights," Chief Commercial Officer Andrew Nocella told employees. "We are ready to go. We are ready to get all the necessary regulatory approvals to make that happen."

Sector-specific Stimulus Programs

- Air France-KLM has secured at least €9bn (\$9.7bn) from the Dutch and French governments and Lufthansa is in advanced negotiations with the German government to obtain a similar amount under the country's *Wirtschaftsstabilisierungsfonds* (Economic Stabilisation Funds).
- In the UK, easyJet and IHG are two high profile companies to access funding via the Covid Corporate Financing Facility (CCFF).

Being A Force For Good

- Some hotels and cruise ships have been used to house essential workers.

Travel & Tourism COVID-19 mitigation strategies



COVID-19 has hit the tourism industry hard. It is impossible to say when travel will return to 2019 levels, 2020 should bear the brunt of disruption
Consumer demands and behavior will be permanently altered, players at all stages of the value chain will need to adapt

Short-term strategies 6-12 months

- Focus on survival.
- Cut costs, conserve cash, secure credit and government funding.
- Airlines: assess route planning and drop low-demand/low-profit routes.
- Lodging: focus heavily on high hygiene standards and promoting them to instil confidence in potential guests. Maintain price discipline.
- Cruises: focus on 2021. Encourage re-booking by offering incentives such as extra credit vouchers.
- Intermediaries: maintain partnerships with key transport and lodging providers.

Mid-term strategies 1-3 years

- Address oversupply in the market: M&A, footprint, and brand portfolio rationalization.
- Prepare for a potential change in how customers see the world. Be prepared to adapt swiftly.
- Assess how demands and expectations may change.
- Adjust product and marketing strategies accordingly.
- Invest in effective marketing campaigns, incorporating the learnings from the COVID-19 crisis.
- Maintain the momentum of domestic tourism, gained during global travel restrictions.

Long-term strategies 3-5 years

- Prepare for a market rebound that might require a very different product/service to that needed now within different competitive environment:
 - Possible long-term shift to reduced business travel as people have become more confident in videoconferencing.
 - Hotels should look to market hygiene standards provided by daily, professional housekeeping as this is an advantage over accommodation sharing sites.
- Continue to re-evaluate and, if necessary, adapt branding and product/service. Consumer behaviour will not be static.

Travel & Tourism COVID-19 thematic score



2020 will undoubtedly be an annus horribilis for operators across the travel & tourism sector

Budget operators stand a better chance of rebounding quickly in a trading environment likely to be characterized by constrained spending

	1	Ryanair: Hopes to resume 40% of flights in July. business model relies on high load factors, so distancing requirements will be problematic.		1	Hilton: Some staff furloughed, suspended dividends.
	1	easyJet: All flights grounded until further notice. Europe-centric. Relies on high load factors to make business model work.		1	IHG: Exposed globally, but strong brand portfolio will help it in the longer term. Some shoots of recovery in China.
	1	Delta Air Lines: Significant reduction in international and domestic flights. Government support on offer. High exposure to US market.		2	Shanghai Jin Jiang: Largely dependent on Chinese market which is already starting to see an uptick in domestic bookings.
	1	American Airlines: Significant reduction in international and domestic flights. Government support on offer. High exposure to US market.		1	Royal Caribbean: Sailings suspended through May 12 at least.
	1	Southwest Airlines: Some planes grounded, high exposure to US domestic market. Has access to US government funding.		1	Carnival Corp: Aims to resume cruise operations by August 1st at the earliest.
	1	Emirates: Uniquely exposed as it connects to one of world's largest hubs (Dubai). Flights to many destinations affected by restrictions.		1	Norwegian Cruise Line: Suspension of all sailings across fleet through June 30.
	1	IAG: 12,000 jobs at risk and has suggested it may not resume operations at Gatwick for some time.		1	Expedia: Highly dependent on travel booking, which shows no signs of returning to pre-crisis levels. Close to securing investment.
	1	Wyndham: Large exposure to US market.		1	Booking Holdings: Highly dependent on travel booking, which shows no signs of returning to pre-crisis levels.
	1	Marriott: Furloughed thousands of workers, exposed globally but some shoots of recovery in China.		1	Enterprise: Some rental locations are closed.
	1	Accor: Closed two-thirds of hotels, suspended dividends.		1	Hertz: Had to negotiate a payment for leasing costs after missing original deadline.

■ Significant negative impact
 ■ Moderate negative impact
 ■ No impact
 ■ Moderate positive impact
 ■ Significant positive impact

Enterprise Technology & Services COVID-19 impact assessment



The hyper-digital imperative of COVID-19 has put the spotlight on the telecom and tech sectors

The response of the industry has been swift and largely effective, but the sector will not be immune from longer-term economic impact

Revenue impact

- False optimism abounds in the industry. A wake-up call is imminent.
- Collaboration and other cloud services are growing exponentially.
- But many other IT infrastructure and services projects are stalled.
- IT services hardest hit as projects are re-evaluated.
- Shift to homeworking sparks demand in collaboration tools. However, there are associated risks with cybersecurity, which are starting to come to light.

Unemployment

- Technology companies are not yet reporting job cuts but hiring programmes have been cut back significantly.
- Cut-backs are inevitable at some point.
- Conversely, Cisco, Salesforce and other leading tech companies are proactively stating a no job-cut policy, and advocating that position.
- But many IT services projects are on hold, which will likely impact the industry. HPE, for example, has announced pay cuts lasting several months.

Supply chain & demand disruption

- Apple, Samsung and many others have experienced significant supply chain disruption. Expect significant supply chain diversification in the medium-term.
- Enterprise IT saw a rapid and intense demand spike for networking and capacity services, collaboration software and cybersecurity.
- Many other IT projects are delayed or cancelled.
- Enterprise digitization plans could be delayed by 2 to 3 years.

Being a force for good

- IT companies—normally keen competitors—are working together with governments by providing AI, compute and other resources.
- Cloud service providers are prioritizing capacity for healthcare, emergency and education requirements.
- Enterprise technology and IT services providers are adjusting pricing and offering free services and more flexible financing terms to help alleviate economic pressure.

Enterprise Technology & Services COVID-19 mitigation strategies



The immediate recession will be deep, and long lasting, the recovery will take time

Short-term strategies 6-12 months

- With drastically reduced new business opportunities, focus on serving existing customers with tactical advice rather than big-picture pitches.
- Focus sales messages on efficiency improvements, cybersecurity, collaboration and automation.
- Plan for permanent changes to customer requirements.
- Assess the relevance of existing R&D projects and how they will serve the demands of customers post-COVID-19.
- Manage staff morale during uncertainty to maintain productivity.

Mid-term strategies 1-3 years

- Diversify supply chains to mitigate future shutdowns.
- Track start-up failures and acquire relevant IP.
- Help customers recover with the use of technology with appropriate pricing and contract terms.
- Work closely with customers to define their on-going technology requirements.
- Plan for accelerated adoption of SaaS, IaaS and PaaS.
- Role of government as buyers will increase, particularly in areas including drones, biosensors, IoT and cloud-based analytics.

















Long-term strategies 3-5 years

- Focus less on 'disruptive innovation', focus more on pragmatic technologies that solve existing problems rather than speculative moon shots.
- Update business continuity planning to account for extreme possibilities and incorporate digital transformation initiatives such as virtualization and greater automation.
- Restart big-picture marketing and R&D with an eye towards larger market trends as economic conditions improve.

Enterprise Technology & Services COVID-19 thematic score



The biggest winners will profit from ecommerce and cloud; most will find the going tough in the next few years

	1	Apple: Significant exposure to Chinese supply chain		2	Cisco: Cut-backs on IT infrastructure spending short-term balanced against increases in areas such as security and collaboration
	2	Microsoft: Warned investors that revenues will miss earlier forecasts		1	Oracle: Will suffer from deferred and cancelled IT projects
	3	Alphabet: Advertising will be hit; cloud and other services will mitigate impact		2	Infosys: Will suffer from deferred and cancelled IT projects
	4	Amazon: ecommerce sales soaring. AWS will benefit from strong demand for on-demand compute and storage.		4	Salesforce: Increased use of cloud services and remote working
	4	Alibaba: ecommerce sales soaring. Alibaba will benefit from strong demand for on-demand compute and storage		2	Accenture: Will suffer from deferred and cancelled IT projects
	2	TSMC: High demand for chips; supply chain issues in short-term		2	Wipro: Will suffer from deferred and cancelled IT projects
	2	TCS: Will suffer from deferred and cancelled IT projects		2	IBM: Will suffer from deferred and cancelled IT projects
	2	Samsung: Affected by supply chain issues in South Korea		2	NVIDIA: Suffers from supply chain disruption, product launch uncertainty with events cancelled
	2	Intel: High demand for chips; supply chain issues in short-term		2	Capgemini: Will suffer from deferred and cancelled IT projects
	4	VMware: Significantly boosted by the shift to cloud		1	SAP: Will suffer from deferred and cancelled IT projects



The hyper-digital imperative of COVID-19 has put the spotlight on the telecom sector

The response of the industry has been swift and effective, although signs of a global economic downturn bring new challenges

Revenue impact

- Tier 1 Q1 2020 financial results paint a reassuring story of resilience: losses in handset sales and roaming revenue were largely mitigated by retention and convergence penetration gains in many markets.
- Signs of an extended and global economic downturn could create new SME segment and bad debt challenges.
- Telcos' crisis-response focus on connectivity and business continuity has muted the anticipated sales and marketing focus on 5G services.
- Telecom infrastructure is moderately impacted.
- Many operators face near-term slowdown due to deployment, commissioning, and installation challenges that will dampen CapEx.
- An exponential rise of video streaming and cloud service traffic has created network EBITDA challenges.

Unemployment

- Telecom operators are not yet reporting job cuts or furloughs.
- However, in many companies, all new hiring is on hold.
- Less well-funded start-ups are reporting job losses.

Supply chain & demand disruption

- Apple, Samsung and other OEMs have confirmed supply chain disruptions that will impact near and mid-term 5G device deliveries.
- There has been measurable impact on the infrastructure supply chain for some vendors, but Chinese production facilities are nearly back to full strength.
- Residential telecom services traffic is at an all-time high; a sustained home working trend could change the shape of home service demand.
- Home working and e-learning is changing wide-area mobile voice and roaming demand patterns.

Being a force for good

- Many broadband service providers are waiving late bills and providing affordable connectivity to financially vulnerable homes.
- Telcos indicate willingness to provide anonymized location data to support epidemic infection spread control initiatives.
- Some OTT video suppliers are resuming HD quality after voluntarily reducing quality to alleviate network traffic congestion.

Telecom: Consumer Services & Technology COVID-19 mitigation strategies



The immediate recession will be relatively deep, but the bottom will be short, and the recovery will be fast

Even if customer demand is constrained by overall recession, technology will be valued as a way forward for consumers

Short-term strategies 6-12 months

- Maintain employee base.
- Focus on digital customer experiences.
- Study, and implement learnings about COVID-19 induced changes in consumer requirements.
- Invest in digital service innovation and product development.
- Consider new areas of consumer VAS; Cybersecurity for the home, connectivity guarantees, insurance and premium cloud services.

Mid-term strategies 1-3 years

- Anticipate and meet post COVID-19 consumer service requirement for quality home connectivity and digital experiences.
- Address supply chain issues with diversification.
- Address internal digital transformation issues where they exist.
- Solidify digital engagement with customers and partners.
- Accelerate delivery of solutions that have emerged with higher demand than expected prior to crisis.
- Accelerate plans to automate network capacity management and network operations.

Long-term strategies 3-5 years





















- Position as digital service leaders and partners.
- Leverage innovation investments made during downturn to transform product lines.
- Make enhanced humanitarian support and proactive community engagement a permanent part of corporate policy.
- Establish rules for proper use of smartphones in pandemic tracing and other public emergencies.

Telecom & Technology COVID-19 thematic score



The diversity of the sector means there are significant winners and losers

Telecoms to perform better than technology in the short-term, particularly large incumbents

	1	Apple: Significant exposure to Chinese supply chain		2	Cisco: Cut-backs on IT infrastructure spending in the short-term balanced against increases in areas such as security and collaboration
	2	Microsoft: Warned investors that revenues will miss earlier forecasts		1	Oracle: Will suffer from deferred and cancelled IT projects
	3	Alphabet: Advertising will be hit; cloud and other services will mitigate impact		2	China Mobile: Consumer retail and call center channel sales hit; 5G and AI app acceleration drive will help mitigate impact
	4	Amazon: ecommerce sales soaring		4	Salesforce: Increased use of cloud services and remote working
	4	Alibaba: ecommerce sales soaring		2	Accenture: Will suffer from deferred and cancelled IT projects
	2	TSMC: High demand for chips; supply chain issues in short-term		3	Broadcom: Rescinds guidance on uncertainty worries. Questions H2 rebound
	3	AT&T: Consumer retail and call center channel sales hit; enterprise and IT cloud strength will mitigate impact in the short term		2	IBM: Will suffer from deferred and cancelled IT projects
	2	Samsung: Affected by supply chain issues in South Korea		2	Qualcomm: Weakened demand for 5G in the short-term
	2	Intel: High demand for chips; supply chain issues in short-term		1	Huawei: Weakened demand for 5G in the short-term. Exposure to China market
	3	Verizon: Digital channel strength mitigates retail impact; enterprise and IT cloud strength provides further insulation in the short term		1	SAP: Will suffer from deferred and cancelled IT projects

Wealth Management COVID-19 impact assessment



Wealth managers are adapting to remote working while managing clients at a key moment of truth: portfolio losses

Though profits will be down across the board, wealth management will fare better than other banking sectors more exposed to credit risk

Revenue predictions

- Execution-only revenue will increase as clients reposition portfolios out of equities benefiting those with large brokerage operations.
- AUM levels will be down massively leading to a short-term reduction in recurring stable revenue.
- Past experience with the GFC suggests the second half of 2020 will be more challenging than the immediate crisis period.
- Revenue is expected to decline, though no wealth manager should be sent into a loss as commissions and bonuses similarly fall.
- On average, we expect a 15% reduction in revenue over the course of 2020 compared to the strong results of 2019. Much of the red ink in reserving for credit losses seen at retail banks will be avoided.

Unemployment

- Wealth managers and banks are pledging not to reduce headcount, adding to running costs during crisis.
- Hiring of new advisers, the key method for expansion in private wealth will be disrupted, negatively impacting net inflows.
- Retail investors are likely to run down savings as lockdowns prevent economic activity and unemployment bites into cash flow.

Supply chain & demand disruption

- Markets, after their initial drops, have proven volatile with wild swings that make timing investments difficult.
- Advisers formerly dependent on face-to-face meetings must adapt to home working and managing concerned clients remotely. TD Ameritrade has launched a series of webinars to help its advisers adapt.
- Adviser efficiency, previously rising, will decline. Training in newly rolled-out digital tools like BNP Paribas Wealth Management's new Client Experience program is key to mitigating this decline.

Sector-specific stimulus programs

- Quantitative easing will boost asset prices long term as per the global financial crisis. The flood of 0% or near 0% cash is forcing a rethink of leverage.
- Emergency early withdrawals from pension/superannuation are draining assets from the sector at bad valuations.

Being a force for good

- Sector helping high profile donations, notably Jack Dorsey's \$1bn gift.
- Independent financial advisers and major brands like Raymond James are at the forefront of local fundraising for hospitals and community services.

Wealth Management COVID-19 mitigation strategies



The immediate recession will be deep, the bottom will be short, the recovery will be drawn out

Wealth managers will need a sustained investment in digital client interactions

Short-term strategies 6-12 months

- Invest in collaboration and workflow tools to maximize efficiencies.
- Redirect headcount to growth areas.
- Improve digital distribution channels.
- Improve digital and remote client interaction channels.
- Minimize client damage by offering liquidity and credit support.
- Cater to nervous investors with structured products.
- Highlight capabilities in tax-loss harvesting.
- Ensure client portfolios are positioned to minimize the effects of market volatility.

Mid-term strategies 1-3 years

- Position client portfolios to capture market upturns.
- Improve or develop digital wealth management capabilities.
- Invest in regional offices and distributed working arrangements outside of hotspots.
- Co-locate private wealth suites at retail branches to allow for continued operation into possible intermittent lockdowns.
- Develop ESG and SRI products with investments in pandemic prevention and epidemic response.
- Acquire choice books of clients from players rationalizing their footprint.

Long-term strategies 3-5 years

- Target wealth in markets with effective epidemic responses.
- Ensure contingency plans for disaster response.
- Ensure advisers can extend emergency credit to investors in a safe and timely manner.
- Invest in digital distribution.
- Cut personnel costs and ensure variable remuneration figures more prominently in the cost base.

Wealth Management COVID-19 thematic score



Both the world's largest wealth market, the US, and its key growth region, Asia Pacific have been hit hard damaging the industry across the board
Short term pain will be felt by all wealth managers but longer term those with the most diversified and digital footprint will benefit

	2	UBS: All key markets, including Swiss center hit, inflows will recover first in Asia, where it has been building its presence		3	China Merchants : China focus will see inflows recovery earlier
	1	Bank of America Merrill Lynch: large US focus but New York and Miami centers		3	HSBC: Profit engine in Greater China and wider Asia will recovery early but Europe and Americas will drag
	1	Morgan Stanley: large US focus, advisor base and New York headquarters		3	Bank of China: Early exit from crisis by Greater China
	3	Credit Suisse: Swiss center hit but growth in Asia and limited US exposure		3	LGT: More AUM in Asia Pacific than Europe, non-Swiss headquarters
	2	JP Morgan: Large US focus and New York headquarters		3	DBS: ASEAN and Greater China focus
	2	Citigroup: Diversified global footprint but New York center		3	OCBC: ASEAN and Greater China focus
	1	BNP Paribas: Large presence in Italy and France; only partially mitigated by new suite of Digital Tools.		4	Betterment: Solely US presence but net inflows & tax loss harvesting a draw
	2	Goldman Sachs: New York based giant will suffer productivity losses.		5	Wealth Simple: Diversified footprint in Canada, Europe and the US
	2	Julius Baer: Switzerland hard hit but global footprint		4	Personal Capital: US focus but California base
	2	Pictet: Switzerland hard hit but global footprint		5	Wealthfront: US focus but strong growth in account openings

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