



Coronavirus (COVID-19) Executive Briefing

Understanding the COVID-19 outbreak, its impact on the economy, and implications for specific sectors

March 17th, 2020



- The coronavirus (SARS-CoV-2) outbreak, dubbed COVID-19, is first and foremost a human tragedy, affecting millions of people globally.
- Minimising the humanitarian cost of this pandemic and effectively solving the challenges posed by COVID-19 needs to be the top priority for all.
- However, it is important to note that the virus is having a growing impact on the global economy. This report is intended to provide business leaders with an initial perspective on the current situation, the potential economic impact, and implications for specific sectors.
- This is a highly complex, uncertain, and fast moving situation. This report reflects our perspective as of 16 March, 2020, although the outbreak is moving quickly, and some of the perspectives in this article may fall rapidly out of date.
- We are updating our research daily as the outbreak evolves, and are already helping our clients to:
 - Stay up-to-date with dynamic, real-time COVID-19 Dashboards
 - Understand, monitor, and develop responses to COVID-19 with strategic playbooks
 - Understand the business implications of COVID-19 with detailed sector-specific research reports
 - Keep decision-makers informed with the latest insight from expert briefings
 - Benefit from tailored, high-impact consulting services



1 COVID-19 Overview

- The contagious coronavirus, named SARS-CoV-2 (formerly 2019-nCoV), which broke out at the close of 2019, has led to a medical emergency across the world, with the World Health Organization officially declaring the novel coronavirus a pandemic on 11 March 2020.
- The virus has now spread to 155 countries/regions with over 180,000 confirmed cases, with its spread outpacing other major infectious outbreaks from the past.
- Alongside this backdrop, the digital age has seen the spread of COVID-19 play out on the web and social media, with associated traffic rising rapidly since Feb-25th.
- Despite massive efforts, the first vaccine will take at least a year to develop, with both antivirals & vaccines being developed independently and through major industry collaborations.
- However, only a handful of companies have vaccine candidates ready to move into human testing.

2 Economic Impacts

- Fears surrounding the impact of COVID-19 have already significantly impacted the world's top economies, with key markets across the globe losing 20-50% of their value year-to-date.
- Many economists and institutions have cut their forecasts, with consensus global GDP growth currently at 2.6% for 2020, and many experts predicting the potential onset of recessionary environments.
- In attempt to curtail this humanitarian and economic crisis, governments across the world are now responding to the threat of COVID-19, with increasingly aggressive measures.
- Global companies are also concerned about the rising risk of COVID-19, with thousands of the world's leading companies explicitly mentioning its impact on their business in their latest company filings.



3 Sectoral Impacts

- The implications for specific sectors are broad and diverse, with many of the world's largest sectors facing immediate impacts, as well as long-term uncertainty.
- For example, the Automotive sector in China has been hit significantly, with sales of light vehicles down 80% year-on-year in February, 2020.
- Travel & Tourism has also been one of the hardest hit sectors, with travel restrictions imposed by governments across the globe are limiting people's ability to travel even if they retain the desire to do so.
- As a result, travel insurers are looking to limit their exposure by either modifying policy terms to exclude travel disruption clauses or like LV= has done in the UK market, or put a hold on the selling of policies.
- GlobalData's recent US Consumer Survey (March 2020) also suggests a significant consumer response to the COVID-19 outbreak, with 61.8% of shoppers taking at least one action to reduce exposure and prepare for potential shortages.
- As governments and healthcare systems actively grapple to contain the spread, there are heightened demands for hospital capital equipment globally, with Germany, Italy, US and others embarking on urgent procurement of 10's of thousands of ventilator machines, plus other ICU-associated equipment.
- Whilst, the UK is actively consulting with the Defence, Automotive, Aerospace and Allied Engineering sectors, issuing effectively Urgent Operational Requirements for basic ventilators, which is unprecedented in peacetime.
- All in all, it is clear that 2020 will be an increasingly complex, uncertain, and fast-moving year, with executives facing tough choices regarding how to successfully steer their business through the upcoming challenges.

COVID-19

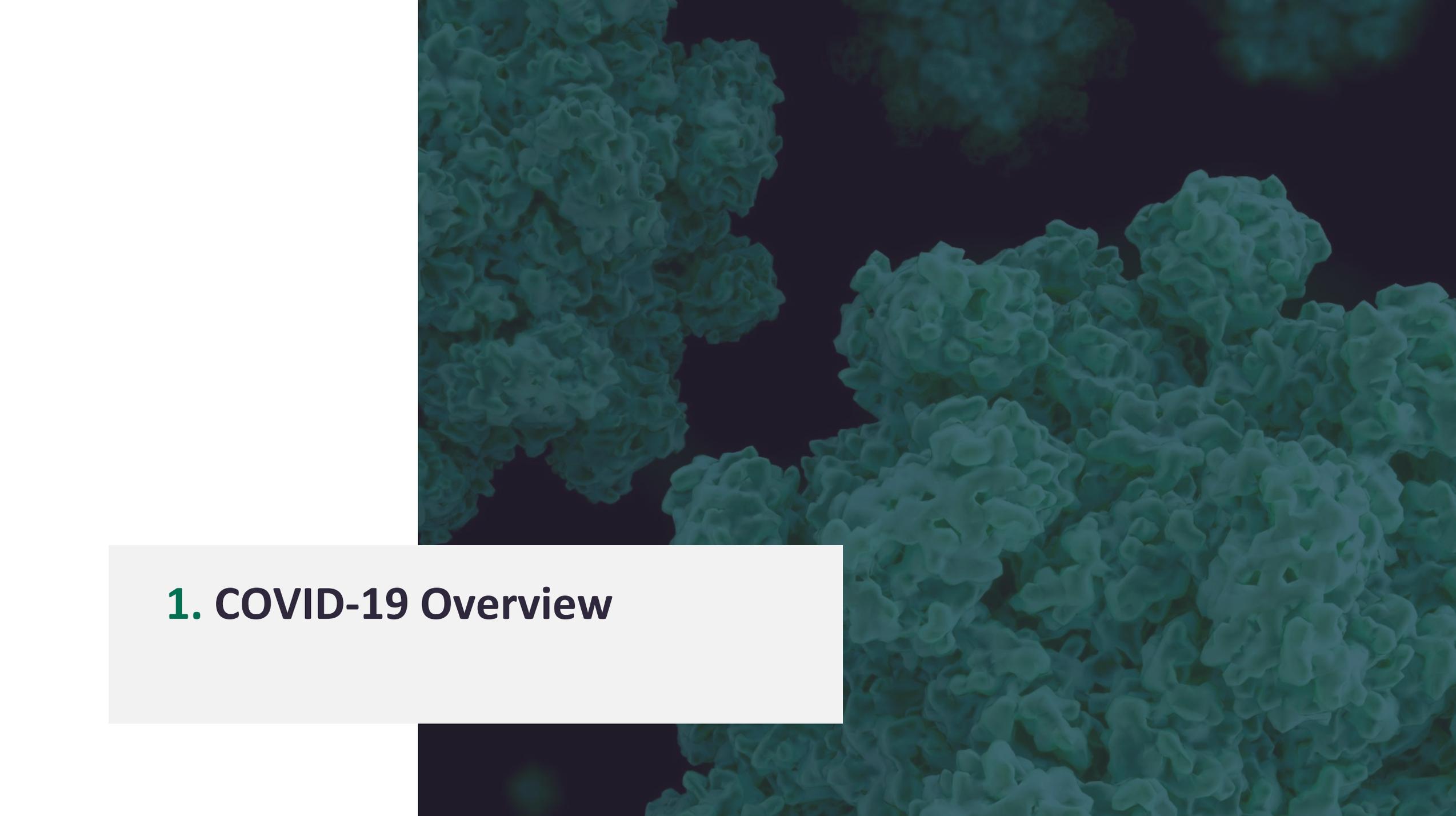
- Spread of COVID-19
- Comparison with other infectious diseases
- Progression and inflection point
- Social media discussion and public interest trend
- Efforts to find cure

Economic Impact

- Impact on top economies
- Impact on markets around the globe
- Government responses by infected countries
- Impact on GDP
- Concerns of global businesses'

Sector Impact

- Implications for specific sectors

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 Overview

COVID-19 cases have been confirmed in 150+ countries...



Introduction to Coronavirus

- Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as MERS-CoV and SARS-CoV
- Coronaviruses are zoonotic, meaning they are transmitted between animals and people
- SARS-CoV-2 was first reported in Wuhan, a major travel hub in China, in December 2019
- On January 13 2020, Thailand reported the first case of the coronavirus outside of China
- SARS-CoV-2 has now spread to 155 countries/regions with over 180,000 cases being reported
- Total cases outside of China have overtaken those in China, passing ~87,000
- Even as the number of new cases in China is falling, it is increasing dramatically outside China.

Impact of COVID-19

as of 16th March, 2020



COUNTRIES/REGIONS AFFECTED

155



Countries	Confirmed Cases	Recoveries	Deaths
China	81,033	67,910	3,217
Italy	27,980	2,749	2,158
Iran	14,991	4,590	853
Spain	9,942	530	342
South Korea	8,236	1,137	75
Germany	7,272	67	17
France	6,650	12	148
United States	4,632	17	85
Switzerland	2,200	4	14
United Kingdom	1,551	21	56

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

...with its spread outpacing other major infectious outbreaks from the past



Comparison of Fatality Rates %

as of 16th March 2020



COVID-19

Countries/Regions	155
Confirmed Cases	181,546
Deaths	7,126
Fatality Rate	3.93%



SARS

Countries/Regions	26
Confirmed Cases	8,437
Deaths	813
Fatality Rate	9.64%

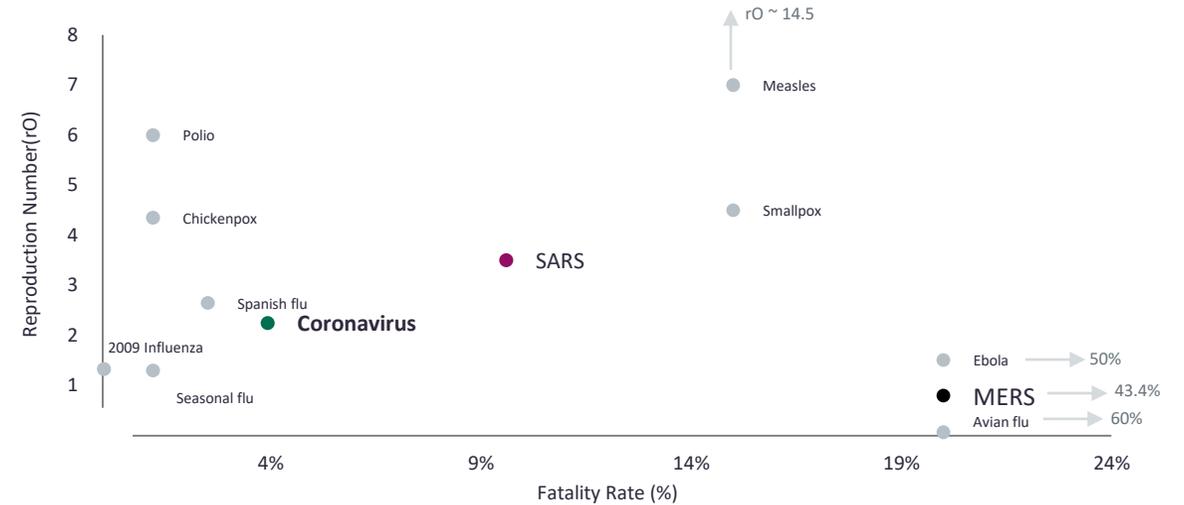


MERS

Countries/Regions	27
Confirmed Cases	2,494
Deaths	858
Fatality Rate	34.4%

Comparison of Reproduction Number (rO)

as of 16th March 2020



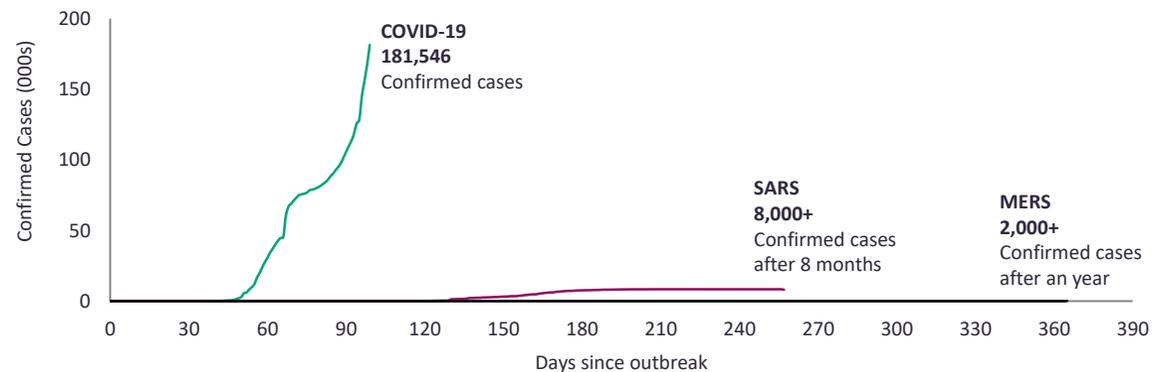
Factors impacting COVID-19 spread

as of 16th March 2020

- **Fatality rate:** About 3.93%
- **Incubation period:** 1 – 14 days, allowing the illness to go undetected and spread.
- **Reproductive number (rO):** Between 2 and 2.5.
- **Time to develop cure:** Drugs are being tested in clinical trials, but a vaccine is not yet available.

Comparison of pace of outbreaks

as of 16th March 2020

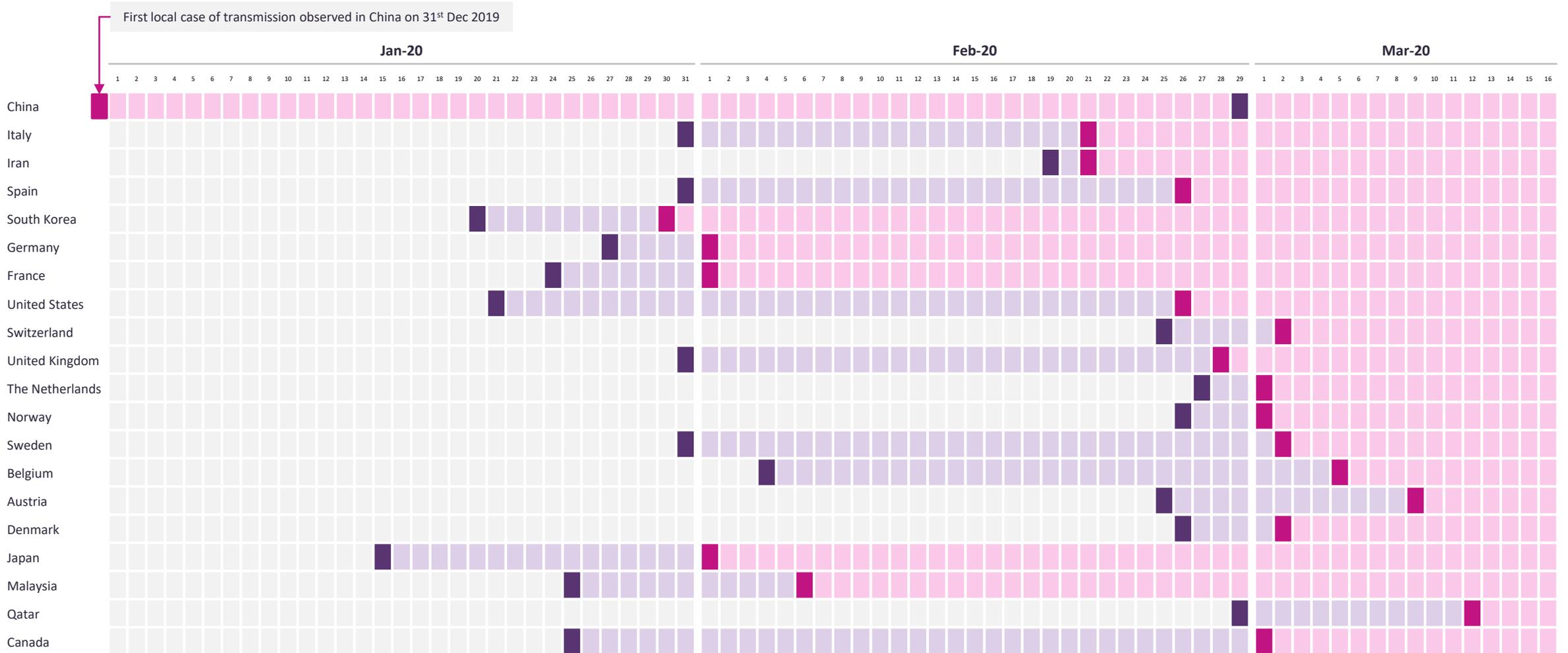


Confirmed cases rise sharply once local transmission begins within countries...



Imported & Local Transmission Dates of COVID-19

as of 16th March 2020



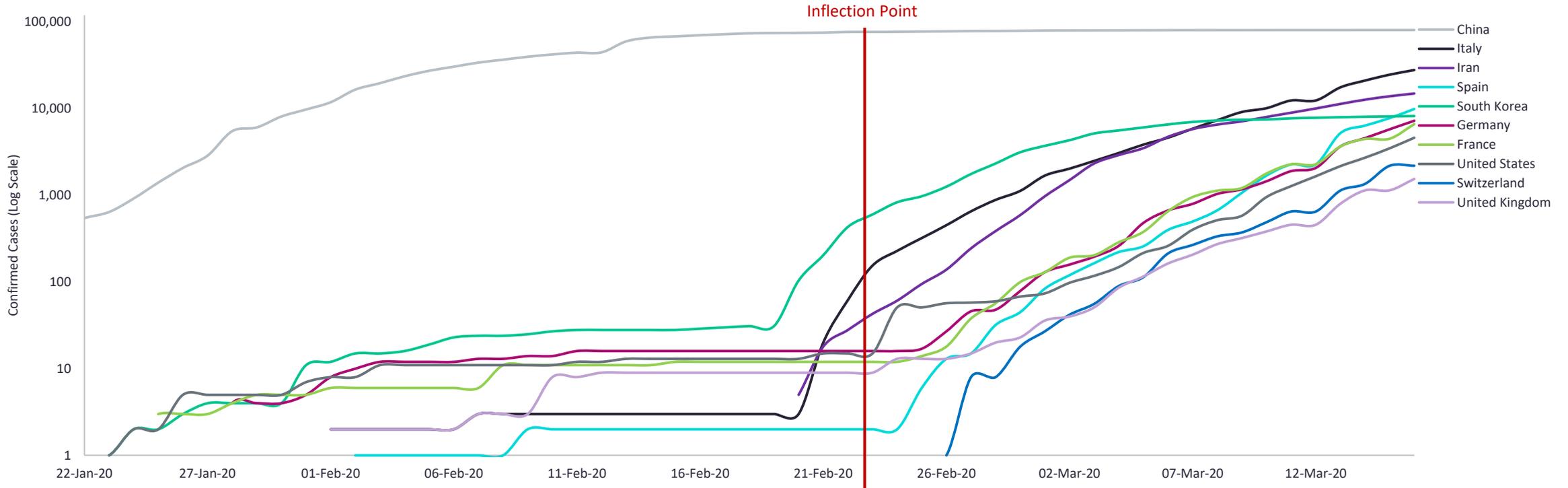
1. COVID-19 Overview

...and new case growth in the rest of the world now outpaces growth in China



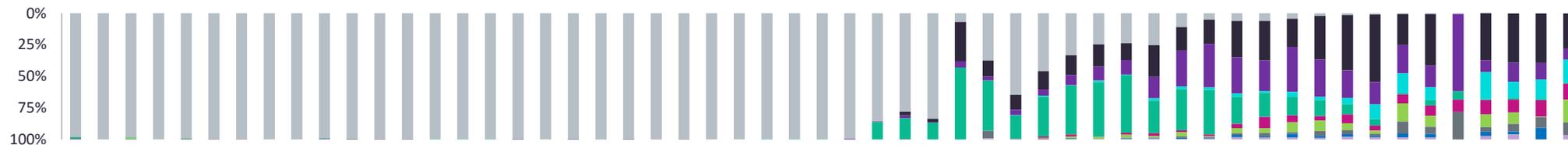
COVID-19 Confirmed Cases by Country

as of 16th March 2020



1. COVID-19 Overview

Breakdown of new cases by countries



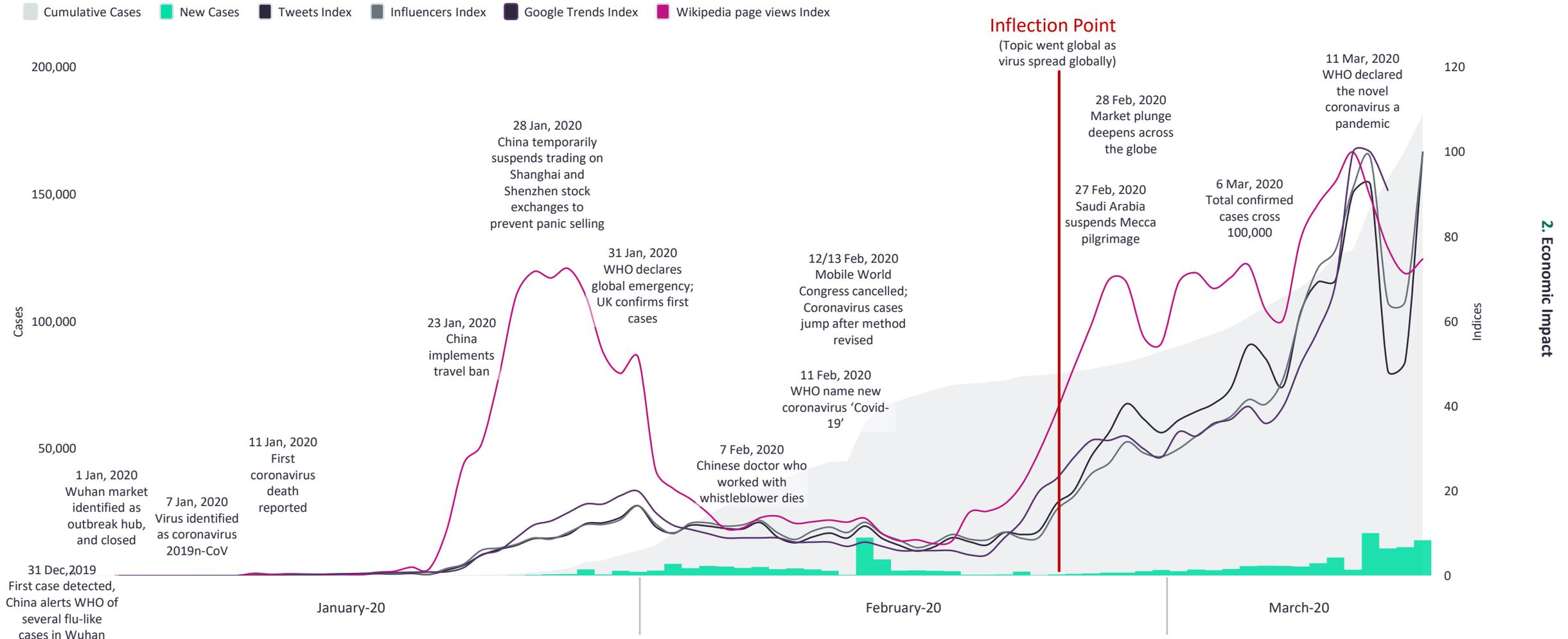
Source: GlobalData Analysis; 2019 Novel Coronavirus COVID-19 (2019-nCoV) Data Repository by Johns Hopkins CSSE;

In the digital age, COVID-19 web and social media activity has risen with cases



Impact of COVID-19 on Asset Prices

Year-to-date performance, Indexed to 100



Despite massive efforts, the first vaccine will take at least a year to develop



Summary of COVID-19 Clinical Trial Activity

as of 16th March 2020

- Multiple collaborations have mobilized, with clinical trials underway to find treatments and vaccines.
- The first COVID-19 vaccine in China is expected to be ready for clinical trials by the end of April 2020 and antivirals have already entered the clinic.
- Only a handful of companies have vaccine candidates ready to move into human testing, but more and more companies have joined the race.
- US' National Institutes of Health to start coronavirus vaccine trial on 16 March 2020 in Seattle.
- Both remdesivir and ASC09/ritonavir are set to complete Phase III studies by May 2020. Should these agents show efficacy in treating COVID-19, they could be rushed through the approval process and see approval by late 2020.

“ *It will take at least a year and a half to have a vaccine we can use* ”

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

Drug	Intervention Type	Trial Title and Phase	Trial Status
CAR-T (Shanghai) Biotechnology Co's Stem Cell Therapy for Knee Osteoarthritis and Type 2 Diabetes	Therapeutic	Novel Coronavirus Induced Severe Pneumonia Treated by Dental Pulp Mesenchymal Stem Cells (Phase 0)	Planned
Novavax's Coronavirus Disease 2019 (COVID-19) vaccine	Vaccine	Phase I Study of Coronavirus Disease 2019 (COVID-19) Vaccine (Phase I)	Planned
Inovio Pharmaceuticals' INO-4800	Vaccine	Phase I Study of INO-4800 (Phase I)	Planned
Expres2ion Biotechnologies' Coronavirus Disease 2019 (COVID-19) vaccine	Vaccine	Phase I/IIa Study of COVID-19 (SARS-CoV-2) Coronavirus Vaccine (Phase I/IIa)	Planned
Apeiron Biologics' APN-01	Therapeutic	APN01 for Severe Corona Virus Infection in China (Phase II)	Ongoing, recruiting
Cytodyn's leronlimab	Therapeutic	Phase II Study of Leronlimab (PRO-140) in Subjects with Coronavirus Disease 2019 (Phase II)	Planned
Tasly Pharmaceuticals' T89	Therapeutic	The Effect of T89 on Improving Oxygen Saturation and Clinical Symptoms in Patients With COVID-19 (Phase II)	Planned
Ascleptis's ASC09 + ritonavir	Therapeutic	Study of ASC09/Ritonavir Combined with Interferon a to Treat New Coronavirus Infection (Phase III)	Planned
Hudson Medical Group's eculizumab	Therapeutic	Eculizumab (Soliris) in Covid-19 Infected Patients (SOLID-C19) (Phase III)	Ongoing, recruiting
Gilead's remdesivir	Therapeutic	Remdesivir (GS-5734) in Participants With Coronavirus Disease (COVID-19) (Phase III)	Ongoing, recruiting

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

SARS-CoV-2 antivirals & vaccines are being developed independently...



Independently developed antivirals

as of 16th March 2020

- Gilead is developing remdesivir, an antiviral now in Phase III of trials in China/Asia and the US.
- A drug candidate developed by APEIRON Biologics named APN01 is being tested in China in a Phase I pilot trial as a treatment for COVID-19.
- 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.



Independently developed vaccines

as of 16th March 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 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.



VAXART



...as well as, through partnerships and collaborations



Vaccines developed with partnerships/collaborations

as of 16th March 2020

- BravoVax COVID-19 vaccine based on the former's MVA-VLP vaccine platform.
- iBio and CC-Pharming have formed a partnership to develop a plant-derived coronavirus vaccine based on the former's FastPharming System.
- Takis and Evvix are partnering for a coronavirus cure based on genetic technologies.
- Regeneron Pharmaceuticals and U.S. Department of Health and Human Services are to develop new coronavirus drugs based on Regeneron's VelociSuite.
- The Coalition for Epidemic Preparedness Innovations (CEPI) and GSK are collaborating to develop vaccine based on GSK's adjuvant platform.
- CEPI has requested the University of Queensland to fast track the development of a vaccine using its rapid response technology called Molecular Clamp.
- Moderna is developing an mRNA vaccine for COVID-19, with funding from CEPI, in collaboration with the Vaccine Research Center (VRC), a part of the National Institute of Allergy and Infectious Diseases (NIAID), who will be responsible for carrying out IND-enabling studies and a phase one clinical study in the US.
- CureVac received initial funding of \$8.3m from CEPI, accelerating development of a CoV-2019 vaccine leveraging its mRNA platform.
- Inovio Pharmaceuticals has collaborated with Beijing Advaccine Biotechnology Company to advance the development of the former's vaccine, INO-4800, as a novel coronavirus vaccine. The company has started testing for manufacturing.
- Tonix Pharmaceuticals has partnered with Southern Research, a non-profit research organisation, to develop a coronavirus vaccine, TNX-1800. The vaccine is a modified horsepox virus developed using Tonix's proprietary platform.

BravoVax

iBio

 北京睿诚海汇健康科技有限公司
BEIJING CC-PHARMING LTD.

REGENERON

gsk

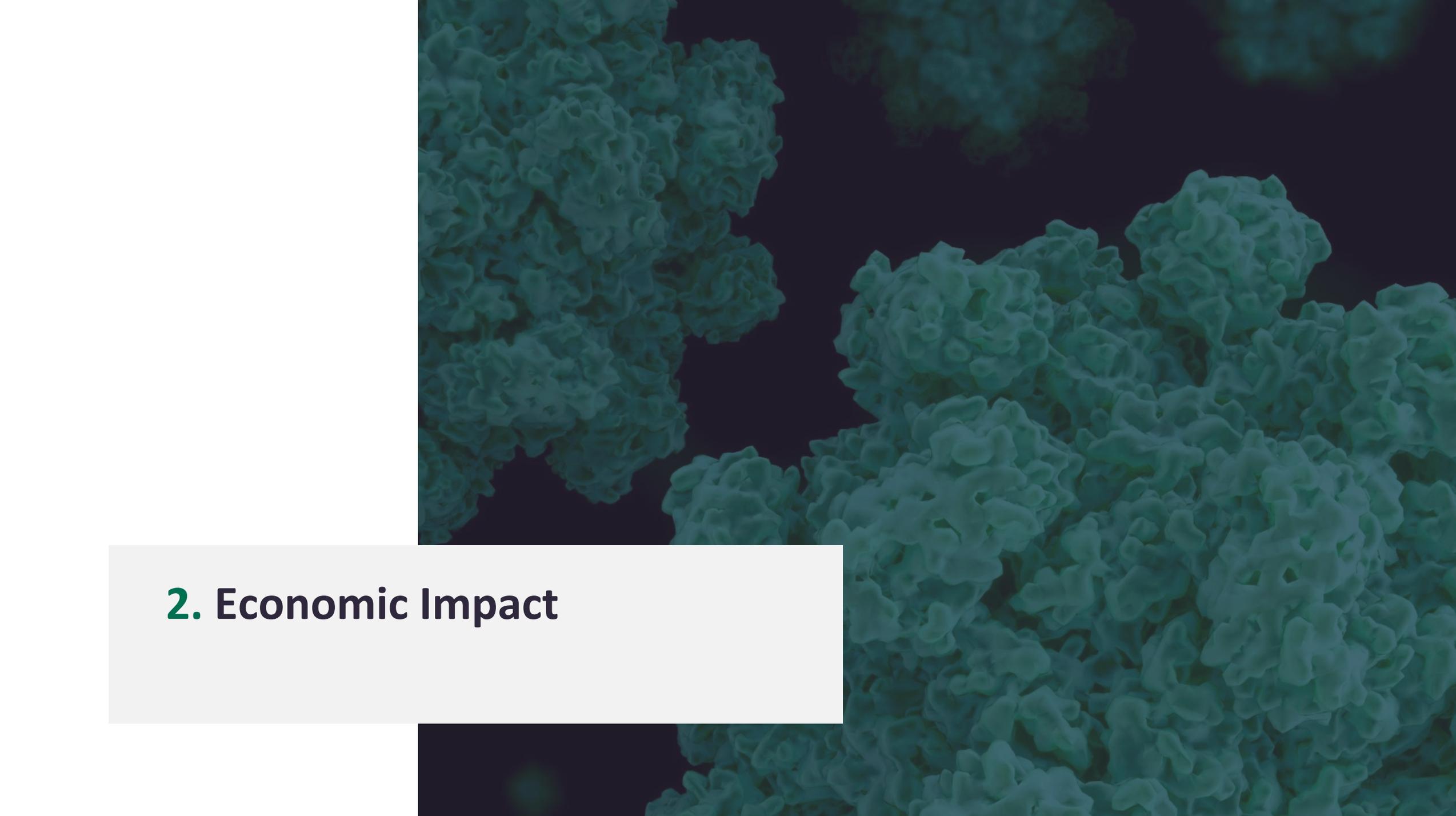
GlaxoSmithKline

moderna™
messenger therapeutics

CUREVAC

inovio

TONIX
PHARMACEUTICALS



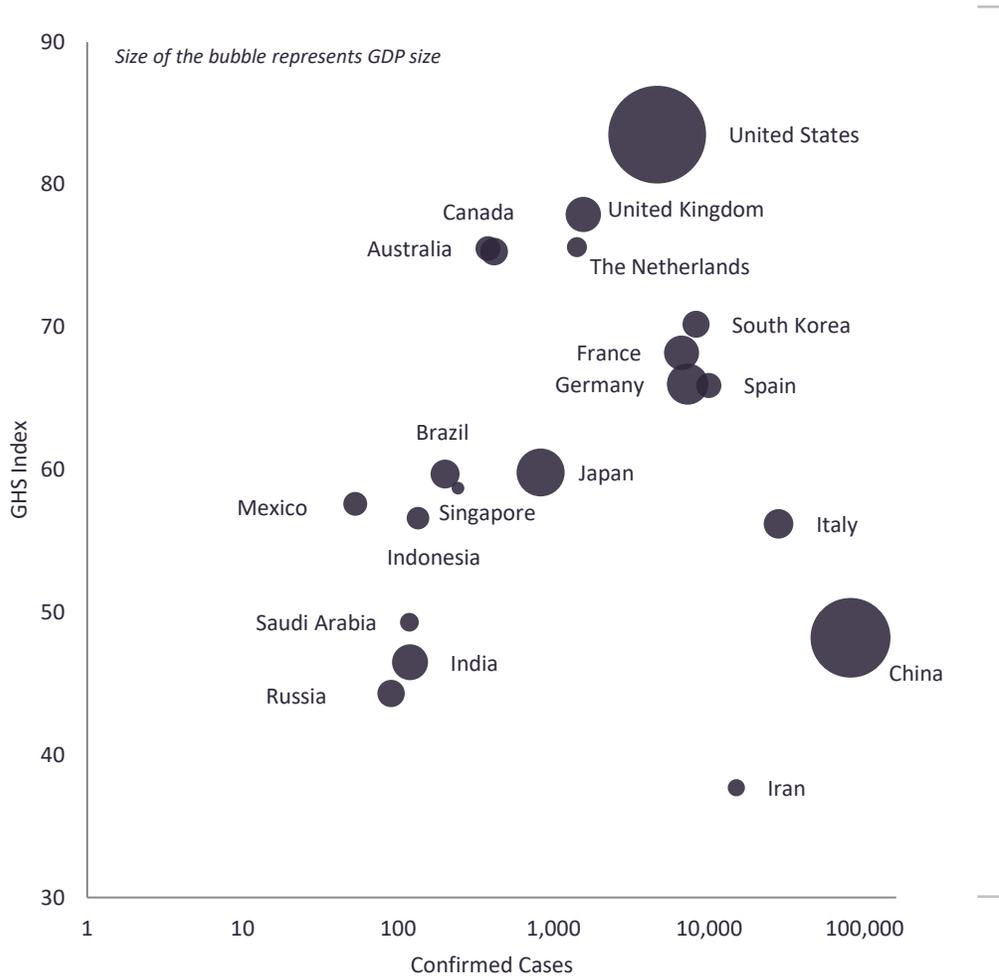
2. Economic Impact

COVID-19 has already impacted the world's top economies...



COVID-19 Confirmed Cases by Country

as of 16th March 2020



Economic Profile of COVID-19 Affected Countries

as of 16th March 2020

	Confirmed Cases	Days Since 1st Case	Fatality Rate	Cases per Million Population	GHS Index	GDP (Trillion USD)	% of Global GDP	Market Index (% Change, YTD)
United States	4,632	55	1.84%	14.0	83.5	21.45	24.8%	-29.3%
China	81,033	75	3.97%	56.3	48.2	14.26	16.5%	-8.6%
Japan	825	55	3.27%	6.5	59.8	5.12	5.9%	-28.1%
Germany	7,272	50	0.23%	86.8	66.0	3.86	4.5%	-34.0%
India	119	47	1.68%	0.1	46.5	2.89	3.3%	-24.4%
United Kingdom	1,551	46	3.61%	22.8	77.9	2.80	3.2%	-31.7%
France	6,650	53	2.23%	101.9	68.2	2.71	3.1%	-35.1%
Italy	27,980	46	7.71%	462.8	56.2	1.98	2.3%	-36.3%
Brazil	200	20	0.00%	0.9	59.7	1.87	2.2%	-38.5%
Canada	415	51	0.96%	11.0	75.3	1.72	2.0%	-26.5%
Russia	90	46	0.00%	0.6	44.3	1.66	1.9%	-24.0%
South Korea	8,236	55	0.91%	160.6	70.2	1.64	1.9%	-22.0%
Spain	9,942	45	3.44%	212.6	65.9	1.39	1.6%	-36.1%
Australia	377	51	0.80%	14.8	75.5	1.38	1.6%	-25.2%
Mexico	53	18	0.00%	0.4	57.6	1.27	1.5%	-12.5%
Indonesia	134	15	3.73%	0.5	56.6	1.13	1.3%	-25.5%
The Netherlands	1,414	19	1.70%	82.5	75.6	0.90	1.0%	-31.1%
Saudi Arabia	118	15	0.00%	3.4	49.3	0.78	0.9%	-28.3%
Iran	14,991	27	5.69%	178.5	37.7	0.66	0.8%	39.1%
Singapore	243	54	0.00%	41.5	58.7	0.36	0.4%	-22.6%

2. Economic Impact

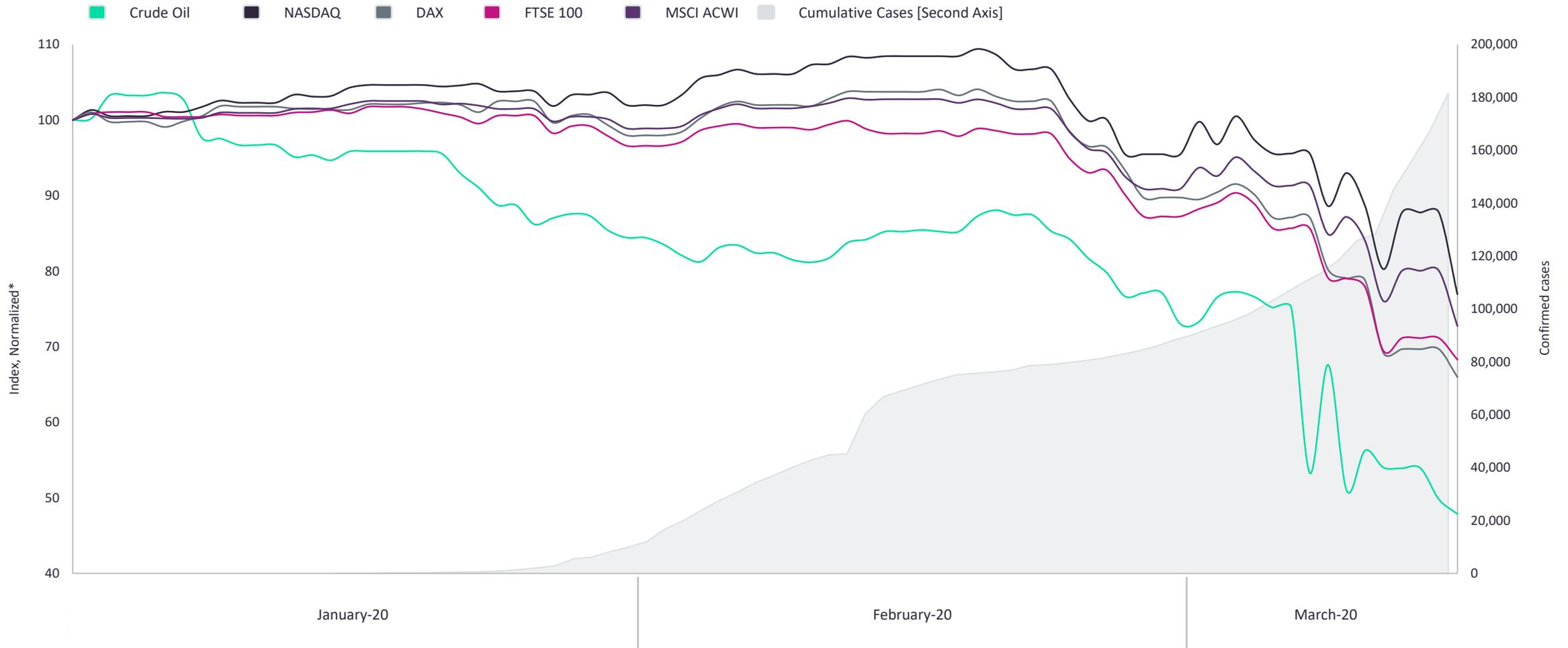
Source: GlobalData Analysis; Client & Subject Matter Expert Interviews; Press Articles; Company Announcements; 2019 Novel Coronavirus COVID-19 (2019-nCoV) Data Repository by Johns Hopkins CSSE; World Health Organization; GHS Index
 Note: GHS Index represents a country's capability to prevent and mitigate high-consequence biological events.

...with markets across the globe losing 20-50% of their value year-to-date



Impact of COVID-19 on Asset Prices

Year-to-date performance, Indexed to 100



2. Economic Impact

Estimates vary but the consensus seems to favor a recessionary environment



Estimated 2020 GDP Growth

as of 16th March 2020



Source: GlobalData Analysis; National Statistics Office; the World Bank; Broker Estimates; Twitter
 Note: Estimates on 2020 GDP growth based on multiple broker projections

Views of Economists

as of 16th March 2020

Nouriel Roubini @Nouriel · Mar 10
 There will be a recession due to coronavirus, says Nouriel Roubini

There will be a recession due to coronavirus, says Nouriel Roubini
 Nouriel Roubini, Chairman of Roubini Macro Associates and Professor of Economics at NYU's Stern School of Business, joins 'Closing Bell' to ...
[cnn.com](#)

Samuel Tombs @samueltombs · 23h
 Google searches in the UK including the term "restaurant", "cinema" or "theatre" were down 24% last week on the same week in 2019. The food services sector counts for 2% of GDP, so its downturn alone could push the economy into a recession.

Google Trends data (search volumes); 100 = 2019 weekly average
 — Searches containing "Cinema" or "theatre" (Left)
 — Searches containing "Restaurant" (Right)
 Solid line = 2020 data; dashed = 2019 data
 Latest = week ending March 15

Constantin Gurdgiev @GTCost · 10h
 + the risk of the #COVID19 pandemic turning into a new Great Recession. But it will further undermine public support for the democratic institutions and the state, enabling demagogues and opportunists, like Mr. Trump, to win in the next electoral cycle. Now, why direct income +

Mohamed A. El-Erian @elerman · Mar 12
 While the immediate economic hit of a 2008 FINANCIAL sudden stop is more severe, world's current cascading ECONOMIC sudden stops are longer lasting. And they can't be relieved by #CentralBanks intervening to act as intermediary.
 Bottom line: HIGH probability of a global recession

Paul Krugman @paulkrugman · Mar 9
 Mr. Market is basically saying that we're headed for permanent recession

U.S. Treasuries	
SYMBOL ↓	YIELD ↓
US 3-MO	0.284
US 2-YR	0.259
US 5-YR	0.325
US 10-YR	0.411
US 30-YR	0.649

Lawrence H. Summers @LHSummers · Mar 15
 Watch @FareedZakaria @CNN Sun 10 & 1.

There's a 85-90% chance we have a recession. You see a real breakdown of the whole mechanism of exchange on which economy depends, that in turn causes financial difficulty, that means less purchasing still & even more financial difficulty.

Menzie Chinn @menzie_chinn · 14h
 Former White House economic adviser: 'Odds of a global recession are close to 100 percent' [politi.co/39QYx7U](#) via @politico

'A matter of weeks and months': Larry Kudlow predicts short-lived coro...
 But a former White House economic adviser says chances of a global recession are "close to 100 percent"
[politico.com](#)

Nouriel Roubini @Nouriel · 1h
 Given the lousy retail sales figures for February it is now highly likely that US growth in Q1 will be negative rather than positive. So the US recession of 2020 will start in Q1 rather than Q2. Exports, capex & now consumption will be down in Q1. Recession is now a certainty!

Justin Wolfers @JustinWolfers · Mar 16
 Takeaways from Powell's presser:
 1. The economy will shrink in Q2 => The recession has started.
 2. He thinks fiscal policy is the best tool for dealing with the corona-related recession.
 3. The Fed is focused on providing liquidity to financial markets (& can do more of this).

2. Economic Impact

Governments across the world are now aggressively responding to the threat



China

Confirmed cases	81,033
Deaths	3,217
Recovered	67,910

Government measures

- Lockdown of Wuhan and nearby cities; over 50 million people under a mandatory quarantine.
- Built two dedicated hospitals in Wuhan in just over 1 week and converted various venues into make-shift hospitals.
- Health care workers from all over China were sent to the outbreak's center.
- Aggressive "social distancing" measures implemented in the entire country.
- Stringent traffic control measures such as suspension of public transportation.



Italy

Confirmed cases	27,980
Deaths	2,158
Recovered	2,749

Government measures

- Nationwide lockdown to avoid spread to other parts of the country.
- All retail trade is suspended, save for essential goods and banking, financial and insurance services.
- All gatherings of people are forbidden, and the movement of people is restricted.
- Banned travel that isn't for essential work, or for health or family emergencies.



Iran

Confirmed cases	14,991
Deaths	853
Recovered	4,590

Government measures

- Limit travel between major cities.
- Halted Friday prayers in urban centers across the country.
- Closed schools and universities and suspended large cultural and sports events.
- Restrictions in the holy city of Qom, with visits only allowed with face masks and hand-sanitizing gels.
- Announced door-to-door testing and plans to mobilize soldiers and volunteers to fight the epidemic.



South Korea

Confirmed cases	8,236
Deaths	75
Recovered	1,137

Government measures

- Raised the coronavirus alert to the highest level, banned large gatherings, and shut down educational institutions and other public spaces.
- Recommended employers to issue either 14 days of leave of absence or work from home to employees returning from China.
- Passed new medical laws allowing it to prosecute coronavirus-suspected people who don't co-operate to get tested for the nCoV.
- Expanded screening measures to arrivals from all European countries.
- Preparing to announce measures to address funding stress and market volatility.



Germany

Confirmed cases	7,272
Deaths	17
Recovered	67

Government measures

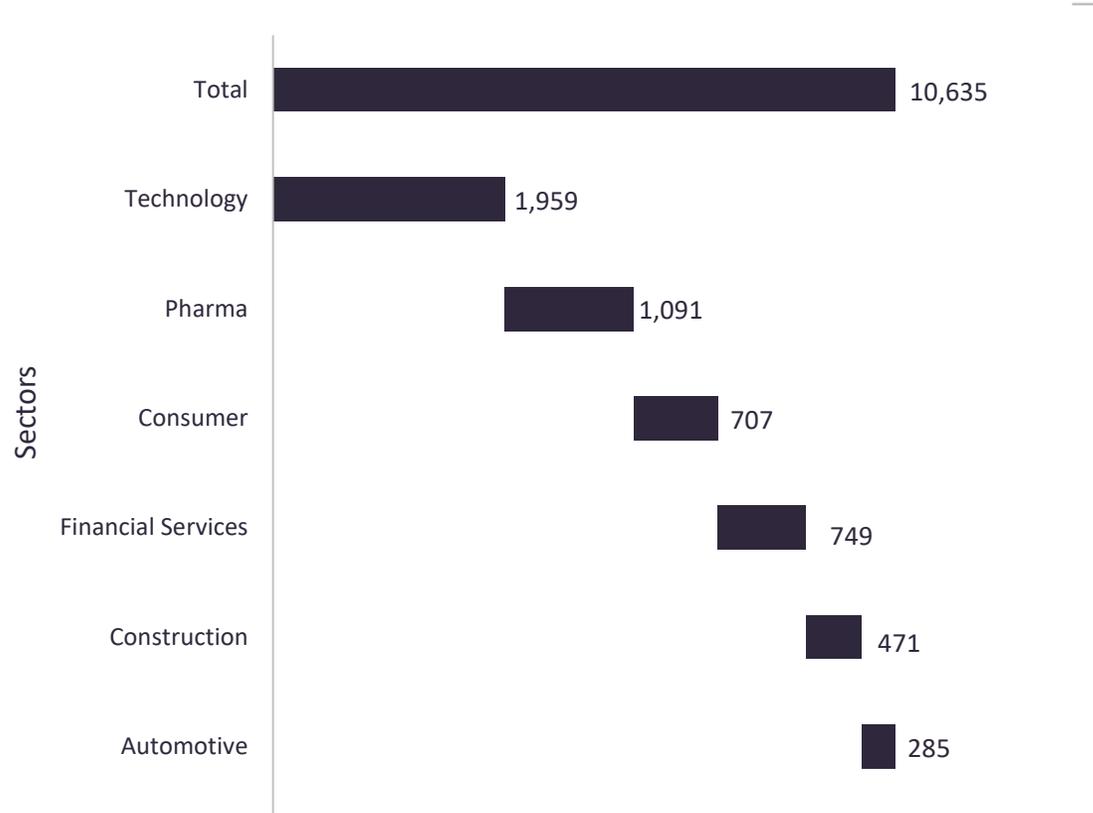
- Temporarily closed several schools and workplaces .
- Cancelled many upcoming events including Leipzig Book Fair and ITB Berlin.
- Tracking travelers within the country and ensuring easy contact in case of outbreak.
- Closed borders with France, Switzerland, Austria, Denmark and Luxembourg from 16 March 2020.

Global companies are also concerned about the rising risk of COVID-19



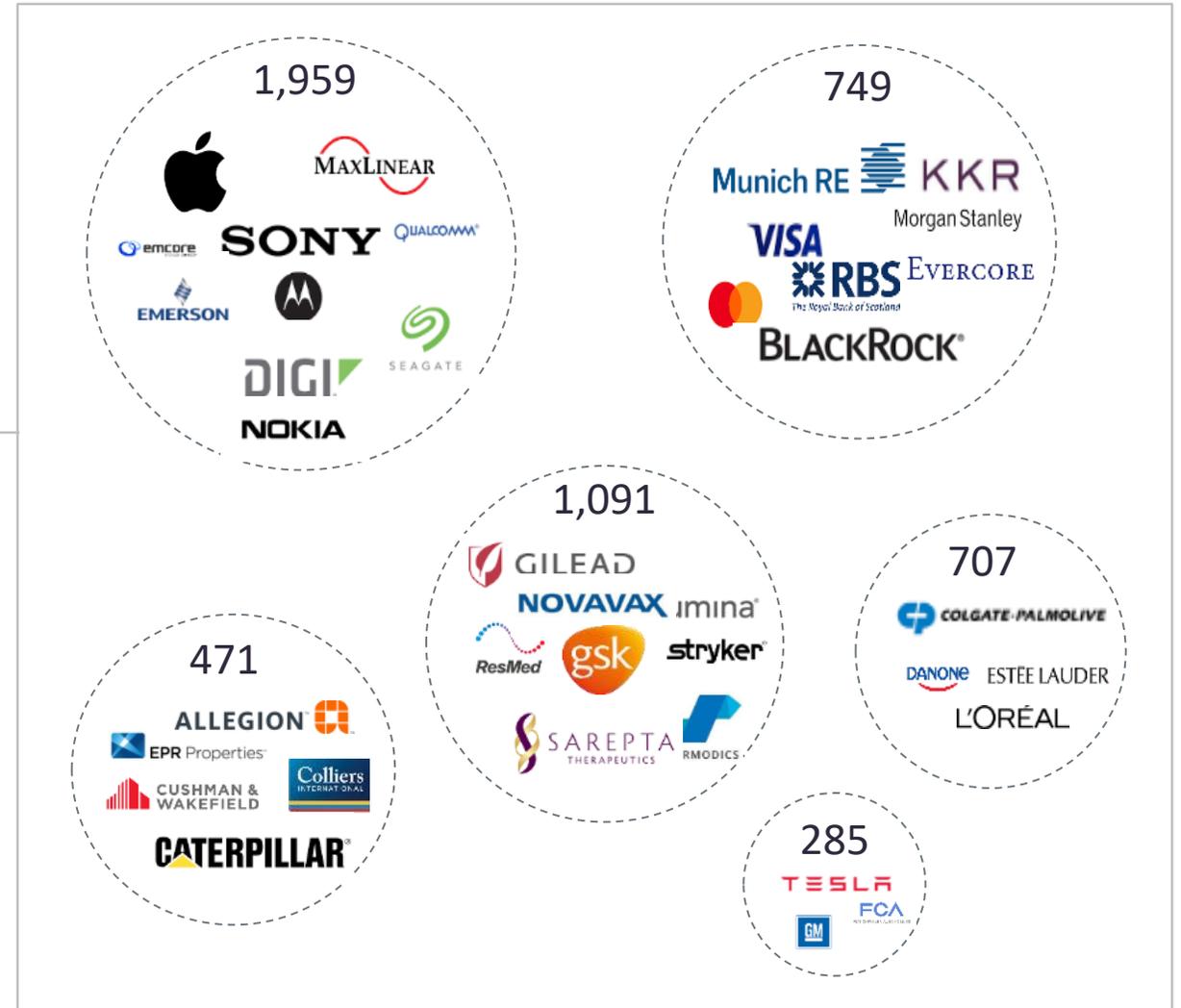
COVID-19 is increasing as a company risk factor across sectors

Year-to-date mentions of "Coronavirus" related-terms in company filings, as a risk factor



Major companies have mentioned COVID-19 as a risk factor

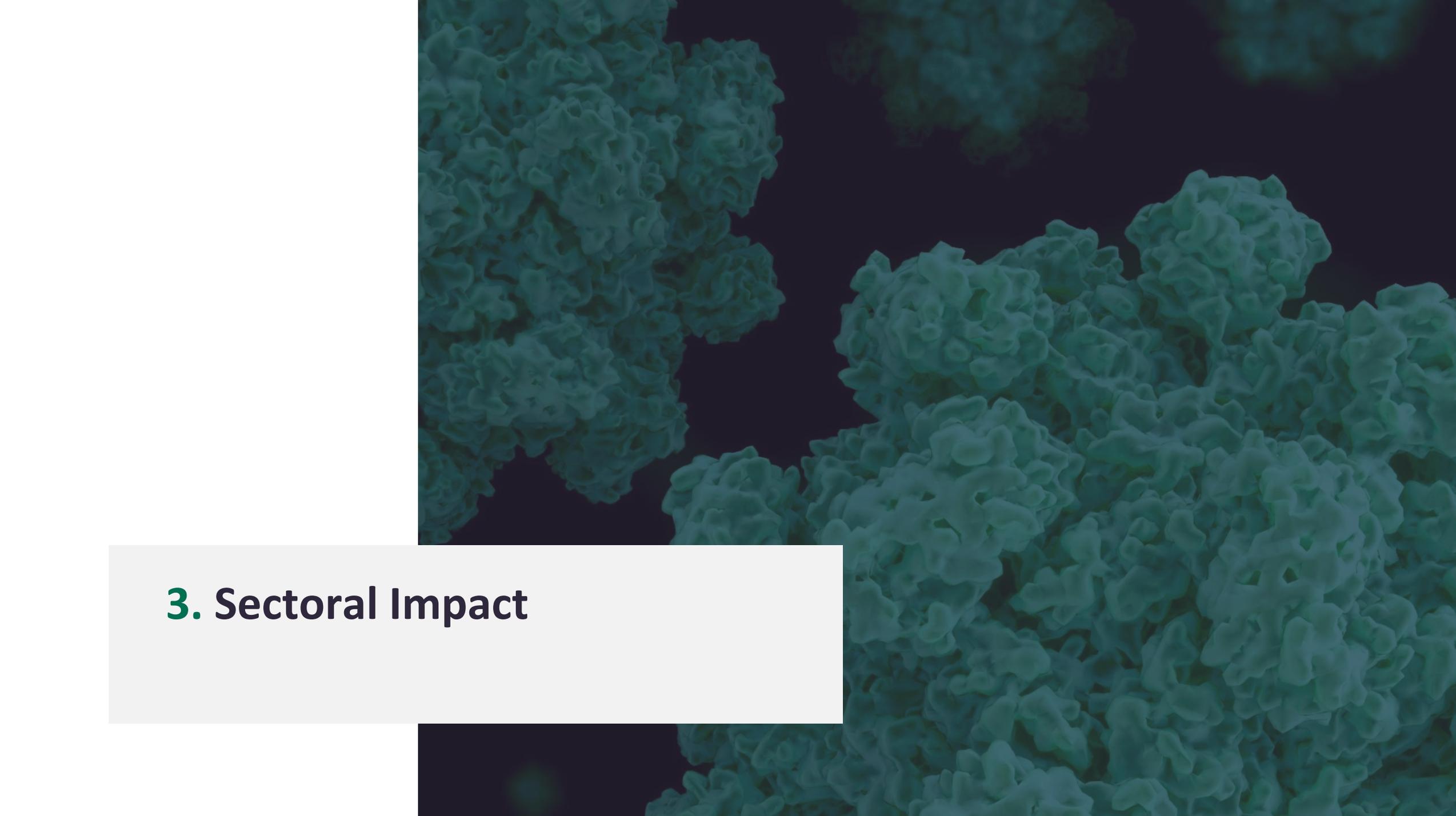
Year-to-date mentions of "Coronavirus" in Q4 Result announcements



2. Economic Impact

Source: GlobalData Analysis; Company Announcements; SEC

Note: The following key words were included in our search of SEC filings: *Coronavirus; covid; novel coronavirus; corona virus; corona virus outbreak; SARS-CoV; Coronaviruses; wuhan virus; 2019-nCoV; corona outbreak*



3. Sectoral Impact

“

All eyes will now be on China for first indications of how the industry can recover, as the country itself restarts operations and returns to some semblance of normality.

”

Sector Impact: Automotive



COVID-19 Impact Assessment

as of 16th March, 2020

- Sectoral concerns have moved on from being centered on supply chain disruption emanating from the source of the virus's inception to the demand side of the equation.
- Initial reports revealed the deep-seated complexity of supply chains as production at FCA and Hyundai factories in Europe and South Korea was disrupted.
- However, given the size and importance of the Chinese market to the industry, global light vehicle sales were severely dented in January 2020:
 - A 33.1% fall in China sales in January, brought a 13.9% global fall compared to the previous January
 - Amid tightening restrictions, February's sales in China took a vertiginous 80% fall.
 - With worldwide efforts to contain the virus, it is expected that weak sales figures for February will bring further decimation come the end of March.
- No parts of the automotive value chain will be undamaged in the short-term, with some more exposed than others, but only marginally so - the question moves on as to whether lost volume and value can be recaptured or if it's gone forever.

GlobalData Analyst View

“

Relaxing restrictions /obligations on financial products would be one way banks could serve their customers during this period

”

COVID-19 Impact Assessment

as of 16th March, 2020

- Consumers will shift from in-store payments to online payments in order to avoid exposing themselves to disease vectors, with Quantum Metric suggesting that US retailers were seeing over 50% growth in weekly revenue from e-commerce compared to Q1 of 2019.
- This will provide a short-term boost to online payments specialists that may kick off a longer-term period of e-commerce growth as previously unengaged consumer segments come to rely on online shopping more for day-to-day purchases, having had to adopt it while under isolation or quarantine:
 - For example, the SARS outbreak in the early 2000s has been credited with giving Chinese e-commerce a large boost while consumers were staying at home, and Alibaba used the crisis as an opportunity to build the Taobao online marketplace that was a cornerstone of their growth in the last 20 years.
- Longer term, the shift to digital channels also represents an opportunity to encourage a more permanent migration if banks are able to facilitate basic ‘how to’ education content to customers:
 - Bill payments would be a high priority for some consumers due to the potential for late fee charges, and according to GlobalData’s Banking & Payments survey 2019, 18% of consumers globally prefer to pay regular bills via the branch.
- Additionally, when shopping in-store, consumers will shift from cash-based payments to digital payment tools, particularly contactless cards and mobile – again, to avoid exposure to disease vectors:
 - The People’s Bank of China is currently disinfecting and destroying physical cash to limit the spread of the disease through banknotes, while contactless is being touted as a means of limiting exposure to the virus when transacting in-store.
 - Australia’s small businesses are rapidly going cashless in response to the outbreak, according to ZDNet.
- More broadly, COVID-19 will accelerate the shift to cashless payments overall in developed and developing markets, and particularly among consumers who have access to electronic payment tools but favour cash over them:
 - In 2019, over 9 billion payments were made using cash in the UK according to GlobalData’s Payment Instrument Analytics; this was forecast to fall to just over 8 billion this year but the coronavirus crisis will likely cause an even sharper decline.
- Banks could see a rise in non-performing assets particularly amongst sole traders and small businesses where cash flow is tight, however, it is also an opportunity for banks to cement customer relationships as the hiatus in business activity represents a ‘moment of truth’:
 - Banks such as Lloyds, NatWest, TSB and RBS have increased credit card limits for some consumers, permitted withdrawals from fixed term-saving products and offered repayment holidays for some mortgage holders, according to the Guardian.

Source: GlobalData Analysis; Client & Subject Matter Expert Interviews; Press Articles; Company Announcements; Quartz; CNN

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Governments are likely to accelerate the disbursement of funds for infrastructure investment to prop up the industry and support the economy, and the monetary authorities will cut interest rates.

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Sector Impact: Construction



COVID-19 Impact Assessment

as of 16th March, 2020

- Given the severe disruption that has been wrought on China and other leading economies worldwide following the outbreak, GlobalData has revised down its forecast for global construction output growth in 2020 to 2.3% (from 3.1% in the Q4 2019 update):
 - The current forecast being based on a relatively positive central scenario that the outbreak is contained across all major markets by the end of the second quarter, further cuts to the growth forecast are likely.
 - With quarantine measures and travel restrictions being imposed across many major economies, the supply shock is expected to dampen economic activity, and construction is being hit directly.
 - In cities and regions facing complete lockdowns, major projects are being halted. Even in areas where travel is not restricted, construction works are being disrupted by limited supplies of key materials and equipment.
- Reflecting these issues, the direct impact of the coronavirus on construction has been extensive in the worst-hit countries, namely China, Italy, South Korea and Iran:
 - Data from China shows that in January-February fixed asset investment in infrastructure contracted by 30.3% and in real estate development it was down by 16.3%.
- More generally, the construction industry will be heavily affected by the expected widespread disruption to economic activity and a likely drop in investment:
 - Planned projects, particularly in commercial and industrial buildings sectors, being delayed or cancelled as firms review their expansion plans.
- Offsetting this impact, governments are stepping up plans to accelerate the disbursement of funds for infrastructure investment to prop up the industry and support the economy:
 - Policymakers have already begun taking significant measures to deal with the shock, announcing emergency relief packages and cutting official interest rates.

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There will also be an acceleration of lifestyle trends, such as working from home, entertaining within the home, and greater emphasis on personal and household hygiene.

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Sector Impact: Consumer



COVID-19 Impact Assessment

as of 16th March, 2020

- The most visual and headline-grabbing impact of COVID-19 on FMCG has been the spectacle of consumers panic-buying food and drink, toilet roll, and other essential personal care and household items such as hand sanitizer in a bid to cope with the prospect of self-isolation and potential quarantine measures:
 - The British Retail Consortium issued advice to UK consumers this week asking them not to stockpile items in order to ensure fair access and availability of all products.
- While this has led to some short-term on-shelf shortages, COVID-19 has not led to widespread disruption of the FMCG supply chain, and it is very unlikely that it will grind to a complete halt.
- There is some risk of interruption to the worldwide movement of goods as countries introduce quarantine measures which may temporarily halt the production of goods, and the intensification of travel restrictions and controls at ports may slow down import/export activity.
- However, governments and businesses have been on the front foot to design contingency plans to ensure the ongoing supply of essential items:
 - The US government announced this week that it has been working with federal and local leaders to ensure that US supply chains remain strong.
- At a consumer behaviour level, demand for online orders and deliveries has gone up as people seek to avoid crowded spaces.

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Going forward, delivery companies are expected to benefit from consumers unwilling to venture out and avoiding the close proximity of restaurants.

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Sector Impact: Foodservice



COVID-19 Impact Assessment

as of 16th March, 2020

- Coronavirus has already had a huge impact on Q1'2020 earnings in foodservice across affected countries. With Starbucks closing up to half of its stores for roughly a month during China's coronavirus crackdown.
- Starbucks have since rolled out similar measures in other markets, with even lesser hit countries, such as Canada, moving towards a 'to-go' mode and removing seating from their stores.
- Impact so far has largely been driven by government intervention, with quarantines and outlet closure particularly apparent in China and Italy, who have taken aggressive action to stem the spread of the virus within their borders.
- Whilst China is now starting to re-open for business, the impact is starting to hit countries such as the US, UK, France and Germany, with social distancing measures moving into place, and restaurants and bars seeing dramatic falls in footfall.
- The chief executive of trade association Hospitality UK said it was "catastrophic" and foresaw 1000's of permanent closures as a result of disruption.
- Similar initiatives are expected to increase, with "social distancing" policies expected in the coming month across even more countries in Europe and elsewhere, with Malaysia recently closing its borders following rising numbers of cases, and India cancelling new travel visas.
- Foodservice is expected to take a hit across cost and profit sector, with most channels seeing up to an entire month of lost earnings, healthcare channels are not likely to see a hugely significant increase foodservice spending, but a bump is expected.
- Furthermore, foodservice is expected to suffer separately from falling tourism, exacerbated by an increasing number of flight cancellations globally.
- However, opportunities exist going forward, with delivery companies well positioned to benefit from the COVID-19 outbreak. Restaurants should be looking to switch to focusing on delivery where possible. Indeed, players like UberEats and Deliveroo have responded quickly to COVID, introducing new 'no contact' options for delivery.

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“3 Wisemen” approaches to triaging may be seen more and more as the demand intensifies and physicians seek ethical means to allocate resources.

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Sector Impact: Healthcare



COVID-19 Impact Assessment

as of 16th March, 2020

- As the numbers of those infected with the coronavirus enters an exponential phase of growth, pressures increase on healthcare systems already under stress from this year’s flu season.
- Greatest pressures will be seen in ICUs, as demand intensifies for available beds, while Emergency Rooms and Walk In Health Centers will see increased footfall, raising the prospect of more and more frontline medical staff becoming infected with the virus.
- Emergency room physicians and pulmonologists will be expected to be most involved in the care of COVID-19 patients, with physicians from other disciplines being co-opted as necessary.
- “3 Wisemen” approaches to triaging may be seen more and more as the demand intensifies and physicians seek ethical means to allocate resources.
- Post-pandemic, there will be extra demand on healthcare resources to treat patients with long-term respiratory disease resulting from viral infection.
- GlobalData has data on the numbers of physicians, including Emergency Medicine, Public Health and Pulmonology, by US state to identify which states face the greatest resource challenges as the pandemic unfolds.
- Manufacturers dependent of elective surgical procedures and trauma procedures are concerned with diminishing surgical volumes as a result of cancelled operations and increased quarantine. They are also concerned how quickly surgeries will recover after the crisis, fearing certain surgical procedures may disappear entirely



Sector Impact: Insurance

GlobalData Analyst View

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Travel insurers are looking to limit their exposure by either modifying policy terms to exclude travel disruption clauses or by placing a temporary pause on the sale of new policies.

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COVID-19 Impact Assessment

as of 16th March, 2020

- Insurance related to business interruption is in focus due to the impact of coronavirus on business production units, but it's unlikely to have a major impact on insurers as most insurance products exclude risks arising from pandemics such as the ongoing coronavirus outbreak.
- The current health crisis is expected to drive private health insurance adoption in Asia-Pacific countries like China and India, where health insurance penetration is low standing at 0.60% and 0.25%, respectively in 2018.
 - In India, there has been a 40% increase in number of queries for new health insurance policies due to Covid-19.
 - In China, the government healthcare system has been unable to meet requirements as they do not provide adequate coverage for the cost of emergency transportation to access private facilities among others.
- Travel insurers are looking to limit their exposure by either modifying policy terms to exclude travel disruption clauses or like LV= has done in the UK market, or put a hold on the selling of policies.
 - Insurers including Aviva, InsureandGo and the Post Office have withdrawn the cover for COVID-19 claims on policies purchased post March 12, 2020 by removing the travel disruption clause.
 - RSA Canada announced that clients who had travelled to affected countries before a travel advisory was issued are eligible for medical coverage for up to 10 days from the date of formal notice.

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Big Data will play an important role both in contact tracing and in patient stratification.

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Sector Impact: Medical



COVID-19 Impact Assessment

as of 16th March, 2020

- Through the use of metagenomic next-generation sequencing (mNGS), the sequence of the novel coronavirus has been quickly identified, leading to the efficient development of diagnostic kits for real-time reverse transcription polymerase chain reaction (RT-PCR), and potential treatment against the virus:
 - GlobalData forecasts that PCR systems will be one of the fastest-growing aspects that drive the infectious disease segment of the in-vitro diagnostics space.
- The infectious disease market, currently estimated at USD\$7.6 bn, is expected to grow stably between 2019 and 2025 to USD\$8.4 bn at a Compound Annual Growth Rate (CAGR) of 2.2%.
- GlobalData also anticipates an increase in the respiratory devices market, currently estimated at USD\$6.7 bn, growing with a Compound Annual Growth Rate (CAGR) of 4.8%, driven by an increase in patients requiring respiratory support in the short and long term.
- COVID-19 will also provide opportunities for the IT industry, particularly in the areas of Big Data and Artificial Intelligence, as healthcare providers grapple with a fast-changing situation.
- New Lab tests are being quickly generated, following FDA emergency approval of tests for the CDC and New York Dept of Health, with Roche and Thermofisher receiving approvals enabling the commercial laboratories to undertake testing at a much higher rate than is possible by the public health state labs:
 - New tests are now starting to include serology tests, mainly from Chinese manufacturers, which will enable population level testing, and likely improve the false negative testing rate. Low cost rapid tests will also likely appear
 - Mologic is an emerging company that is actively collaborating on rapid tests and vaccine production, and might be considered an acquisition target
- Heightened demands for hospital capital equipment is now being felt globally, with Germany, Italy, US and others embarking on urgent procurement of 10's of thousands of ventilator machines, plus other ICU-associated equipment:
 - The UK is actively consulting with the Defence, Automotive, Aerospace and Allied Engineering sectors, issuing effectively Urgent Operational Requirements for basic ventilators, which is unprecedented in peacetime
 - Accelerated purchase or acquisition of capital equipment may lead to future deferred purchases due to an excess of equipment in use. Older equipment may be prematurely retired or mothballed, as volumes are returned to normal levels.

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Miners across the globe face supply chain interruptions with delays in equipment, parts and consumables, which will impact productivity in the near term.

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Sector Impact: Mining

COVID-19 Impact Assessment

as of 16th March, 2020

Both commodity supply and demand are being impacted by the coronavirus.

▪ **Demand Side:**

- On the demand side, lower growth in construction activity, especially in China and across Asia where a large Chinese workforce is used for projects, such as Singapore, is particularly impacting copper demand.
- China accounts for over half of the global copper consumption and demand in the country is now forecasted by GlobalData to grow by just 3.8% in 2020 as opposed to a previous forecast of 5.8% before the outbreak.
- This is based on China switching from a focus on containment to reigniting its economy, with hundreds of billions of dollars expected to be directed towards infrastructure.

▪ **Demand Side:**

- On the supply side, miners across the globe face supply chain interruptions with delays in equipment, parts and consumables, which will impact productivity in the near term.
- For example, at Rio Tinto's Oyu Tolgoi copper-gold mine, work on the construction of the underground mine has been impacted by tighter border and travel checks in Mongolia, with Arnaud Soirat, Copper & Diamonds chief executive, stating:
“It has inevitably resulted in a restriction on the movement of goods and people in the country and this is slowing down construction activity at the Underground Project.”
- The risk of infected workers also means delays to staff returning to work from overseas due to quarantine requirements and even the potential for widespread isolation of staff or temporary closures; more likely in cases with high numbers of FIFO workers, particularly if returning from countries with high numbers of infections.
- In Africa there have been two announced cases, one at AngloGold Ashanti's Obuasi gold mine in Ghana and one at Endeavour Mining's Houndé mine in Burkina Faso, where workers arriving from the UK tested positive, although neither case has prevented operations from continuing.
- As a result, some miners, such as Barrick Gold, are stockpiling inventory to mitigate disruption to output.

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Service companies are facing a tough task ahead, with squeezed margins, delayed projects, and a lurking prospect of reduced future orders.

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Sector Impact: Oil & Gas



COVID-19 Impact Assessment

as of 16th March, 2020

- Coronavirus has impacted the global crude oil demand and prices, with the WTI/Brent crude oil benchmarks already decreased by more than 50 per cent, as on mid-March, since January 2020.
- The slump in oil demand due to spread of coronavirus has been largely due to less domestic and international air travel, less seaborne trade, and less domestic transportation.
- Upstream sector will bear the brunt of the coronavirus outbreak as the falling oil prices impact production economics. The debt-ridden US shale/tight oil industry will see production decline due to the low-price environment.
- China is faced with the severest impact, leading to a drop of around 20 percent in crude oil consumption due to the shutdown of refineries and factories, and travel restrictions imposed throughout the country.
- Several oil and gas projects – and also operators companies with China exposure are looking at an unclear future. Companies are already contemplating a rethink of their 2020 capex plans.
- The service companies are facing a tough task ahead, with squeezed margins, delayed projects, and a lurking prospect of reduced future orders.
- The full impact is not known yet and it is expected that this will unfold with time, as severity of the virus outbreak grips even more countries.

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Liquid dairy choices in Asia Pacific are being affected by perceptions around hygienic dairy production and the safety of final packaging.

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Sector Impact: Packaging



COVID-19 Impact Assessment

as of 16th March, 2020

- Beyond supply chain interruption and weakening demand, two further central themes affect packs used in consumer goods.
- Firstly, consumers are displaying a “flight to trust” in terms of the brands (and packs) they purchase and the types of categories they purchase.
 - For example, liquid dairy choices in Asia Pacific are being affected by perceptions around hygienic dairy production and the safety of final packaging. The result is a preference (if product is available) for trusted brands and pack formats.
- Secondly, the “what” and “when” of consumption occasions and purchasing occasions are altering – changing the most popular pack types chosen in the most affected countries.
 - For example “on-the-go” type products and packs for foodservice distribution are seeing weakening demand as consumers minimize social interactions and travelling.
 - In contrast, bulk formats and packs suited to e-commerce distribution are growing in popularity.
- GlobalData sees these trends are more prevalent in key Asia Pacific countries currently affected by the virus, but there is a strong likelihood of these trends following the spread pattern of the virus itself as more countries become more affected.

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...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.

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Sector Impact: Pharma

COVID-19 Impact Assessment

as of 16th March, 2020

- The eruption of the COVID-19 pandemic has propelled the pharmaceutical industry into action, with a race to develop both preventive and therapeutic interventions: both an antiviral for disease treatment and symptom relief, as well as a vaccine to prevent transmission, are urgently needed.
- The nearest 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.
- While global financial markets are plummeting in the face of uncertainty, stock prices of companies investing in R&D for COVID-19 drugs and vaccines have fared far better.
- However, the volatility of financial markets is unlikely to subsist until infection rates stabilize or decrease, so there are no clear winners.
- Pharmaceutical supply chain disruptions have been difficult to quantify to date, although the US FDA expressed the expectation that shortages were likely in a February 14 statement.
- However, the impact of the initial outbreak in China on facilities in that country has been substantial, with multiple companies – including Lonza, WuXi Biologics, and WuXi AppTec – closing manufacturing plants at the height of the outbreak, per public statements.
- Over the coming months, the ways in which the global supply chain has been influenced – as well as the associated medicine shortages and downstream effects on API and generics manufacturers – will come to light.

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The energy storage sector will also face roadblocks due to a reduction in lithium-ion battery production in China.

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Sector Impact: Power

COVID-19 Impact Assessment

as of 16th March, 2020

- Spread of coronavirus in China will have an impact on the global solar power industry due to disruption in the supply chain.
- China has the largest solar module production in the world and a stoppage of production or inability to ship these modules will have a significant impact on the industry:
 - The provinces placed under quarantine hold many key manufacturing plants in the solar industry, including Trina Solar, Hanwha Q Cells, and Enphase.
 - Markets like India, which rely on China for 80% of solar modules will face the biggest brunt, with around 3GW of capacity expected to miss the deadlines.
- Chinese wind power is also expected to be impacted, though to a lower extent than solar:
 - The Chinese government may consider extending the deadline for feed-in-tariffs beyond December 31, 2020 to ensure that projects likely to be capable of claiming support are still able to do so.
- China will also witness lower power demand from the industrial and commercial sector, which will reduce power generation from conventional sources such as coal or gas.
- The oil price crash is expected to have an impact on the electric vehicles (EV) market:
 - Sales of EVs are expected to see a drop owing to record low oil prices, which will encourage consumers to buy petrol or diesel vehicles.
 - Tesla's stocks have plunged to half of where they stood in the mid of February, whilst General Motors' stocks have seen a dip of more than 40% during the same period.

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US consumer survey data suggests a significant consumer response to the COVID-19 outbreak, with 61.8% of shoppers taking at least one action to reduce exposure and prepare for potential shortages.

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Sector Impact: Retail

COVID-19 Impact Assessment

as of 16th March, 2020

- Data from GlobalData’s recent US Consumer Survey (March 2020) suggests a significant consumer response to the COVID-19 outbreak, with 61.8% of shoppers taking at least one action to reduce exposure and prepare for potential shortages.
- While there is an expected short-term boost to volumes across indispensable purchases (with 46.5% of shoppers now “stocking up on essentials”), this will do little to offset vastly reduced purchasing across clothing, footwear and home products as footfall in public places dwindles.
- However, COVID-19 appears likely to create a long-term, positive effect for online retail, persuading online-sceptic consumers to move spend away from physical stores in a bid to reduce time spent in public places.
- This will be most noticeable in food & grocery (in which online penetration sits below total retail online penetration), with the major supermarkets experiencing unprecedented demand for home delivery services.



GlobalData Analyst View

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There has been a well-documented impact on mobile platform providers such as Apple with regards to supply chain disruption in China.

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COVID-19 Impact Assessment

as of 16th March, 2020

Consumer Telecom Services:

- Minimal impact expected for telecom operator revenues or market share, even in hard hit areas such as China, South Korea and Italy.
- Evidence from recent epidemics (Ebola in Africa, MERS in South Korea) shows no impact on telecom operators.

Consumer Telecom Platforms & Devices:

- There has been a well-documented impact on mobile platform providers such as Apple with regards to supply chain disruption in China. Apple adjusted its quarterly investor guidance downward on 17 February to reflect the impact of the manufacturing slow-down in China on Apple product delivery timetables.
- That country, however, is aiming to revive manufacturing across the board, including the Tech sector, in the coming weeks, so minimal further disruption to the supply chain is expected.
- However, there may very well be a reduction in demand for new devices based on general economic down-turns as a result of COVID-19.

Telecom Technology & Software:

- There has been minimal impact on the telecom infrastructure supply chain, and no major suppliers, including Ericsson, Nokia, Cisco, Huawei, and ZTE, are indicating any trouble getting required technology components.
- There is likely, however, to be an impact on the demand side, as major infrastructure roll-outs related to 5G and other upgrades will almost certainly be slowed or delayed in regions and countries affected by COVID-19.

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Airline stocks have taken a battering as uncertainty reigns and they suspend guidance on 2020 performance.

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Sector Impact: Travel & Tourism



COVID-19 Impact Assessment

as of 16th March, 2020

- Travel restrictions imposed by governments across the globe are limiting people's ability to travel even if they retain the desire to do so.
- Initially focusing on travel in and out of China, these restrictions have morphed into something much greater, with the most high profile restriction so far has been imposed by the United States:
 - On March 11, the President announced that the country is suspending inbound travel from countries in the Schengen Area for 30 days effective 11.59 p.m. EST on March 13.
 - On March 14, it was announced that the ban was extended to include the UK and Ireland effective Midnight EST on March 16.
- These restrictions, coupled with some travelers adopting a safety-first approach, have had huge ramifications for airlines:
 - The likes of Delta, United, Qantas and Lufthansa (to name but a few) have all announced the suspension of a significant portion of flights and airports are reporting marked drops in footfall.
 - Airline stocks have taken a battering as uncertainty reigns and they suspend guidance on 2020 performance, with Flybe bankrupt and Korean Air admitting it faces a struggle to survive.
- Hotels in cities across Asia, Europe, and the Middle East are seeing significant declines in occupancy as people postpone travel plans and have them scuppered by travel restrictions:
 - Cancellations of large-scale events that typically drive visitation is leading to much lower occupancy than hotels are accustomed to.

Additional Information

For any questions or further research inquiries, please contact:

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