McKinsey & Company

COVID-19: Briefing materials

Global health and crisis response

Updated: April 13, 2020

Current as of April 13, 2020

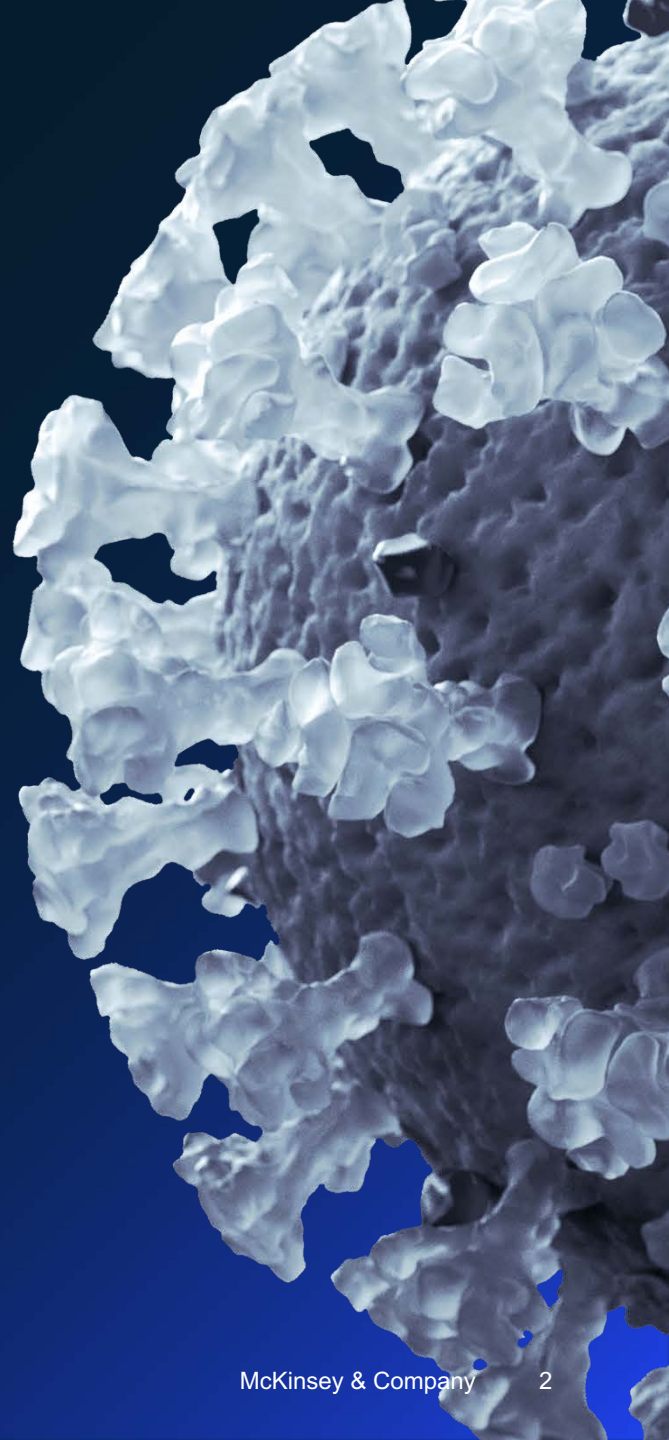
COVID-19 is, first and foremost, a global humanitarian challenge.

Thousands of health professionals are heroically battling the virus, putting their own lives at risk. Governments and industry are working together to understand and address the challenge, support victims and their families and communities, and search for treatments and a vaccine.

Companies around the world need to act promptly.

This document is meant to help senior leaders understand the COVID-19 situation and how it may unfold, and take steps to protect their employees, customers, supply chains, and financial results.

Read more on McKinsey.com →



Executive summary

The situation now

At the time of writing, COVID-19 cases have exceeded 1.5 million and are increasing quickly around the world, with concerns that a 15% hospitalization rate could drive hospital system overload.

To reduce growth in cases, governments have moved to stricter social distancing, with “shelter in place” orders in many areas in the U.S., Europe, India, and other countries. This has driven rapid demand declines and fears of recessions, which governments are trying to meet through bailouts and other fiscal measures.

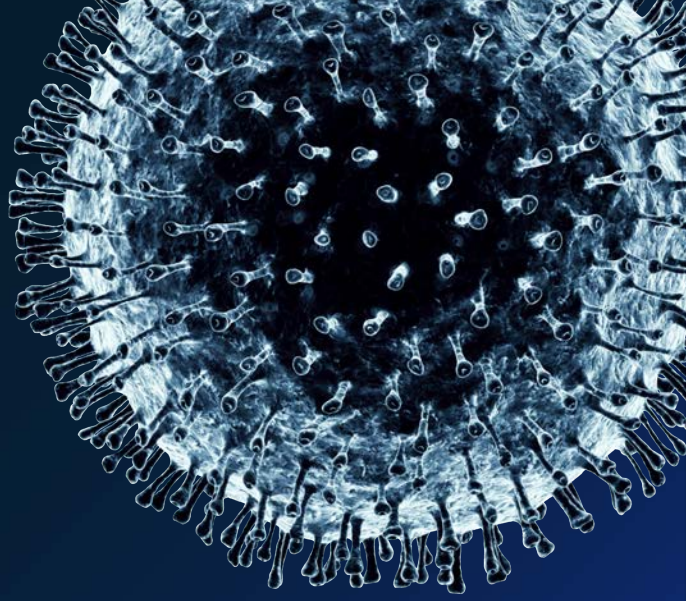
Some Asian countries, e.g. China, have kept incremental cases low, and are restarting economies. So far, there is little evidence of a resurgence in infections, though reinfection from abroad is being reported.

How the situation may evolve

There is a limited window for governments to drive adequate public-health responses and meet demand drawdowns with proportionate economic interventions. Without this, the possibility of a deeper effect on lives and livelihoods is more likely.

Scaled-up testing will soon clarify the extent and distribution of spread in the U.S., and Europe. There continues to be concern about the extent of spread and its consequences in countries with large populations and higher population densities

Learnings from other countries and recent innovations (strict social distancing rules, drive through testing, off-the-shelf drugs that can address mild cases, telemedicine enabled home care) could provide basis for a restart.



Actions that institutions can take

Having invested in setting up a basic structure to drive basic Resolve and Resilience planning, public and private sector institutions around the world are engaged in continuing protection of people (incl. workforce and customers), stabilizing supply chain (esp. PPE), as well as ensuring adequate cash and liquidity on hand.

In addition to this focus, some governments and companies are also starting to shift focus to what a Return to work may look like.

An effective Return depends on a number of factors – from ensuring that the local region has adequate readiness for a restart from a public health standpoint, to estimating timing for a return of demand, and other factors

Ensuring that the Nerve Center, has adequate strategic focus in the form of Plan Ahead team, continues to be an important organizing principle for many institutions

Contents

Current as of April 13, 2020

The global spread is accelerating with more reports of local transmission

Latest as of April 12, 2020

Impact to date

>1.91M
Reported confirmed cases

>119,500
Deaths

>212
Countries or territories with reported cases[1]

>180
Countries or territories with evidence of local transmission[2]

70
Countries or territories with more than 1000 reported cases[1]

~0.1%
China share of new reported cases April 7 – April 13

~38%
US share of new reported cases April 7 – April 13

~46%
Europe share of new reported cases April 7 – April 13

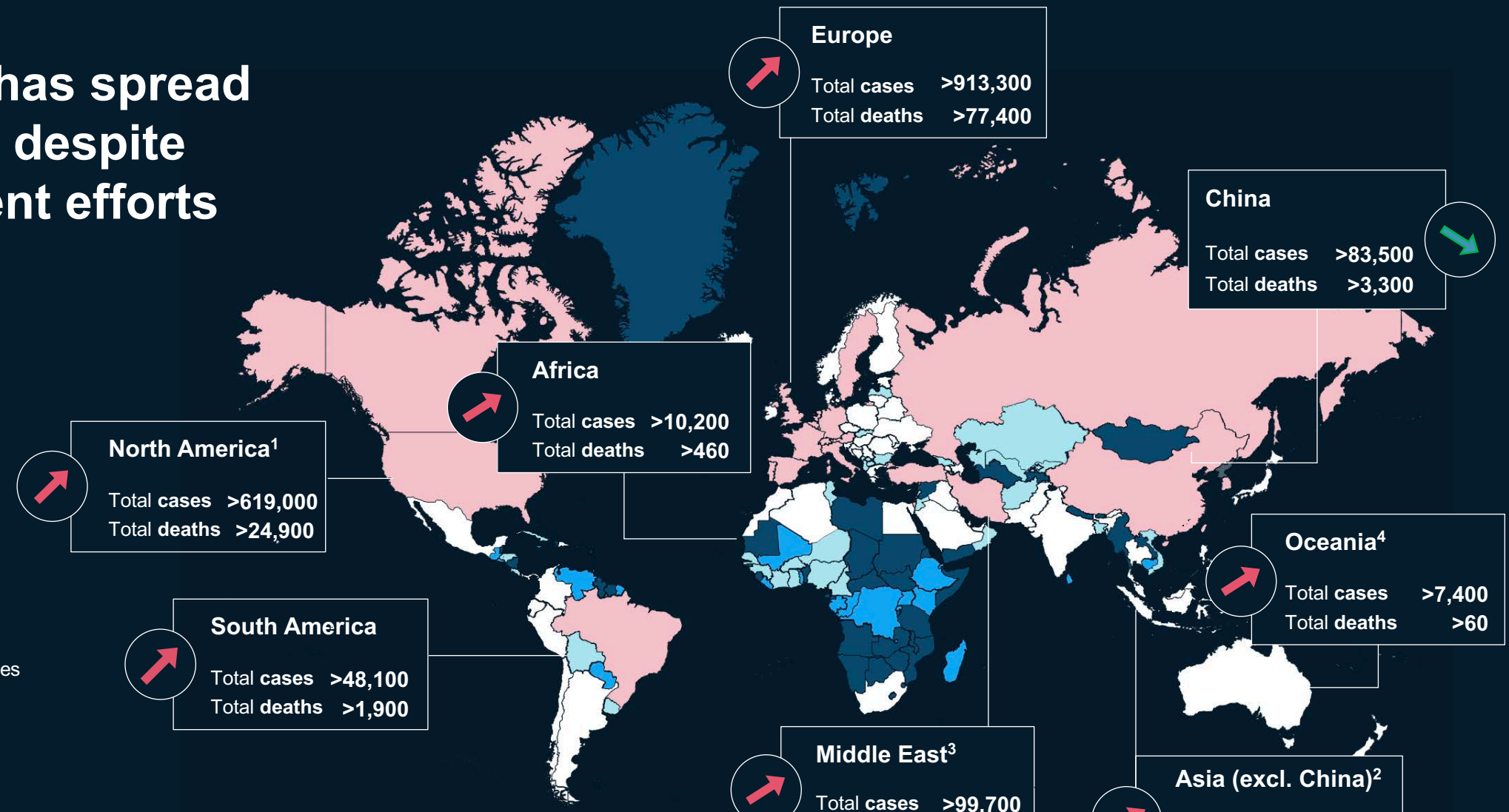
3
New countries or territories with cases April 7 – April 13

1. Previously counted only countries; now aligned with WHO reports to include territories and dependencies; excluding cruise ship
2. Previously noted as community transmission in McKinsey documents; now aligned with WHO definition

Sources: World Health Organization, John Hopkins University (Observed at 2100 ET), CDC, news reports

Current as of April 13, 2020

The virus has spread worldwide despite containment efforts



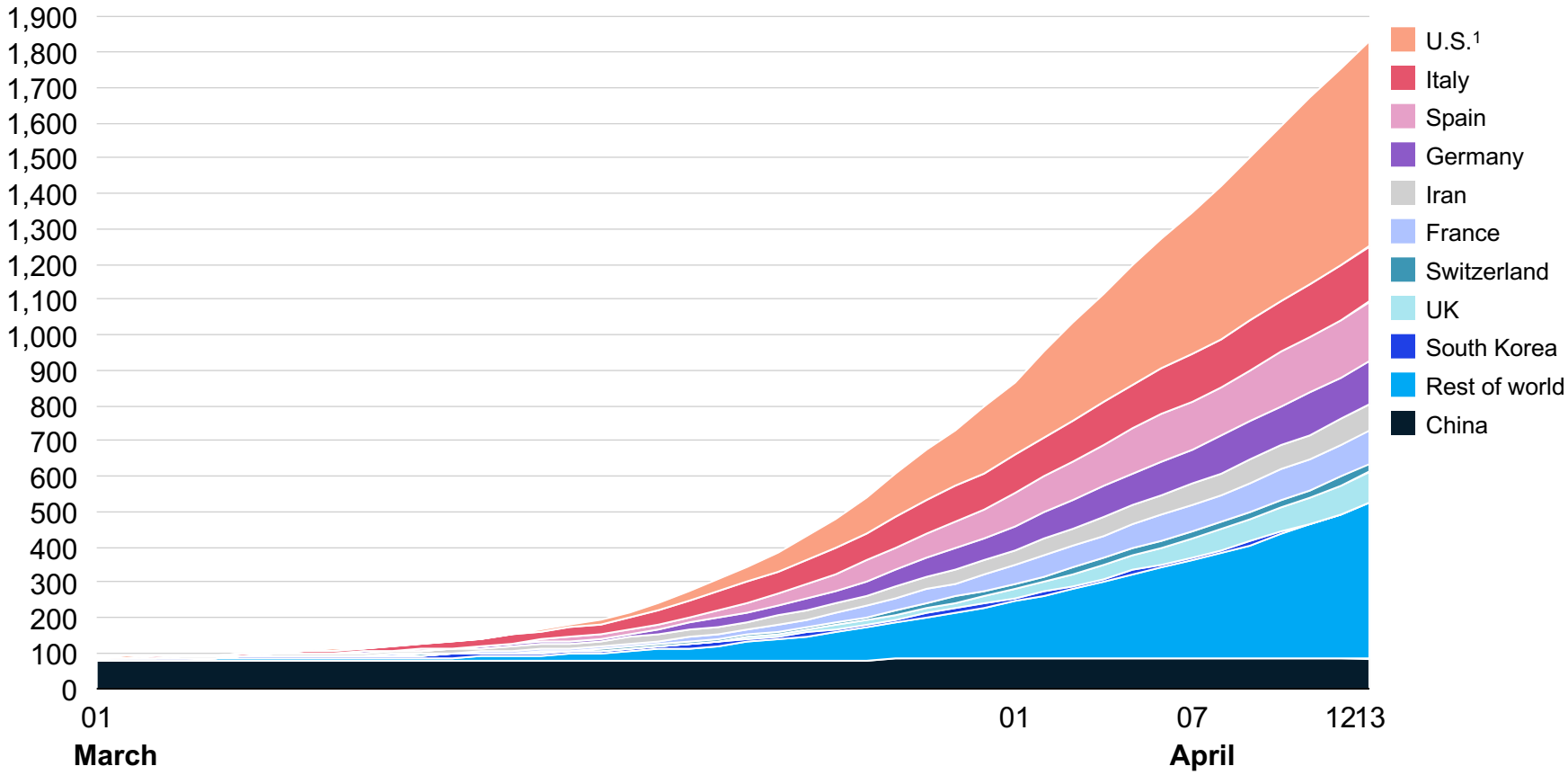
1. Johns Hopkins data used for U.S. (observed at 2100ET), all other North America countries reporting from WHO
2. Includes Western Pacific and South–East Asia WHO regions; excludes China; note that South Korea incremental cases are declining, however other countries are increasing
3. Eastern-Mediterranean WHO region
4. Includes Australia, New Zealand, Fiji, French Polynesia, New Caledonia, Papua New Guinea

Source: World Health Organization, Johns Hopkins University, McKinsey analysis

The greatest share of cases come from Europe and the U.S.

Cumulative number of cases since March 1st – April 13th

Thousands



Asia

Incremental cases for China and South Korea are now <100 per day with continued focus on disease surveillance and management of imported cases and localized transmission

Europe

The effects of lockdowns policies are beginning to show across multiple countries. While the absolute number of new cases remains high, daily totals have plateaued or are declining in a number of countries

United States

The U.S. consistently has the highest number of new cases in the world, but there is early evidence of plateauing in new infections – each of the first 12 days in April has seen between 25K and 35K new cases

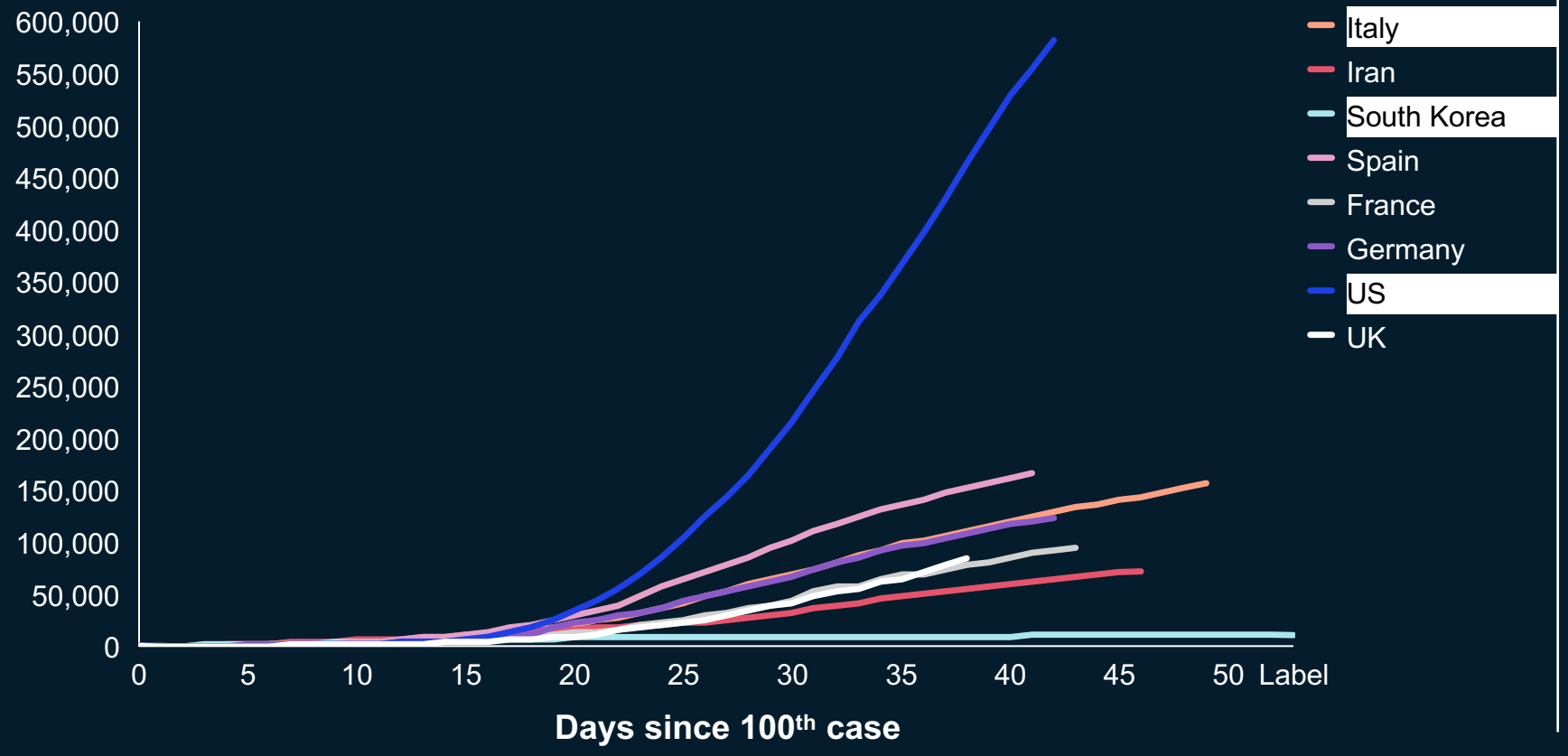
1. U.S. data from Johns Hopkins University CSSE (Observed at 2100ET); all other data from WHO Situation Reports

Sources: WHO situation reports, Johns Hopkins University, press search

Current as of April 13, 2020

Countries begin with similar trajectories but curves diverge based on demographics and measures taken

Cumulative number of cases



Select country detail

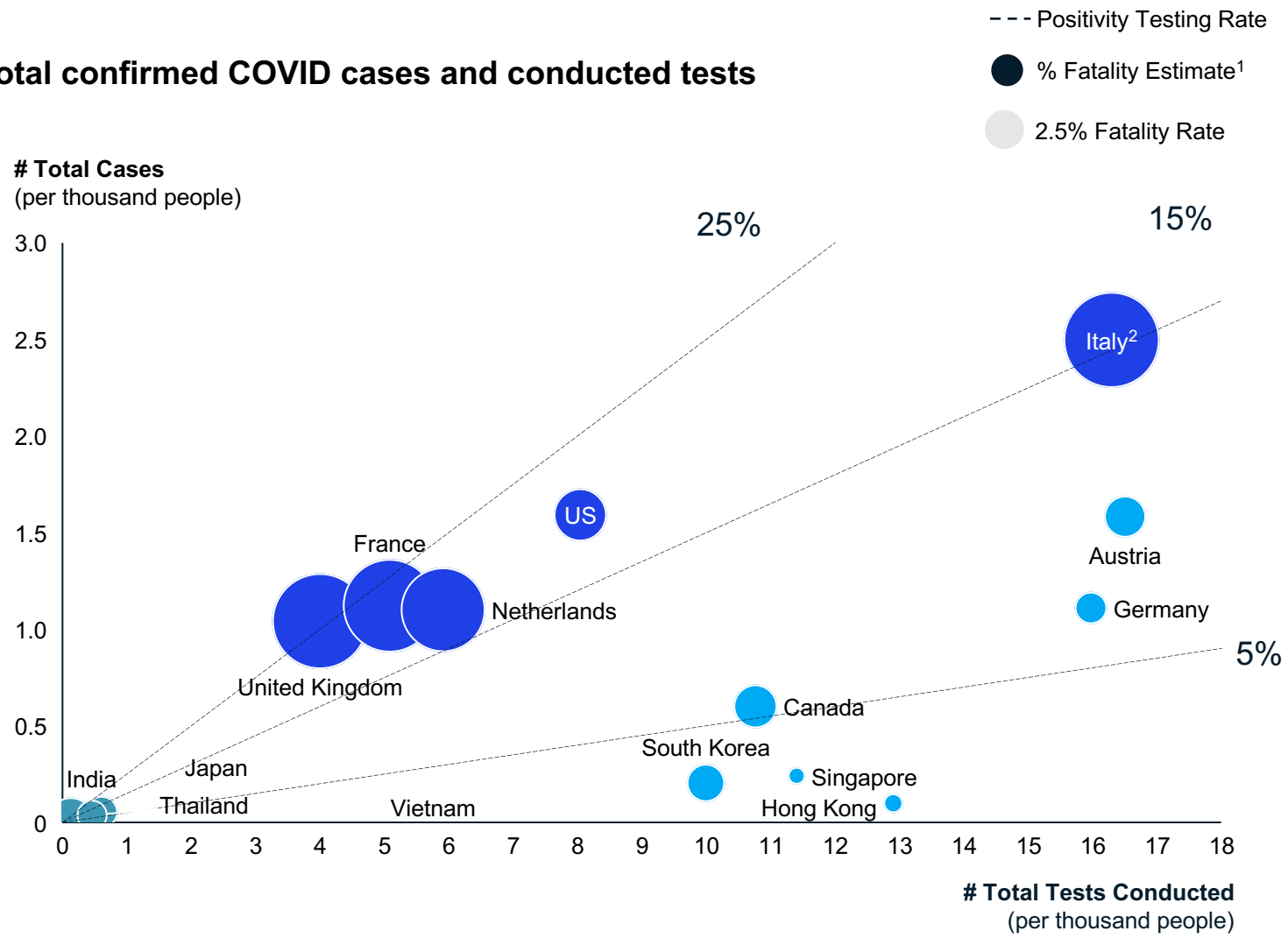
- **Europe:** Multiple European countries (including Italy, Spain, Germany) have seen their curves bend downward as the rate of new infections plateaus or declines
- **South Korea:** Aggressive testing, contact tracing and surveillance, and mandatory quarantines are helping isolate virus clusters and dramatically slow spread of outbreak.
- **United States:** Steepest rate of growth but the curve has bent over the last 10 days

U.S. data from Johns Hopkins University CSSE; all other data from WHO Situation Reports

Sources: WHO situation reports; Johns Hopkins University, press search

Countries with the widest testing tend to have the fewest cases per 1,000 people

Total confirmed COVID cases and conducted tests



1. Number of deaths / confirmed cases
2. Significantly more testing recently occurred

Sources: WHO situation reports, Johns Hopkins University, Our World In Data, The Government of the Hong Kong Special Administrative Region, The Singapore Government; Current as of 4/12 (South Korea, Japan, Canada, Austria), 4/11 (Italy, U.S., India, United Kingdom, Vietnam). 4/10 (Thailand), 4/7 (Netherlands, France), 4/6 (Sinagpore), 4/5 (Germany), 3/31 (Hong Kong)

3 Archetypes of testing approaches

1. **Countries with limited testing**

   Low volumes of testing lead to few confirmed positive cases

2. **Countries with moderate testing approach**

   Some countries test only (or predominantly) those with significant symptoms. Since milder cases are more likely to be missed, the Case Fatality Rate appears higher

3. **Countries with broad testing approach**

   Countries that have taken broad testing strategies tend to be those that have had success in limiting the number of new cases

State of the Science: Latest evidence on COVID-19

A

How is COVID-19 transmitted, and how long can it persist in different settings?

We are learning more over time about how long the virus remains in the air and about survival on surfaces

According to one study[1], droplets can hang in the air for 0.5-3 hours

Durability on surfaces ranges from hours to days, with the virus surviving for longer on harder, less porous surfaces

More work is needed to understand the impact of these findings on transmission

B

What portion of patients are asymptomatic, and what is the fatality rate?

WHO and the US CDC estimate that between 20-50% of all infected individuals are asymptomatic

The same sources project a case fatality ratio (CFR) of all infected individuals of 1.4-5.7%

C

What therapies and vaccines are in development for COVID-19?

To date, there is no approved specific therapy or vaccine available for COVID-19. There are over 130 therapeutic candidates and 80 vaccine candidates[2] being considered across a range of modalities and use cases.

Among therapeutics, some small molecules are repurposed from other indications (e.g. antivirals, antimalarials); some showed efficacy in isolated cases[3] under compassionate use

D

Do masks help reduce transmission of COVID-19?

Surgical masks catch both large and small droplets (coughed, sneezed, or exhaled by an infected individual)

Several countries have recommended public use of masks to various extents (e.g., fines in Vietnam for not using masks, Japan delivering cloth masks to each household)

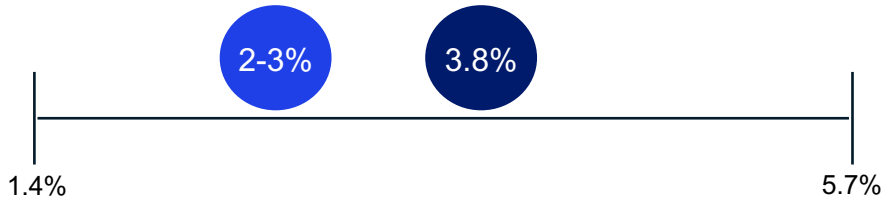
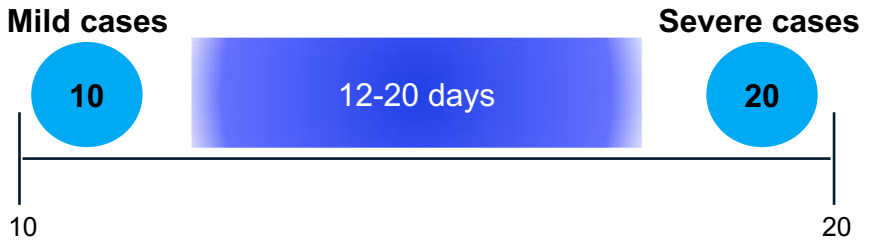
1. https://www.nejm.org/doi/full/10.1056/NEJMc2004973, https://www.nytimes.com/2020/03/17/health/coronavirus-surfaces-aerosols.html?auth=login-email&login=email;
2. CDC
3. CDC

A. Viral viability varies among setting and surfaces, but impact on transmission is unclear

		Viability/ survival duration of virus	Mode of transmission
Air		Droplets can hang in the air for 0.5-3 hrs as aerosol[2,3]	Thought to be the 'receiving' primary mode of transmission
Surfaces	Cardboard	Approximately 8hrs on cardboard[1]	Hypothesized to be a mode of transmission[5], however, studies show low concentration of virus[6]
	Paper	4-5 days on paper[4]	
	Glass	Up to 4 days[4]	
	Metals	Up-to 48 hrs on stainless steel[1,] and for up-to 4 hrs on copper[2]	
	Wood	Up to 4 days[4]	
	Plastic	6-9 days[4]	
	Ceramics	Up to 5 days[4]	
	Stone	2-12 days[4]	
Polypropylene (incl. packaging, textiles)[7]		Virus can be found on materials containing polypropylene for ~16hrs[5]	Hypothesized to be a mode of transmission[5], however, studies show low concentration of virus[6]

1. https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf
2. https://www.nejm.org/doi/full/10.1056/NEJMc2004973
3. https://www.nytimes.com/2020/03/17/health/coronavirus-surfaces-aerosols.html?auth=login-email&login=email
4. https://www.journalofhospitalinfection.com/article/S0195-6701(20)30046-3/fulltext
5. https://www.medrxiv.org/content/10.1101/2020.03.09.20033217v1.full.pdf
6. https://www.health.harvard.edu/diseases-and-conditions/coronavirus-resource-center
7. https://www.sciencedaily.com/releases/2020/03/200330110348.htm

B. Estimates of the number of asymptomatic patients, case fatality ratio, and infection window continue to evolve

Metric	Expert estimate range	WHO / CDC estimate
Asymptomatic patients	It has been estimated that between **20-50%**[1] of all infected individuals were **asymptomatic**	
Case Fatality ratio	The **case fatality ratio (CFR)** of all infected individuals is estimated to be between **1.4-5.7%**[2]	
Infection window (viral shedding)	**Viral shedding** of infected individuals has been estimated to last between **10-20 days**[3]	

1. Bloomberg, ijidonline, ECDC, Eurosurveillance, The Hill
2. JAMA, The Lancet, WHO, Nature Medicine, The Lancet, CDC, WHO
3. CDC, ECDC, The Lancet, JAMA, Medrxiv

Source: Expert interviews and McKinsey Analysis

C. There are over 80 vaccine candidates and 130 therapeutics candidates in development for COVID-19

Additional detail on following page · Directionally positive result · Directionally negative result

	# Candidates	Mechanism	Description	Earliest US target approval date (publicly announced)
Vaccines	~80	**RNA/DNA-based**	RNA packaged in a vector / direct introduction of plasmid DNA encoding antigen against which immune response is sought	**Fall 2020** for select population (e.g. health workers) with emergency approval[5]
		Viral vectors / viral-like particles	Chemically weakened virus or molecules that closely resemble viruses	**Early 2021** for emergency use authorization[6]
		Protein-based	Purified or recombinant antigens from a pathogen	N/A
Therapeutics	~130	**Small molecules**	Largely repurposed compounds, including antivirals, antimalarials, steroids, and more	N/A
		Antibodies	Monoclonal and polyclonal antibodies – often new development using survivor samples	N/A
		Other	Immune modulators (IL inhibitors or complement pathway inhibitors), cell therapies, gene therapies, RNA therapies, and traditional Chinese medicine	N/A

Candidates with early evidence available

Compound	Initial clinical evidence	Efficacy in isolated use?
Remdesivir	N/A	Improvement in compassionate use cases in US and other countries[1]
Hydroxy-chloroquine	Mixed results on viral clearance from small French and Chinese studies; positive result on clinical improvement from small Chinese trial[7-11]	Improvement in Japanese patient and patients in Australia[2,3]
Favipiravir	Positive result on viral load and clinical recovery in 2 Chinese trials[14, 15]	Test dosages effective in mild and asymptomatic cases[4]
Kaletra (lopinavir, ritonavir)	2 Chinese trials showing lack of efficacy at HIV dosing[12, 13]	Improvement in Thai patient and patients in Australia[3]

1 CDC; 2 Pharma Japan; 3 The Scientist, Tech Times; 4 GenEng News 5 Fierce Biotech 6 J&J website 7 Preprint publication 8 Science Direct article 9 International Journal of Antimicrobial Agents (study retracted: https://retractionwatch.com/2020/04/06/hydroxychlorine-covid-19-study-did-not-meet-publishing-societys-expected-standard/) 10 Mediterranee Infection 11 Zhejiang University Hospital English Abstract 12 Preprint publication 13 NEJM article 14 Engineering journal 15 Preprint publication

D. At scale use of masks can have a role in reducing transmission of COVID-19, as reflected in recent policy changes

Surgical face masks can prevent transmission of coronaviruses

There are two main modes of coronavirus transmission…

Spread through contact and large droplets, such as from a cough or sneeze

Spread through small droplets diffusing through the air over both short and long distances

…and surgical masks can catch both large and small droplets[1] as it's coughed, sneezed, or exhaled

Many governments are facilitating the use of face masks, but with divergent approaches

South Korea[2]

Government banned export of medical masks; mandated 50% of mask production to be directed to centralized governmental supply

Government started rationing medical grade masks

Government published guidelines on re-using medical grade masks

Vietnam[4]

Banned export of face masks

Wearing mask is required in public places

Imposed hefty fines for going 'mask-less'

Japan[3]

It is a standard practice in Japan to wear masks in public while healthy

Japanese government plans to deliver 2 cloth masks per household

United States[5]

CDC initially recommended against general public wearing masks

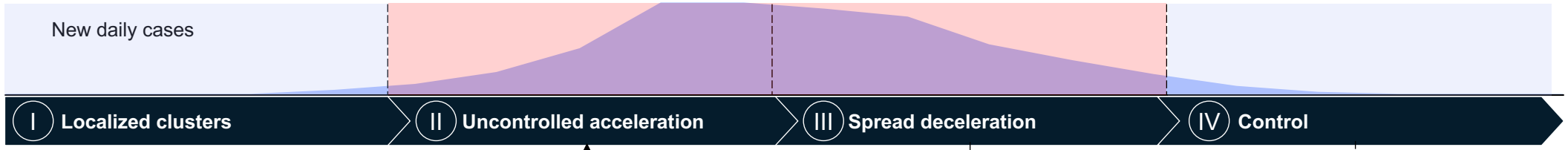
CDC updated its guideline, recommending wearing cloths masks (but is not recommending the use of surgical masks)

Some state/ local governments implemented compulsory mask wearing (e.g., LA)

However, cloth masks may not be effective against airborne aerosols

1. https://www.nature.com/articles/s41591-020-0843-2; 2. https://www.wsj.com/articles/south-korea-rations-face-masks-in-coronavirus-fight-11584283720, 3. https://english.kyodonews.net/news/2020/04/77fea577e0f9-japan-to-give-cloth-face-masks-to-50-mil-households-to-fight-virus.html
4. https://www.voanews.com/science-health/coronavirus-outbreak/vietnam-imposes-hefty-fines-going-maskless; 5. CDC

Countries will decide which measures to implement based on local situations and disease progression

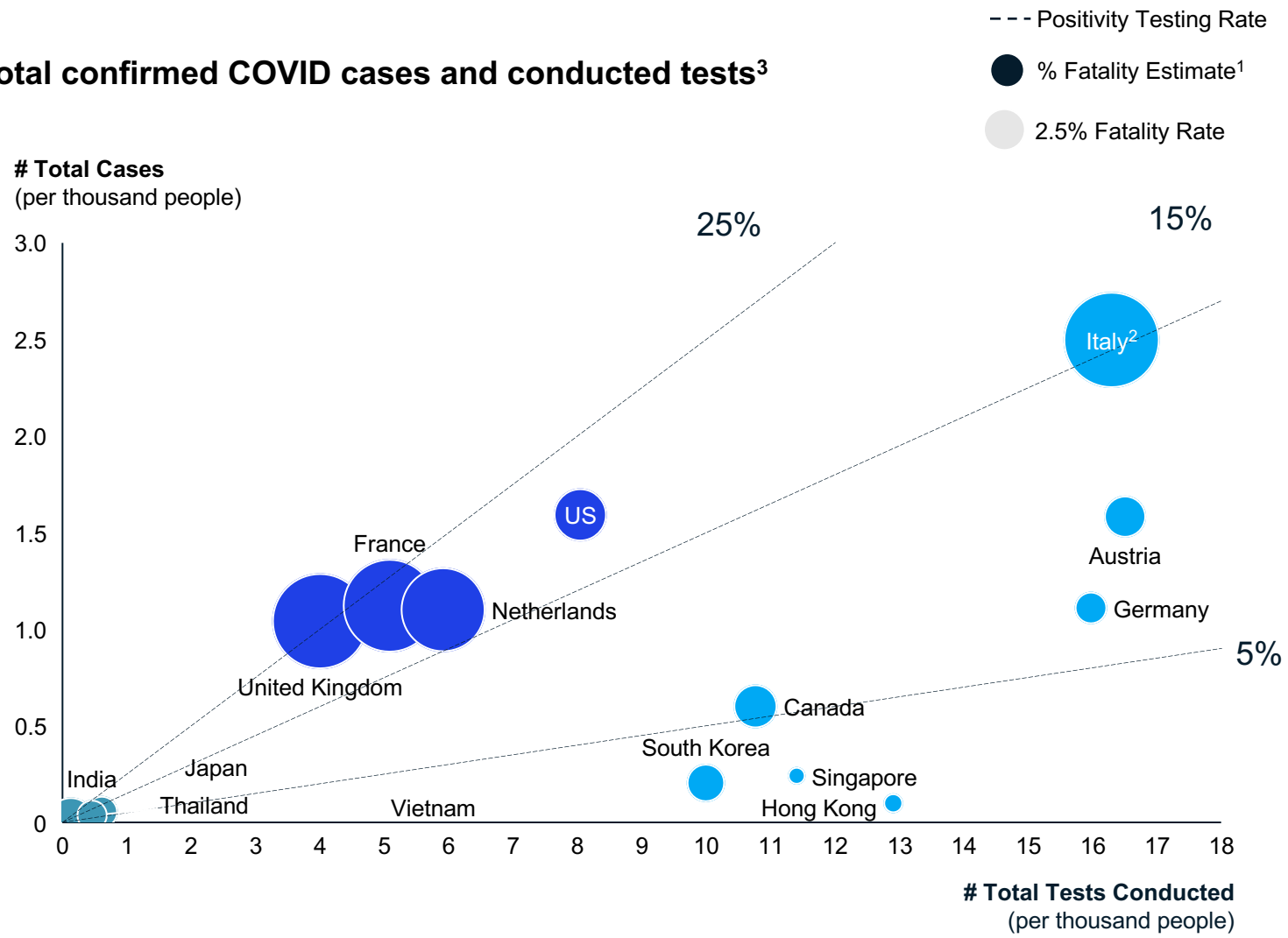


	I Localized clusters	II Uncontrolled acceleration	III Spread deceleration	IV Control
Lead indicators to identify which phase of disease progression is applicable	Majority of cases can be linked to known chains of transmission (i.e., cases can be managed individually) **Magnitude:** Handful of new cases per day **Growth:** Percentage growth may be high, but absolute number of cases remains within the capacity of public health systems	Majority of cases involve an unknown source of infection and infection rate is accelerating **Magnitude:** Significant number of new cases per day **Growth:** Exponential to fast linear growth in the number of new cases	Number of new cases has peaked, and infection rate is decreasing **Magnitude:** Significant number of new cases per day **Growth:** Decline in the number of new cases over time (with potential day-to-day variation)	Limited number of news cases, and systems in place to control spread of infection (e.g., track and manage cases individually) **Magnitude:** Handful of new cases per day, with no significant spikes **Growth:** Cases flat / trending down over time
Likely interventions	**Detect and trace all cases without losing control of chains of transmission (contain acceleration)**	**Apply distancing measures** **Expand healthcare capacity** **Build testing capacity**	**Maintain distancing measures; prepare to release when feasible** **Prepare systems for individual case mgmt.**	**Detect and trace all cases without losing control of chains of transmission while restarting activity**
Predominant measures	A. Physical distancing / quarantine B. Travel restriction C. Effective use of Personal Protective Equipment D. Testing and tracing E. Healthcare capacity surge			D. Testing and tracing

Source: Empirical observation from WHO data of pandemic epidemiologic characteristics of populations in each phase

Countries with the widest early testing show the fewest cases per 1,000 people

Total confirmed COVID cases and conducted tests[3]



1. Number of deaths / confirmed cases, metric depends on confirmed cases
2. Significantly more testing recently occurred
3. Confirmed cases are dependent on breadth of testing

Sources: WHO situation reports, Johns Hopkins University, Our World In Data, The Government of the Hong Kong Special Administrative Region, The Singapore Government; Current as of 4/12 (South Korea, Japan, Canada, Austria), 4/11 (Italy, U.S., India, United Kingdom, Vietnam). 4/10 (Thailand), 4/7 (Netherlands, France), 4/6 (Sinagpore), 4/5 (Germany), 3/31 (Hong Kong)

3 Archetypes of testing approaches

1. **Countries with limited testing**

   Low volumes of testing lead to few confirmed positive cases

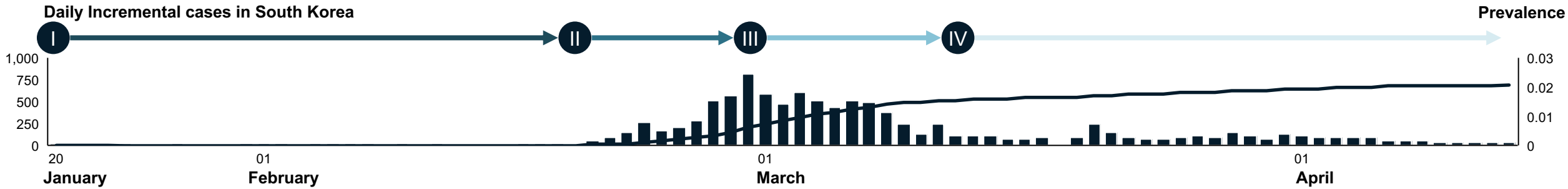
2. **Countries with moderate testing approach**

   Some countries test only (or predominantly) those with significant symptoms. Since milder cases are more likely to be missed, the Case Fatality Rate appears higher

3. **Countries with broad testing approach**

   Countries that have taken broad testing strategies tend to be those that have had success in limiting the number of new cases

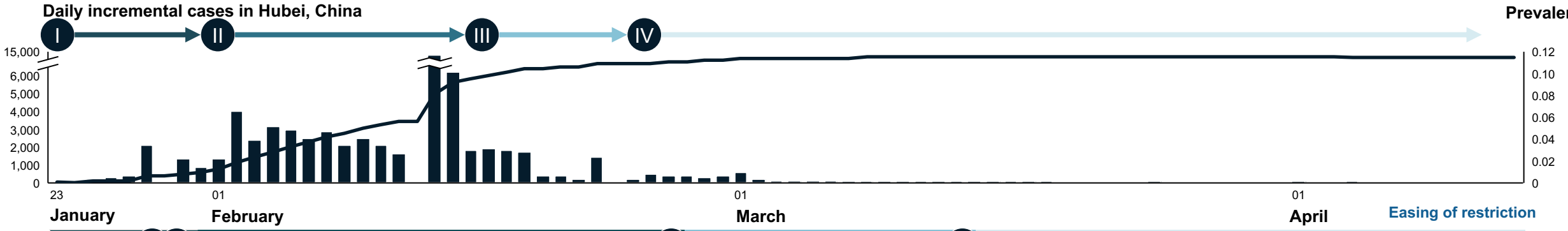
South Korea quickly built the infrastructure required to conduct wide-scale testing and contact tracing



	I Local clusters	II Uncontrolled acceleration	III Spread deceleration	IV Prevention of recurrence
A: Physical distancing / quarantine	Began **daily government communication that created high public awareness** of importance of social distancing	**Shut down schools** Recommended **no mass gatherings, remote-work measures, staggered commuting** hours, and **avoidance of crowded spaces**		**Re-emphasized importance of social distancing in public communications**, specifically for religious gatherings
B: Travel restriction	Imposed **entry ban on all foreign nationals who had traveled to Wuhan, Hubei China** in the past two weeks		Required **arrivals from Europe and US** to take diagnostic test and self-quarantine for 2 weeks; enforced through check-ins by officials	Required **all overseas arrivals** to self-quarantine for 2 weeks
C: Effective Use of PPE		**Distributed ~4.5 million face masks** via public organizations and **restricted mask exports**	Launched a **government-administered mask distribution system** (managed distribution and tracking to avoid crowding) Requested **private mobile apps and web services** to include the location and volume of masks left in pharmacies	
D: Testing and tracing	**Approved first RT-PCR test kit** for emergency use	Built infrastructure to support **rapid contact tracing of confirmed cases and close contacts** by KCDC **Rolled out testing sites** across the country, including drive thru and walk-in sites (600 collection centers) **Began sharing real-time info** with the public	**Launched integrated data platform** connecting 28 agencies and companies to accelerate contact tracing	
E: Healthcare capacity surge		**Developed effective system for triaging patients** and supplemented already strong hospital network with **private sector support** (e.g., repurposing of corporate facilities)		

Source: WHO data, Korea CDC, CNN, New York Times

Wuhan, China reopened sectors over a multi-week period only after new cases counts were dramatically reduced

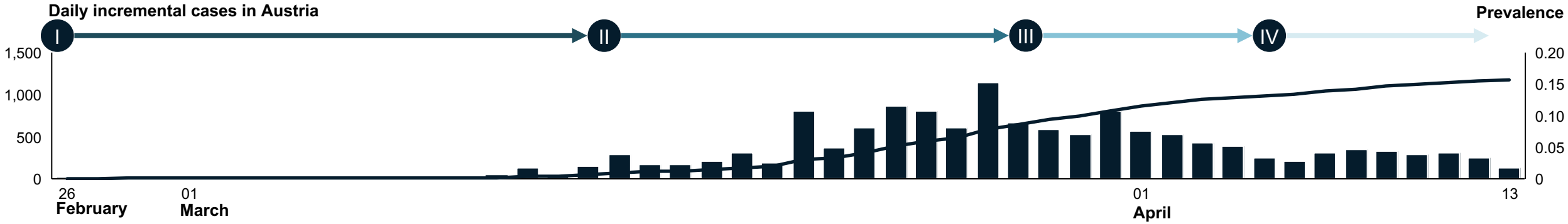


	I II Local clusters / uncontrolled acceleration	III Spread deceleration	IV Prevention of recurrence
A: Physical distancing / quarantine[1]	**Postponed school resume** after CNY holiday **Postponed office resume** after CNY holiday **Shut down all businesses** except medical industry and sanitation		**March 4:** Reopened **1st wave of businesses** (agriculture) **March 11:** Reopened **2nd wave of businesses** (medical, sanitation, utilities, groceries) **March 13:** Reopened **3rd wave of businesses** (elective hospital procedures) **March 24: Allowed for all businesses to reopen** upon individual assessment[2] **March 27: Removed full community lockdown;** however, people encouraged to stay home as much as possible and schools remain closed
B: Travel restriction[1]	Shut down **public transportation** Banned **inter-region and international travel** Issued **shelter-in-place order** Banned **all personal conveyance (cars, etc.)**		**April 8:** Resumed **domestic flights** (excluding Beijing) and **outbound highway and railway travel** (after presenting a phone app that indicates whether they are contagion risks)
C: Effective Use of PPE[1]	Issued order for **masks to be worn in public** Began conducting major **public space sanitization** (2x/day)		
D: Testing and tracing[1]	Began **registering all likely cases** and **conducting temperature checks** at major transportation hubs and supermarkets	**Established mandatory temperature checks** for all residents **Implemented personal "health QR code"** for staff on duty	
E: Healthcare capacity surge[1]	Began to build **temporary dedicated hospitals** Built **mobile cabin hospitals** for mild cases		

1 Measures listed are for Wuhan specifically; 2 As of April 7, ~94% of businesses has resumed operations (11K total)

Source:: wjw.wuhan.gov.cn, www.hubei.gov.cn, www.nbd.com.cn

Austria has released plans to gradually reopen businesses and ease physical distancing restrictions over the next month

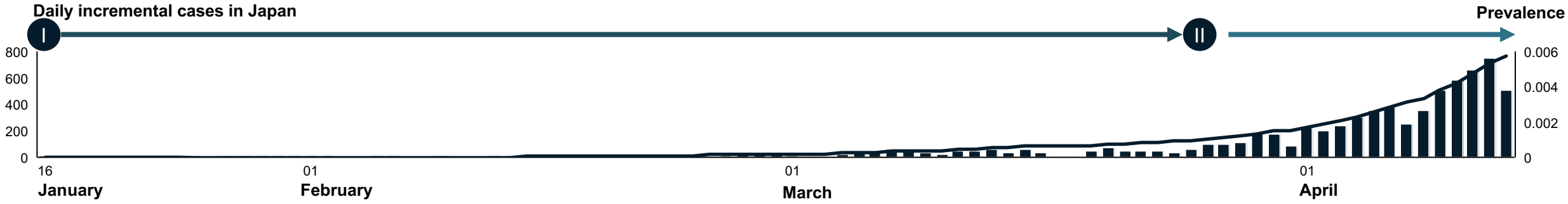


	I II Local clusters / uncontrolled acceleration	III Spread deceleration	IV Prevention of recurrence
			Easing of restriction[1]
A: Physical distancing / quarantine	Ordered **full lockdown**, including prohibition of large public events **Closed all schools**		**Apr 14:** Open federal gardens, shops <400 sq m, hardware and garden centers irrespective of sales area[2] **Expected future openings, if there is no pickup in infections** **End of Apr:** May reopen swimming pools, fitness centers, and sports facilities **May 1:** Open all shops and hairdressers[2] **Mid-May:** Open all hotels, restaurants, and schools **End of June:** Allow public events to resume, open cinemas and theaters
B: Travel restriction	**Restricted cross-border travel** from neighboring EU countries **Suspended external air and train traffic**, **limited public transport** **Isolated multiple regions** with high case loads		**End of April:** May lift restriction on leaving home (currently allowed for work, groceries, and select other situations)
C: Effective Use of PPE	**Distributed masks** at no cost		**Required covering of nose and mouth** in supermarkets + public transit **Required regular disinfection** of open stores
D: Testing and tracing			
E: Healthcare capacity surge	**Provided government funding for hospital equipment** **Set up additional capacity** for mobile and stationary care **Deployed additional healthcare staff**, including military physicians and former civil servants		

1 All milestones are contingent on public compliance with restrictions and assuming the number of cases does not increase; 2 Only 1 customer allowed per 20 square meters; specific requirements for disinfection

Source: WHO, https://www.bundeskanzleramt.gv.at/bundeskanzleramt/nachrichten-der-bundesregierung/2020/bundeskanzler-kurz-stufenplan-fuer-schrittweise-oeffnung-von-geschaeften-nach-ostern-aber-massnahmen-weiter-befolgen.html, https://www.bloomberg.com/news/articles/2020-04-06/denmark-joins-austria-in-easing-virus-curbs-as-europe-cases-slow; https://fortune.com/2020/04/14/europe-austria-denmark-spain-france-reopen-economy-coronavirus-lockdown/

Japan limited the number of cases early, but cases have grown significantly in the past several weeks



	I Local clusters	II Uncontrolled acceleration
A: Physical distancing / quarantine	**Feb 27:** Prime Minister ordered **closure of schools** **Mar 24: Tokyo Olympics and Paralympics postponed**	**Apr 1:** A government panel of experts **called for drastic measures**, but Prime Minister said declaration of a state of emergency was not needed **Apr 7:** Prime Minister declared a **month-long state of emergency** (not lockdown) for Tokyo and six other prefectures, encouraging residents to stay home **April 11**: Prime Minister calls for **70% reduction in workers commuting to offices** in Tokyo and the 6 prefectures affected
B: Travel restriction	**Mar 5: Required 2-week quarantine** for individuals entering from China and South Korea **Mar 18: Required 2-week quarantine** for individuals entering from 28 countries including EU **Mar 23: Required 2-week quarantine** for individuals entering from US	
C: Effective Use of PPE	**Government banned the reselling of face masks online** as a result of price gouging; mask wearing is typical in Japan during hay fever season (regardless of COVID)	**Apr 2: Announced distribution 2 cloth masks** per household
D: Testing and tracing	**Early Feb: Began coronavirus testing for individuals with symptoms**; initiated a specialized team to trace infection clusters	Cities of Niigata and Nagoya began offering **drive-thru testing services** **Apr 7:** Upon declaring state of emergency, Prime Minister committed to **ramping up testing capacity to 20K tests/day**
E: Healthcare capacity surge	**Mar 20:** Prime Minister's Office announced that they would continue to **focus on infection cluster countermeasures** and **preparing health care infrastructure** to treat the seriously ill	

Source: WHO Sitrep, Japan Times, Kyodo News, Nippon, Reuters

Emerging economies face unique challenges across public health measures and have adopted interventions to address them

Categories	Challenges	Key lessons from specific regions
A: Physical distancing / quarantine	High population density and communal living hinders physical dancing High percentage of vulnerable population (migrants)	**Quarantine early and aggressively** **Vietnam**. Proactive and early- quarantine measures to isolate and confine COVID-19 infection (2/13 Lockdown of part of Vinh Phuc province, later lifted) **Colombia.** Rapid national-wide lockdown measures (first in Latin America)
B: Travel restriction	Lengthened domestic travel restriction can be especially costly for countries dependent on primary and secondary industry Access to goods may be harder in developing countries	**Aggressive border control** **Vietnam**. Suspension of international arrivals including ex-pat Vietnam nationals while providing case-by-case exceptions to key industry stakeholders (e.g., Samsung Electronics) **India**. Suspension of all international commercial passenger flights (3/22) **Colombia.** Aggressive border closure (13 days post first case) **Build upon existing social welfare policy** **Colombia.** Additional payments to social welfare programs for families, young people and the elderly; continuance of free childcare and school lunches
C: Effective Use of PPE	Cost of medical-grade PPE is burdensome Communication of PPE importance may be lagging in developing countries Hygienic practices (e.g., washing with clean water) can be difficult especially in rural areas	**Raise COVID-19 awareness** **Vietnam**. Media running frequent messaging on COVID including PPE usage; Hefty fines for sharing "fake news" about COVID-19 **Facilitate mask-wearing behavior** **Vietnam**. Wearing mask is required; hefty fines for going maskless **India**. Proactive export ban on surgical masks (1/31); Government recommends home-made cloths masks
D: Testing and tracing	Large-scale commercial testing is often out of reach in developing countries especially in rural areas Lower digital technology penetration (e.g., smartphones) hinders app-based tracing methods	**Supplement with low-cost/high-volume testing** **Bangladesh**. Approved the production of low-cost antibody detection test kits **Vietnam**. Imported 200,000 lower-cost rapid test kits to complement RT-PCR based tests **Leverage previous pandemic infrastructure** **Nigeria**. Using capabilities built during Ebola crisis (e.g., National Reference Laboratory for molecular testing, Emergency Operations Center) to track and isolate second- hand contacts of infected individual **Colombia**. Using capabilities built during Measles outbreak to conduct initial contact tracings

Source: https://economictimes.indiatimes.com/news/international/world-news/coronavirus-in-india-what-is-happening-and-what-you-should-know/articleshow/73978271.cms?from=mdr, https://www.washingtonpost.com/world/asia_pacific/india-coronavirus-lockdown/2020/03/24/37f201c6-6d55-11ea-a156-0048b62cdb51_story.html, https://www.ft.com/content/0cc3c956-6cb2-11ea-89df-41bea055720b, https://www.as-coa.org/articles/where-coronavirus-latin-america

Contents

The Imperative of our Time

Imperatives

1

Safeguard our lives

1a. **Suppress the virus** as fast as possible

1b. **Expand treatment and testing** capacity

1c. **Find "cures";** treatment, drugs, vaccines

2

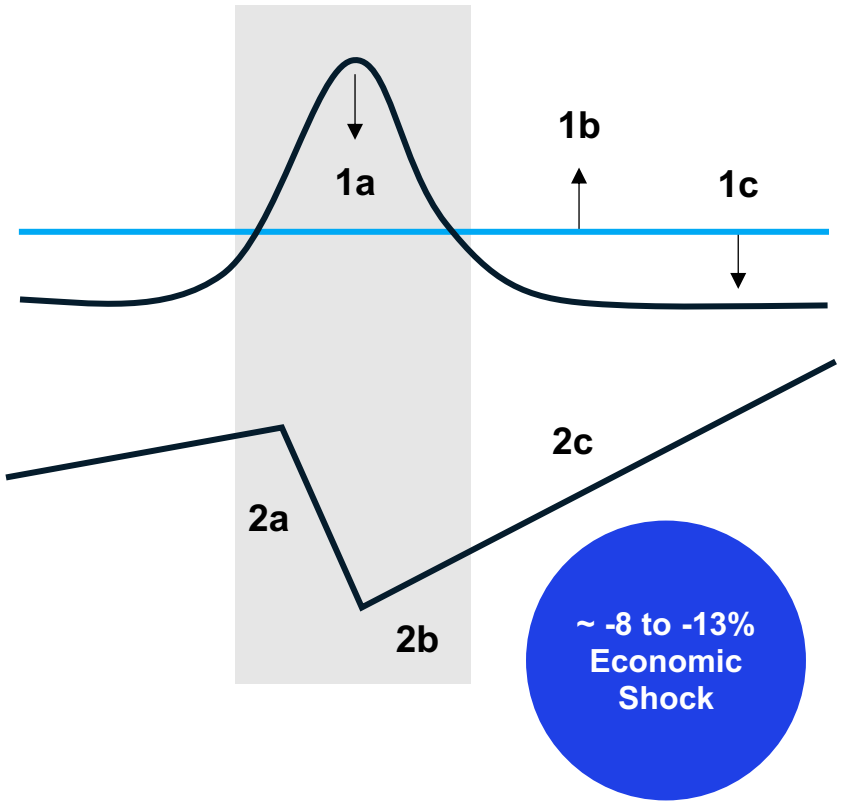
Safeguard our livelihoods

2a. **Support people and businesses** affected by lockdowns

2b. **Prepare to get back to work safely** when the virus abates

2c. **Prepare to scale the recovery** away from a -8 to -13% trough

"Timeboxing" the Virus and the Economic Shock



Source: McKinsey analysis, in partnership with Oxford Economics

Scenarios for the economic impact of the COVID-19 crisis

GDP impact of COVID-19 spread, public health response, and economic policies

Virus spread and public health response

Effectiveness of the public health response in controlling the spread and human impact of COVID-19

Rapid and effective control of virus spread

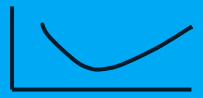
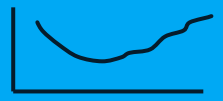
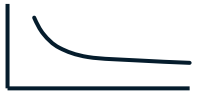
Strong public health response succeeds in controlling spread in each country within 2-3 months

Effective response, but (regional) virus resurgence

Public health response initially succeeds but measures are not sufficient to prevent viral resurgence so social distancing continues (regionally) for several months

Broad failure of public health interventions

Public health response fails to control the spread of the virus for an extended period of time (e.g., until vaccines are available)

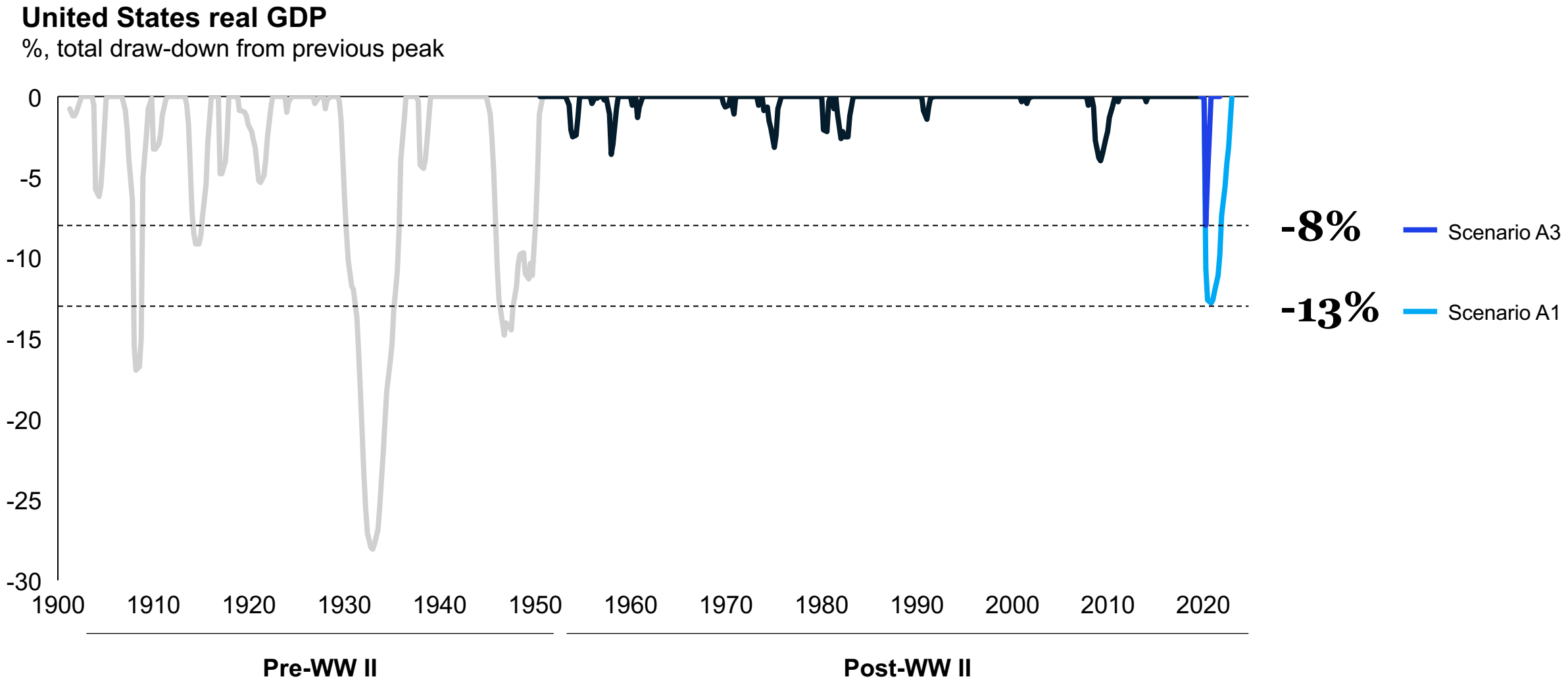
	Ineffective interventions	Partially effective interventions	Highly effective interventions
Virus Contained	**B1** Virus contained, but sector damage; lower long-term trend growth 	**A3** Virus contained, slow recovery 	**A4** Virus contained; strong growth rebound 
Muted World Recovery / Strong World Rebound	**B2** Virus resurgence; slow long-term growth 	**A1** Virus resurgence; slow long-term growth 	**A2** Virus resurgence; return to trend growth 
	B3 Pandemic escalation; prolonged downturn without economic recovery 	**B4** Pandemic escalation; slow progression towards economic recovery 	**B5** Pandemic escalation; delayed but full economic recovery 

Knock-on effects and economic policy response

Speed and strength of recovery depends on whether policy moves can mitigate self-reinforcing recessionary dynamics (e.g., corporate defaults, credit crunch)

Source: "Safeguarding our lives and our livelihoods: The imperative of our time,"; available online at https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/safeguarding-our-lives-and-our-livelihoods-the-imperative-of-our-time; date of access: Mar 31st 2020

COVID-19 U.S. impact could exceed anything since the end of WWII



Source: Historical Statistics of the United States Vol 3, Bureau of economic analysis; McKinsey team analysis, in partnership with Oxford Economics

Scenario A3: Virus Contained

The virus continues to spread across the Middle East, Europe and the U.S. until mid Q2, when virus seasonality combined with a stronger public health response drives case load reduction

Epidemiological scenario

China and East Asian countries continue their current recovery and control the virus by early Q2 2020

Virus in Europe and the United States would be controlled effectively with between two to three months of economic shutdown; new case counts peak by end April and declines by June with stronger public health response and seasonality of virus

Economic impacts

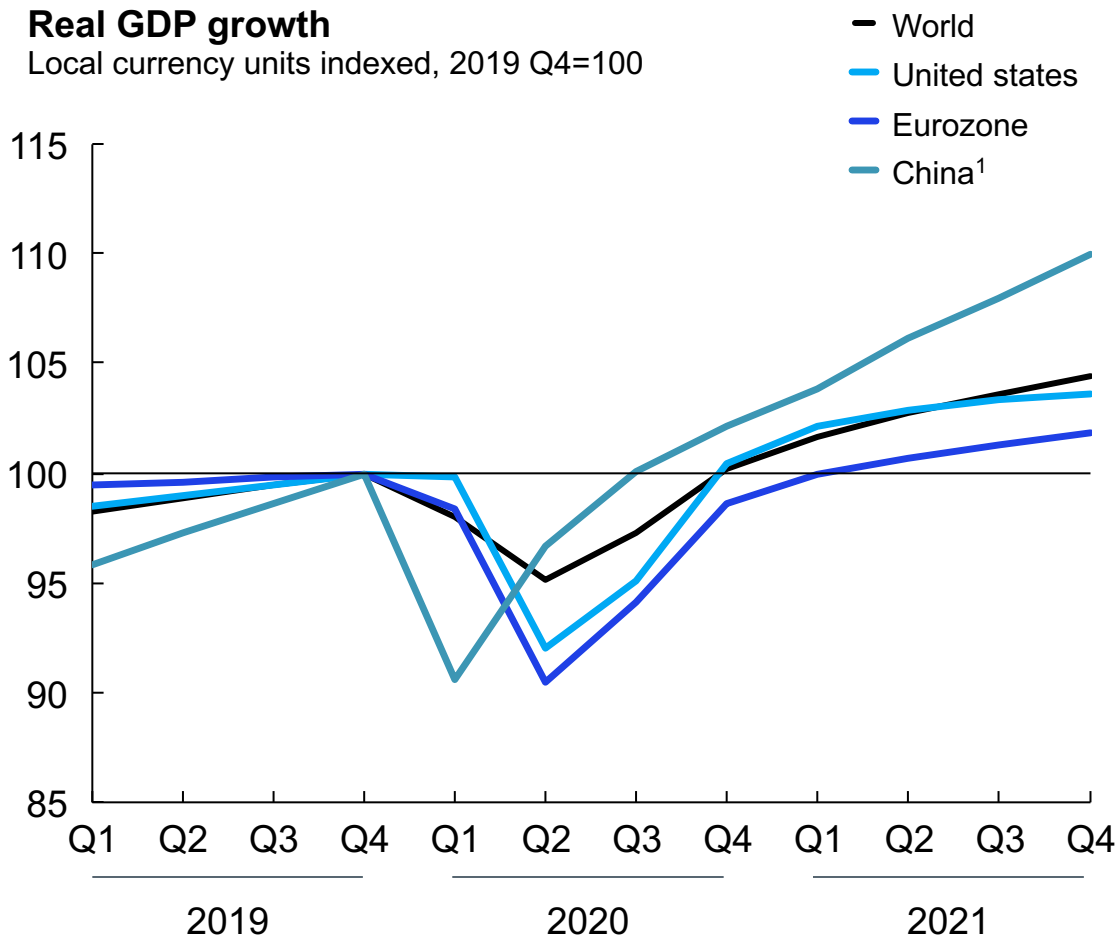
China will undergo a sharp but brief slowdown and relatively quickly rebound to pre-crisis levels of activity. China's annual GDP growth for 2020 would end up roughly flat

In Europe and the U.S., monetary and fiscal policy would mitigate some of the economic damage with some delays in transmission, so that a strong rebound could begin after the virus was contained at the end of Q2 2020

Most countries are expected to experience sharp GDP declines in Q2, which would be unprecedented in the post WWII era

Scenario A3: Virus Contained

Real GDP growth
Local currency units indexed, 2019 Q4=100



	Real GDP drop 2019 Q4–2020 Q2 % change	2020 GDP growth % change	Time to return to pre-crisis Quarter
China	-3.3%	-0.4%	2020 Q3
USA	-8.0%	-2.4%	2020 Q4
World	-4.9%	-1.5%	2020 Q4
Eurozone	-9.5%	-4.4%	2021 Q1

1. Seasonally adjusted by Oxford Economics

Source: McKinsey analysis, in partnership with Oxford Economics

Scenario A1: Muted World Recovery

The virus spreads globally without a seasonal decline. Health systems are overwhelmed in many countries, especially the poorest, with large-scale human and economic impact

Epidemiological scenario

China would need to clamp down on regional recurrences of the virus

The United States and Europe would fail to contain the virus within one quarter and be forced to implement some form of physical distancing and quarantines throughout the summer

Economic impacts

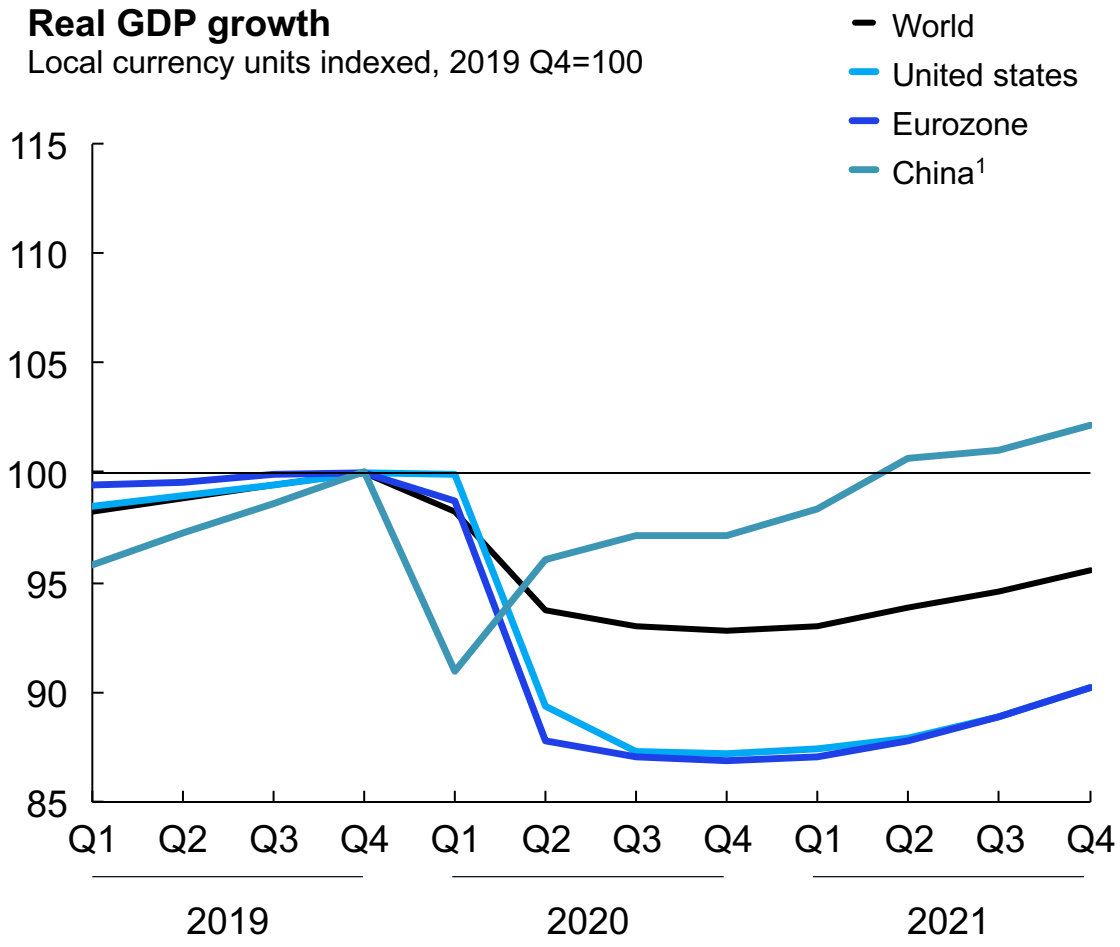
China would recover more slowly and would also be hurt by falling exports to the rest of the world. Its economy could face a potentially unprecedented contraction

The United States and Europe would face a GDP decline of 35 to 40 percent at an annualized rate in Q2, with major economies in Europe registering similar performance. Economic policy would fail to prevent a huge spike in unemployment and business closures, creating a far slower recovery even after the virus is contained

Most countries would take more than two years to recover to pre-virus levels of GDP

Scenario A1: Muted World Recovery

Real GDP growth
Local currency units indexed, 2019 Q4=100



	Real GDP drop 2019 Q4–2020 Q2 % change	2020 GDP growth % change	Time to return to pre-crisis Quarter
China	-3.9%	-2.7%	2021 Q2
USA	-10.6%	-8.4%	2023 Q1
World	-6.2%	-4.7%	2022 Q3
Eurozone	-12.2%	-9.7%	2023 Q3

1. Seasonally adjusted by Oxford Economics

Source: McKinsey analysis, in partnership with Oxford Economics

What business leaders should look for in coming weeks

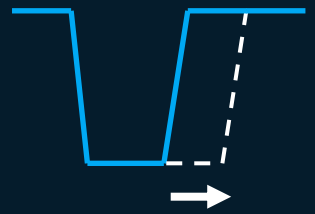
There are three questions business leaders are asking, and a small number of indicators that can give clues

Depth of disruption

How deep are the demand reductions?

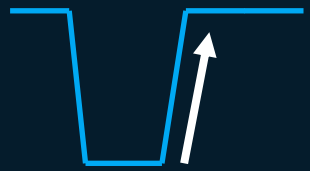
Length of disruption

How long could the disruption last?



Shape of recovery

What shape could recovery take?



Indicators

Epidemiological

- Time to implement social distancing after community transmission confirmed
- Number of cases – absolute (expect surge as testing expands)
- Geographic distribution of cases relative to economic contribution

- Rate of change of cases
- Evidence of virus seasonality
- Test count per million people
- % of cases treated at home
- % utilization of hospital beds (overstretched system recovers slower)
- Availability of therapies
- Case fatality ratio vs. other countries

- Effective integration of public health measures with economic activity (e.g. rapid testing as pre-requisite for flying)
- Potential for different disease characteristics over time (e.g. mutation, reinfection)

Economic

- Cuts in spending on durable goods (e.g., cars, appliances)
- Extent of behavior shift (e.g., restaurant spend, gym activity)
- Extent of travel reduction (% flight cancellations, travel bans)

- Late payments/credit defaults
- Stock market & volatility indexes
- Purchasing managers index
- Initial claims for unemployment

- Bounce-back in economic activity in countries that were exposed early in pandemic
- Early private and public sector actions during the pandemic to ensure economic restart

Contents

Leaders need to think and act across 5 horizons

1

Resolve

Address the immediate challenges that COVID-19 represents to the institution's workforce, customers, technology, and business partners

2

Resilience

Address near-term cash management challenges, and broader resiliency issues during virus-related shutdowns and economic knock-on effects

3

Return

Create a detailed plan to return the business back to scale quickly, as the virus evolves and knock on effects become clearer

4

Reimagination

Re-imagine the "next normal"—what a discontinuous shift looks like, and implications for how the institution should reinvent

5

Reform

Be clear about how the regulatory and competitive environment in your industry may shift

Nerve center

Managing across the 5Rs requires a new architecture based on a team-of-teams approach.

3

Return

Create a detailed plan to return the business back to scale quickly

There are 3 distinct actors with different responsibilities in the Return from COVID 19

National governments, State and Local governments, and companies each play different roles in achieving a full Return - and stakeholders in different geographies can coordinate to define roles and responsibilities

National governments

- Contain the domestic virus spread
- Fasttrack testing, treatment and vaccine approval and production
- Protect and restart the economy

State / Local governments

- Administer virus treatment
- Enforce protection policies
- Safeguard vulnerable populations

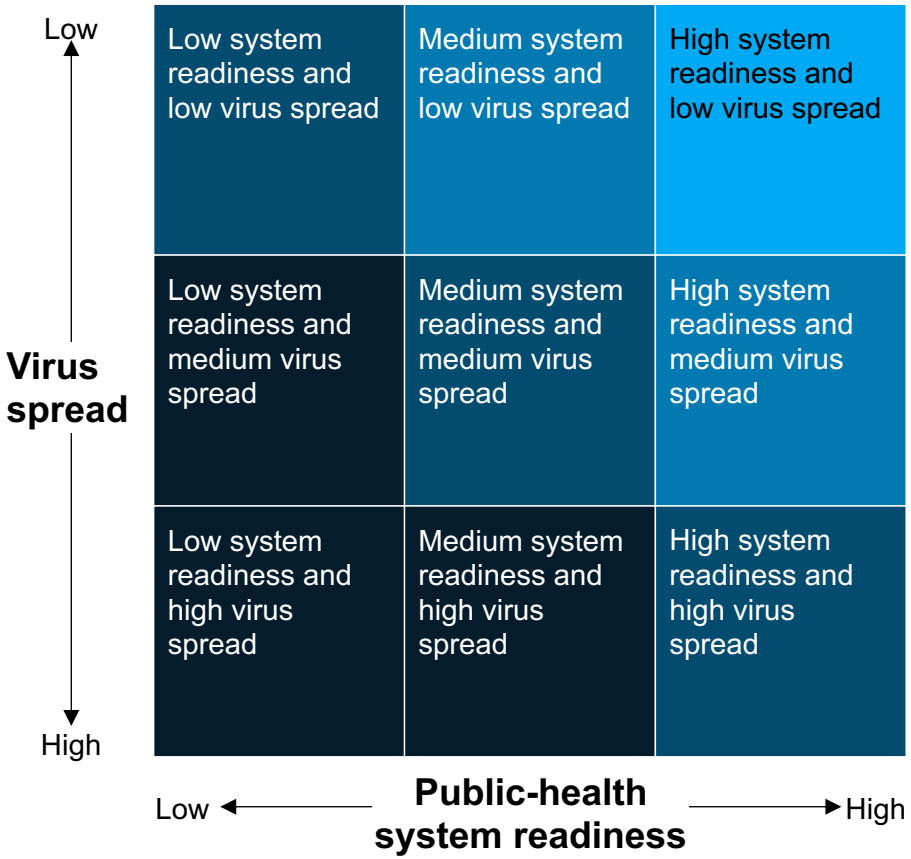
Companies

- Resume sustainable operations
- Protect employees in the workplace

National Governments

The extent of the healthcare system's ability to handle virus transmission is one key indicator for a national government's readiness for reactivation

Each region's readiness can be assessed along two dimensions



Virus spread

- **New daily infections**
- **Virus transmission rate (Rt),** i.e. the number of people that catch the disease from a single infected person
- **New people requiring hospitalization and ICU care daily**

Public-health system readiness

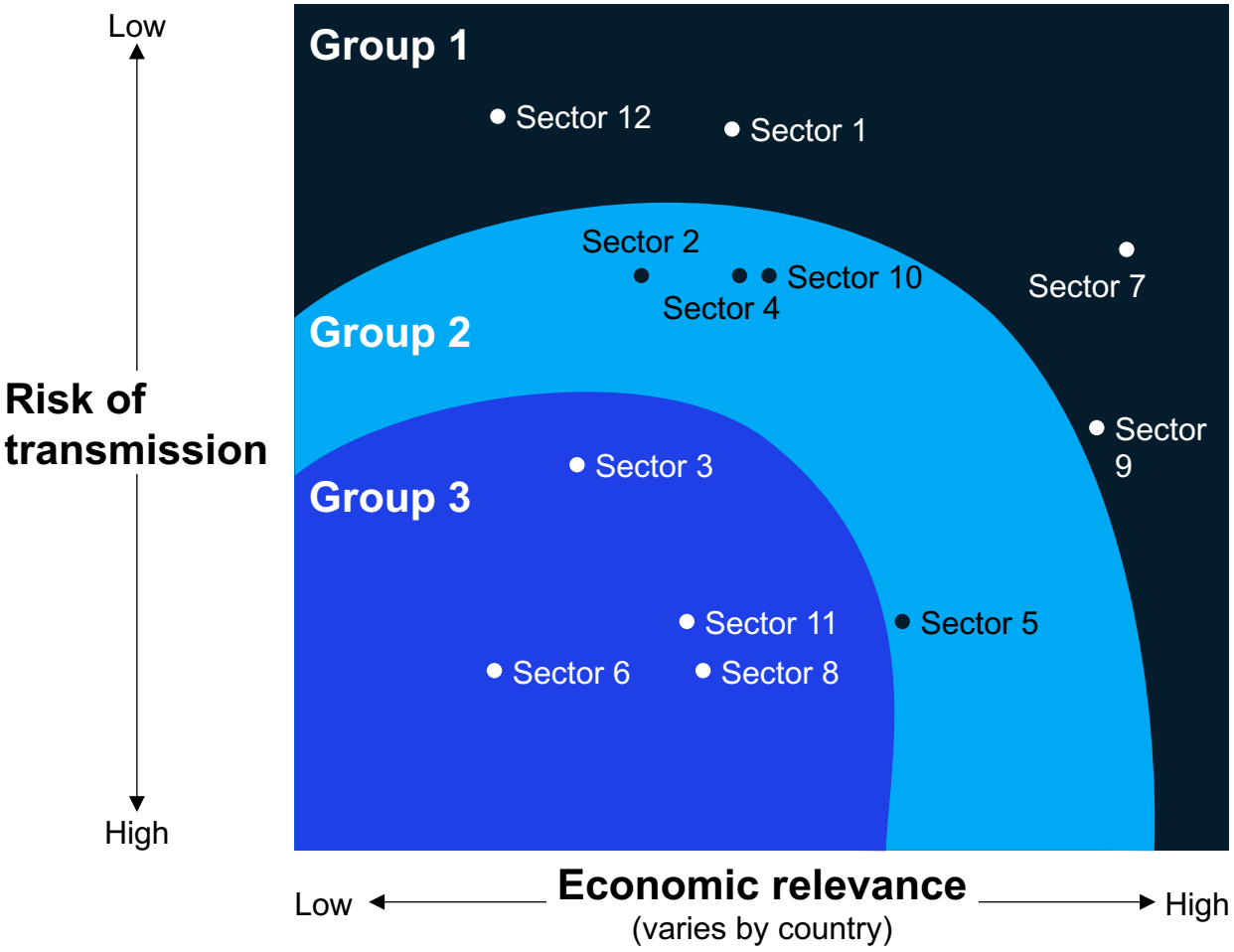
- **Medical capacity**, especially ICUs (e.g., ICU beds, ECMOs)
- **Adequate medical resources** (e.g., trained doctors, beds, personal protective equipment)
- **Ability to rapidly test infections**
- **Effectiveness in tracking and isolating** cases and contacts, including digital tools for real-time sharing of critical data

Source: McKinsey analysis, Press search

Governments could prioritize reopening of sectors based on risks of virus transmission and their economic relevance

An illustration of how countries might prioritize reopening of sectors along two dimensions

Illustrative Example



Essential services and sectors that continue operating regardless of the severity of transmission risk

- Healthcare and services relating to prevention and control of outbreak (e.g., testing)
- Essential goods (e.g., food, medicine)
- Other essential services (e.g., utilities, waste management, public defense)

Group1: Examples of sectors with high economic relevance and low risk of transmission

- Agriculture
- Manufacturing
- Logistics

Group 2: Examples of sectors with some economic relevance and low or medium risk of transmission

- Real Estate
- Other professional services (e.g., accounting, marketing)

Group 3: Examples of sectors with low economic relevance and high risk of transmission

- Food and accommodation (e.g., hotels, restaurants)
- Educational institutions
- Recreational businesses (e.g., Gyms and fitness centers)

Source: McKinsey analysis, OECD

China example: Containment measures can be adapted based on assessed readiness for reactivation

Example of stages of reactivation China's regions went through

		Readiness to reactivate economy			
		Stage 1	Stage 2	Stage 3	Stage 4
Geography	Hubei	No restrictions, but remote working is recommended and households must ensure they follow health and safety measures	Each household to keep only one entrance and exit point open. Allowed limited number of entrances and exits per day	Curfew in place with nighttime outdoor access prohibited; each household is allowed limited numbers of entrances and exits	Mandatory to stay home in isolation with outdoor access prohibited
	Other provinces	No restrictions, but remote working is recommended and households must ensure they follow health and safety measures	Limited restrictions but highly encourage residents to work from home across multiple provinces	Curfew in place with certain restrictions on time of day, day of week, and other limitations that differ by province	Most provinces shut down with residents required to stay at home
Essential sectors		All sectors are allowed to operate and key supply chains operate on market basis	Government begins to prepare the management of key supply chains in partnership with the private sector	Government partially manages essential supply chains	Government ensures management of essential supply chains and infrustructure (ie. medical supplies, building of temporary hospitals)
Non-essential sectors		All sectors are allowed to operate while being cautious of health and safety measures	Most sectors are allowed to operate but must comply with specific physical distancing and health protocols (e.g., in restaurants)	Few sectors are allowed to operate after they have received approval and comply with physical distancing and safety protocols (e.g., manufacturing factories)	Issued order to shutdown all non-essential companies, where only those that can operate online are allowed
Transport	Hubei	Lockdown lifted, all transportation resumes in all Hubei cities including Wuhan. Residents who travel have to show "green" health code. People from other provinces can travel in and out of Hubei with green code	Easing of inter-province movement with Hubei. Transportation in Hubei cities apart from Wuhan resume. Residents must show "green code" and strict screening continues	Removed all traffic control points except for exits of Hubei province and at entrances/exits to Wuhan city. Hubei residents who travel within the province have to show "green code"	Locked down transport in and out of Hubei province, amongst cities in Hubei and within all Hubei cities including Wuhan
	Other provinces	All transportation within city, inter-city and inter-province resumes. People who travel have to show "green code"	Inter-province movement restricted	Limited inter-city movements with strict screening at traffic control points	Intra-city movement restricted
Assembly		Large events and gatherings that draw crowds are banned (e.g., concerts, tourist events)	Gathering limited to medium-sized groups. Workplace events encouraged to be cancelled or postponed.	Gatherings limited to small groups in private and public places	Remain within circle of household members in residential spaces

Source: Press search

China example: Targeted demand and supply interventions can accelerate the recovery of sectors

Examples of interventions used by the Chinese government

Demand: Restore consumer confidence

Boost consumers' willingness to spend:

- Rolled out digital coupons via Alipay and WeChat pay to use for dining, shopping and travel for short period of time
- Reduce import tariffs on consumer goods

Communicate frequently across multiple channels

- Establish centralized reporting and communication channels to keep citizens informed
- Created an online epidemic control website to publish disease indicators and provide real-time updates
- Create health QR codes on leading platform Alipay to track mobility, and alert on risks

Supply: Accelerate business recovery

Guarantee transportation logistics and coordinate supply channels:

- Coordinate local raw material and accessory resources, and promote cross-city collaboration as needed

Assist enterprises in epidemic prevention:

- Advised companies to formulate prevention and control measures (employee inspections, facilities, adequate medical supplies)
- Investigation and research teams sent by central government to inspect work resumption progress

Promulgate trade emergency measures:

- Registration fees exempted for specific drugs and medical devices
- Manufacturers of essential supplies and products will benefit from a one-time tax deduction for equipment purchases
- Import/export of technology by local companies is to be prioritized and receive special assistance from local departments

Solve labor shortage and difficulties in work resumption and recruiting:

- Arranged chartered transport and offered allowances to bring migrant workers from provinces with labour surplus to needed cities
- Subsidise "point-to-point" pickup and drop off of migrant workers
- Offer subsidies for couples returning to work and companies hiring more workers
- Receive money for every new hire by local firm and hiring a minimum of workers from outside provinces

Alleviate pressure on cash flow and operating costs:

- Tax declaration extension
- Exemption of social insurance payments and housing provident funds for corporates
- Reduce electricity cost
- Subsidise loans, issue low cost loans, postpone loan repayment, reduce SSC, VAT reduction or exemption, and reduce rent for SMEs

China example: Sectors recover at different rates, with large industrial firms recovering the earliest and SMEs and services taking longer

99%

Work resumption rate for large enterprises outside Hubei as of March 28

92%

Work resumption rate for all government-owned firms as of early March

77%

Work resumption rate for small and medium enterprises outside Hubei as of March 29

Industrial enterprises

- **99% of China's major industrial enterprises** have resumed production as of March 28
- In Hubei, 95% of major industrial enterprises have resumed operations, and **70% of employees have returned**

Automotive

- Returned to **97% operating rate**, 82% of employees have returned to work as of March 28

Steel & electronics

- **90% of employees** have returned to work as of March 28

Textile, machinery, light industries

- **70-90% of employees** have resumed work as of March 28

Construction & infrastructure

- 11,000 key projects outside of Hubei province have resumed, at a rate of **89.1% as of March 23**
- Major highway and water transportation work has resumption rate of 97%. Airport and major water projects respectively reported a rate of 87% & 86%

Restaurants

- Estimated **40% of restaurants reopened** and **only 20% of workers** returned as of mid-March

Source: Press releases

China example: Continued, targeted stimulus can support populations & businesses that struggle during reactivation periods

Examples of economic measures to support the most vulnerable segments in China

Efforts and measures to help unemployed and impoverished people

- Wanning city government in Hainan created 1,327 **temporary public welfare posts for epidemic prevention, including disinfecting and guarding for impoverished people**
- In addition to offering jobs for low-income families, many places in China **arranged shuttle buses, trains and flights to transport impoverished workers** from their rural hometowns back to work in big cities
- Local governments sought and dispatched workers, majority of whom were rural migrant workers in poverty, to **fill vacancies of enterprises that were facing shortages of labour**
- In the city of Huai'an in northern Jiangsu, the local government has announced measures including the **introduction of jobs and employment subsidies to encourage migrants to work in their hometown**

Financial aid provided to highly impacted SMEs and micro-businesses

- Offer **subsidized loans** to agricultural firms and SMEs
- **Postponement of principal and interest loan repayment** for payments from Jan 25 to June 30 2020
- From March 1 to May 31, 2020, **small taxpayers in Hubei province will be exempted from VAT** if their tax rate is set at 3%. Small taxpayers in other regions will pay rate of 1% on taxable sales revenue if their VAT rate is set at 3 %.
- **Reduce and postpone social security contributions**, reduce contributions for endowment insurance, unemployment insurance and work injury insurance
- Guide banks to issue **low cost loans to individual businesses**
- **Trim electricity charges** by 5% for companies not from high energy consuming industries
- **Encourage local governments to cut land use tax** as incentives for property owners to reduce rent for business tenants

COVID-19 poses a grim market for new graduates

- College graduates in China reaches a record high of 8.74 million while job recruitment has dwindled or been postponed due to the COVID-19 outbreak
- The Ministry of Education has announced measures to ease the pressure, including launching an **online campus recruitment service and expanding the enrolment of master's degree students**
- To provide more job opportunities, the country will **expand recruitment in basic education, primary-level medical care and community services**
- Government encouragement of new graduates to **work in grass-root institutions** in remote areas of the country

Source: Press releases

State / Local governments

Local leaders can combat COVID-19 across six domains

Domain		Example objective	Potential metrics
I	**Foundational Public Health**	**Mitigate contagion** by protecting healthcare workers, scaling testing capabilities, establishing contact tracing, setting effective quarantines, and adopting public use of PPE, and other "low regret" approaches	Mortality, hospitalizations, active cases, testing rate, healthcare worker hospitalizations, mask availability
II	**Societal Compliance**	**Achieving compliance with public health strategies among people and institutions**, using communication, influencers, segmentation, penalties, enforcement, and support	Compliance by segment (old, young, low-income) and by intervention (physical distancing, remote work)
III	**Health System Capacity**	**Expand health system capacity i**ncluding staff, supplies, and physical infrastructure likely through coordination, direct support (National Guard), funding, and directives	Resources (beds, ICU, vents, staff, supplies) per 1000 people; potential expansion once activations
IV	**Industry Safeguarding**	**Protecting the public at work, in stores, and at school** by erecting safeguards to human interaction, helping businesses secure their operations, and creating safe environments for people to work	Portion of each industry confirmed to safeguarded Consumer confidence to engage safely
V	**Vulnerable Populations**	**Ensuring public support** for individuals who are recently unemployed or homeless, or have chronic physical or mental health conditions that can be exacerbated by the epidemic	Trends in events (e.g. eviction rates, suicide rates, depression/anxiety RXs, hate crimes)
VI	**Economic Health**	**Minimize the economic impact and accelerate recovery** by distributing federal stimulus, crafting local programs to supporting business, and incentivizing consumer spending	Unemployment rate, bankruptcies, sales tax, new business formation, state solvency

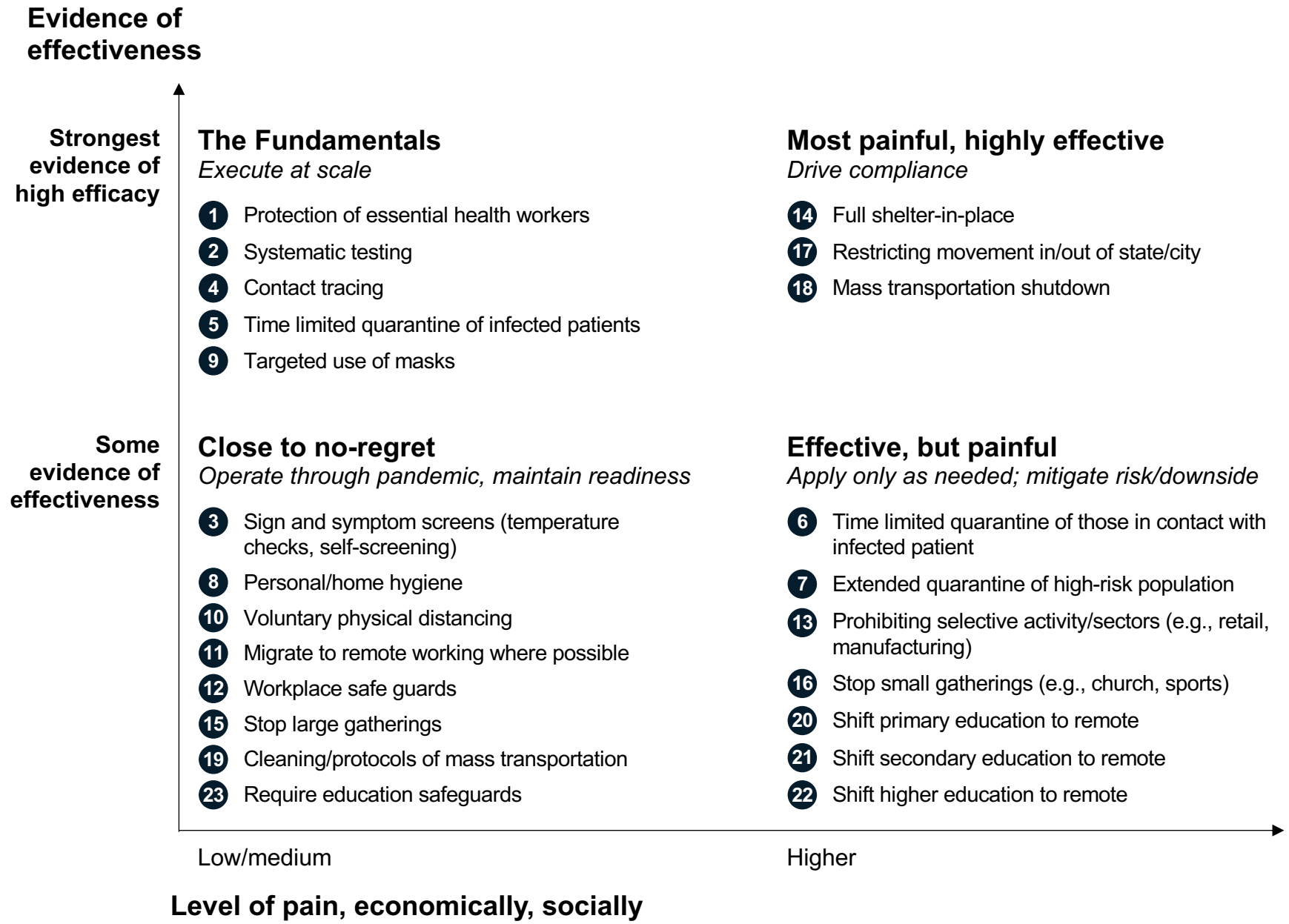
Source: McKinsey.com, "Winning the "local" COVID-19 war"

23 public health interventions identified and assessed across 4 dimensions (epidemic, economic, social and implementation)

Categories	Interventions to stop contagion	Evidence of impact on epidemic	Unfavorable economic impact	Unfavorable social impact	Implementation difficulty
Protection	1 Protection of essential health workers-adequate PPE and protocols	High	Low	Low	Low
Detection/ quarantine	2 Systematic testing	High	Low	Low	Medium
	3 Sign and symptom screens (temperature checks, self-screening)	Medium	Low	Low	Medium
	4 Contact tracing	High	Low	Low	High
	5 Time limited quarantine of infected patient	High	Low	Low	Medium
	6 Time limited quarantine of those in contact with infected patient	Medium	Low	Medium	Medium
	7 Extended quarantine of high-risk population	Medium	Low	Medium	Medium
Personal behavior	8 Personal/home hygiene e.g., hand washing, surfaces	Medium	Low	High	Medium
	9 Targeted use of masks	Medium	Low	Medium	Medium
	10 Voluntary physical distancing	Medium	Low	Medium	Medium
Economic activity	11 Migrate to remote working where possible	Medium	Medium	Low	Medium
	12 Workplace safeguards (e.g., masks, physical distancing)	Medium	Medium	Low	High
	13 Prohibiting selective activity/sectors (e.g., retail, manufacturing)	Medium	High	Medium	Low
Travel/ movement	14 Full shelter-in-place	High	High	High	Medium
	15 Stop large gatherings (e.g., church, sports)	Medium	Low	Low	Low
	16 Stop small gatherings (e.g., church, sports)	Medium	Low	Medium	Medium
	17 Restricting movement in/out of state/city	High	High	High	Medium
	18 Mass transportation shutdown	Medium	Medium	Medium	Medium
	19 Cleaning/protocols of mass transportation	Low	Low	Low	Medium
Education	20 Shift primary education to remote	Medium	High	Medium	Medium
	21 Shift secondary education to remote	Medium	Medium	Low	Medium
	22 Shift higher education to remote	Medium	Medium	Low	Low
	23 Require education safeguards	Low	Low	Low	Medium

Source: McKinsey.com, “Winning the “local” COVID-19 war”

Interventions can be categorized by effectiveness and level of pain, with 5 fundamental interventions identified



Source: McKinsey.com, “Winning the “local” COVID-19 war”

COVID-19 exacerbates challenges across a variety of universal basic needs (1/2)

Health-related basic need	Employment	Housing	Food security	Transportation
Potential COVID-19 related challenges	Economic downturn threatening small businesses Spike in unemployment due to businesses closing as a result of physical distancing	Ability to quarantine compromised by living arrangements (e.g., shelters, group homes) Increase in housing insecurity due to inability to pay rent	Destabilization of food safety net as a result of illness and physical distancing policies (e.g., school closures, staff shortage at food agencies) Rise in food insecurity due to loss of income from layoffs and reduced hours	Public transportation systems reducing frequency of routes Ride-share options reduced with physical distancing

Source: McKinsey.com, “Winning the “local” COVID-19 war”

COVID-19 exacerbates challenges across a variety of universal basic needs (2/2)

Health-related basic need	Social support	Education and language/ literacy	Safety (including racism/ discrimination)
Potential COVID-19 related challenges	Elimination/reduction of in-person social support services and socialization opportunities due to physical distancing	Lack of educational support for students with special education or language needs during school closures Limited access to technology to continue with online learning during shut down Rapid flow of information about COVID-19 may not be provided in appropriate languages or channels to meet needs of hard-to-reach populations	Increasing discrimination against certain racial/ethnic groups Exacerbation of existing racial/ethnic tensions and economic disparities Physical distancing/isolation and economic stress may trigger domestic abuse Economic stress may increase rate of crime

Source: McKinsey.com, “Winning the “local” COVID-19 war”

Measures can be taken across levers to support people and businesses at the local level

Preliminary & non--exhaustive

People

People-oriented interventions should be tailored to account for underemployed populations and vulnerable populations

Businesses

Business-oriented interventions should be tailored to account for specific sectors (e.g. tourism, airlines), business sizes (e.g., SMBs) and regional differences (e.g., rural vs. urban)

Lever	Example specific measures
Protect current employment	• Support continued employment through targeted wage subsidies
Enable rapid returns to the workforce	• Reduce barriers to accessing work (e.g., loosen licensing requirements) • Create COVID-19 response job portals to connect the unemployed or underemployed with companies seeing spikes in demand
Support critical needs	• Ease critical expenses through residential loan forbearance measures or eviction freezes • Identify and communicate to beneficiaries of any stimulus funding measures to ensure appropriate enrollment
Improve liquidity/ cash flow	• Ease financial obligations, e.g., postpone/waive taxes or fees for SMBs or hardest hit sectors, commercial mortgage loan forbearance measures • Accelerate state's payment of outstanding AP to state vendors • Facilitate process for SBA loans/grants, e.g., portal to support application prep
Invigorate demand	• Target affected sectors and SMBs with dedicated state purchasing/ procurement programs • Shift attention to demand spikes and essential needs
Re-start/continue operations	• Support shift to remote operations, e.g., expanded WiFi coverage, targeted loans for remote work equipment

Source: McKinsey.com, "Winning the "local" COVID-19 war"

COVID-19 readiness dashboard structure for state/local governments

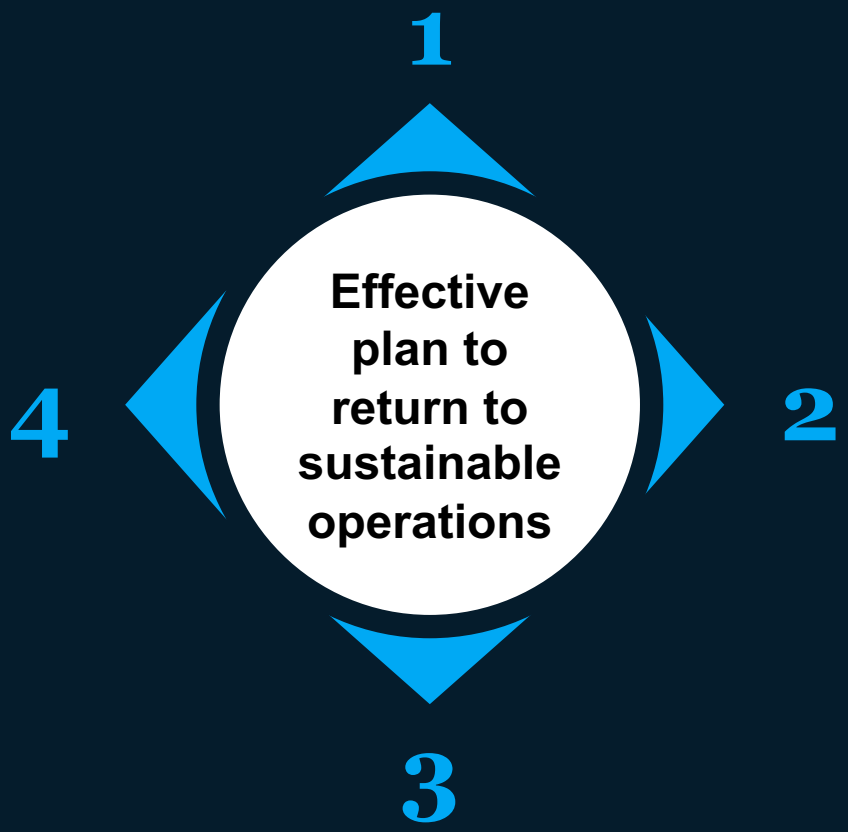
High Medium Low

	Foundational public health	Societal compliance	Health system capacity	Industry safeguarding	Vulnerable populations	Economic health	Composite index
							
Score	**23**	**76**	**54**	**15**	**25**	**32**	**11**
Domain performance metrics	• Mortality • Hospitalized patients, healthcare workers • Active cases • Testing rate • Mask availability	• Compliance by high risk, medium risk, and low risk	• Ventilators • Beds • Intensive care beds • Clinical workforce	• Ability to consume safely • Portion safeguarded of essential services, non-essential services, schools	• Eviction rates • SNAP enrollment • Suicide rates • Depression, anxiety RXs • Hate crimes	• Unemployment • Bankruptcies • Sales tax • New business formation • Solvency • Workforce availability	**Epidemiological** • Starting context • Rate of new cases • immunity **The science** • Treatment • Vaccine **Domain performance** • Public health • Societal compliance • Health system capacity • Industry safeguarding
Tactics	● PPE/worker safety ● Testing ● Contact testing ● Quarantines ● Masks ● Low-regret tactics ● Activity restrictions	● Public outreach ● Enforcement ● Support	● Supplies (vents) ● Physical space ● Clinical workforce ● Direct intervention	● Essential services ● Non-essential sectors ● Education ● Standards ● Monitoring/ compliance	● Social sector ● Private sector ● State programs ● Federal programs ● Monitoring	● Federal programs ● State programs ● State benefits	

Source: McKinsey.com, “Winning the “local” COVID-19 war”

Companies

Many uncertainties are causing lack of clarity on return planning for corporations



1 Future of work

- Will COVID-19 driven changes (e.g., in remote work) accelerate other changes (e.g., greater percentage of jobs done through gig-style contracts) that affects current plans on hiring & talent management

2 Workforce safety

- What leading indicators could precede a lifting of shelter at home provisions?
- Will less impacted regions restart sooner than more impacted regions?
- Will companies be liable if they return employees to work and they fall ill?
- How much advance warning will federal, local, state governments give before shelter at home provisions are lifted?
- Will there be restrictions mandated by the government at the time of a restart/ return to work?
- Are there any employee segments that would like current remote work arrangements to continue, and can still be productive?
- What new norms need to be defined and followed to ensure no spread in our facilities?

3 Strategic shift to 'next normal'

- Will COVID-19 driven changes (in the market, consumers, competitive landscape, other) result in fundamental strategic shifts for the company soon after COVID-19, and will that drive the need for a new set of skills that are not currently assumed in the workforce plan?

4 Financial impacts

- What will the extent of demand drawdown be?
- What are the chances of an economic recession (in spite of bailout packages and other measures)?
- What implications would a potential downturn have on the business (revenue hit, liquidity issues, other)
- What do these implications mean for the workforce?
- Will the bailout package (or post COVID reform measures) include provisions that affect the organization in a fundamental way?

A basic framework for return to work planning

Who to transition

- Workforce criticality
- Extent of Remote Work Possible
- Extent of RW advisable long-term

Onsite critical	Onsite flexible	Virtual	Other

When to transition

- Shelter-at-home provisions
- Local Public Health Readiness
- Return of demand locally
- Readiness to travel

<1 month	1-3 months	>3 months

How to transition

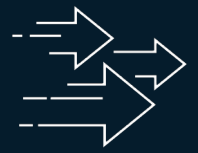
- Policies for at-risk vs. general employees
- Communications & outreach
- Pre-return capability building (new norms)
- Facility preparedness
- Post-transition norms & preparedness

High Restriction Operations	Partial Restriction Operations	Next Normal Operations

Who to transition: Four categories of workforce for the immediate post-shelter-at-home environment

Maintain remote work, while increasing flexibility

- Focus on remote support, productivity, connectivity, health
- Shift contracts where needed & possible towards flexible arrangements



Define plan for staged return based on local context

- Identify milestones for starting a safe return to work process (e.g., local public health system readiness, government return to work guidelines)
- Develop detailed plan for return to work based on key considerations: virus spread, guidance from public health authorities, workforce readiness to return to work, legal liability

Return to work with increased work flexibility

- Define plan for return to work, including staggered shifts and slower ramp-ups
- Re-train to move to more flexible skill sets
- Shift contracts where needed & towards flexible arrangements

Transparency, reskilling, preserve company's future

- Provide transparency into reality of situation facing company
- Re-train or seek opportunities to shift focus
- Other actions to preserve future of company

When
to transition

Charting the path toward returning to work and planning for economic recovery

What you have to believe before returning your workforce back to sustainable operations

Shelter at home provisions are removed

Local public health situation indicates recovery

Demand within region is starting to return (in case the region is a market)

When to transition: Leaders must monitor key milestones to chart path toward recovery

Businesses can anticipate return to work and plan for economic recovery by monitoring readiness indicators

Example Return to work readiness milestones

Health system capacity

- >5 ICU beds per 10,000 adults
- >45 hospital (Med/Sur) beds per 10,000 adults

Case progression

- Rate of new cases falls below <8%
- <.02% of the population is currently sick

Testing and Tracing

- Positive tests represent <20% of total tests administered
- Availability of rapid testing
- Contact tracing at scale infrastructure in place
- Progress toward 70% of population immune (via vaccine, recovery, or tested immunity)

Example Economic recovery readiness milestones

Economic stimulus

- Degree of distribution of government stimulus

Social distancing behavior

- Traffic congestion returns to within 30% of 2019

Corporate confidence

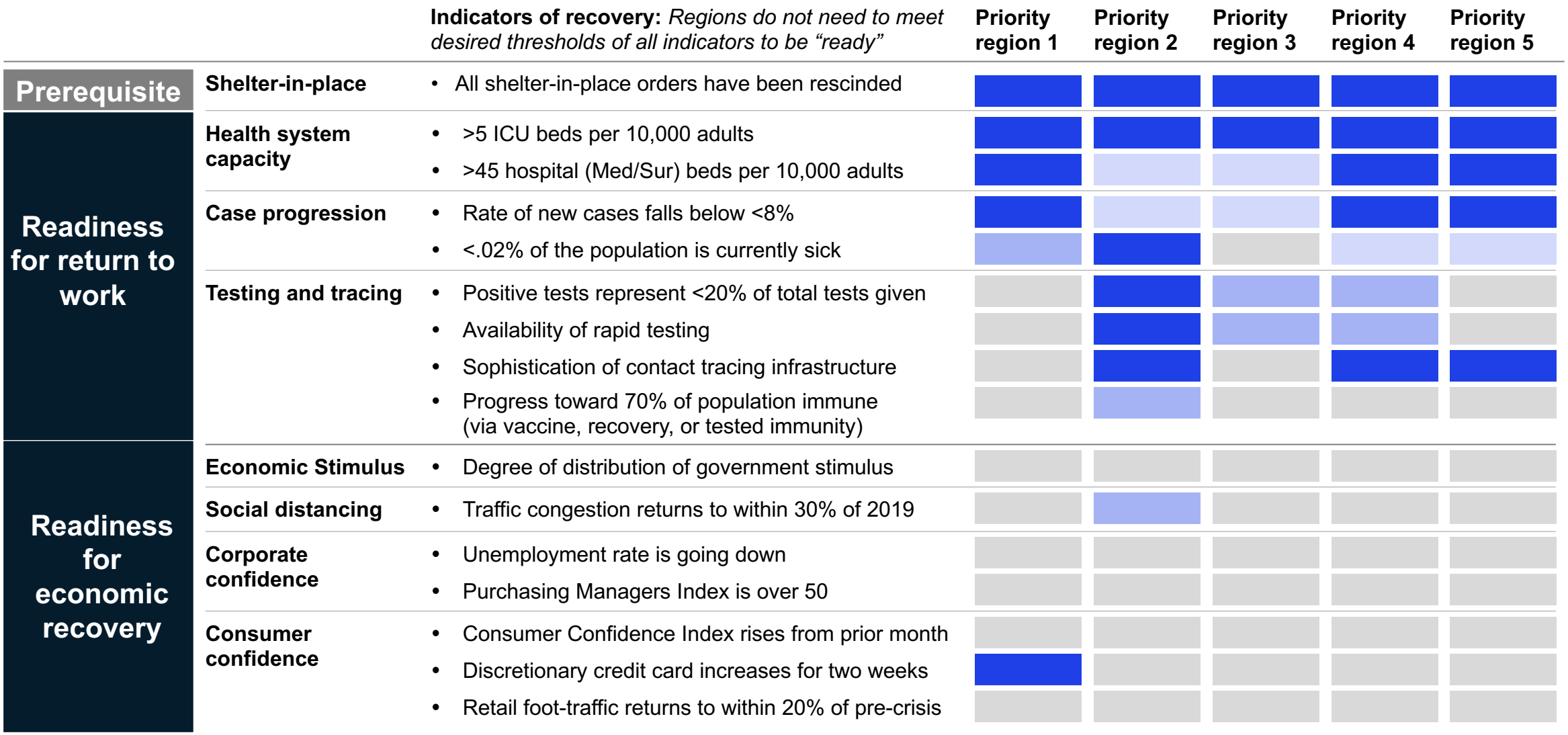
- Unemployment rate is going down
- Purchasing Managers Index is over 50

Consumer confidence

- Consumer Confidence Index rises from prior month
- Discretionary credit card increases for two weeks
- Retail foot-traffic returns to within 20% of pre-crisis

When to transition: An effective leading indicator dashboard can help determine timing of recovery

Indicates recovery



How to transition: "Return to workplace" should be executed with care

Sample employer interventions[1]

Healthy human interactions

- Ensure employees and customers stay > 6 ft apart
- Sanitize high-contact surfaces
- Separate customers and employees from potentially ill individuals
- Ensure hygienic handling of items that come in contact with the broader population (e.g., materials handling)
- Mandate temperature checks upon entry

Seamless business operations

- Flexible sick leave so workers can stay home when ill
- Support function flexibility (e.g. backup supply chains, contractors)
- Manage absenteeism and enable remote work, rotating days/weeks
- Operate multiple locations without travel

Safe work environment

- Structurally limit physical contact between employees (e.g., barriers between workstations)
- Improve building conditions and airflow (e.g., ventilation, no-touch bathrooms)
- Educate on good hygiene habits (e.g., handwashing, sanitizer)
- Routine and targeted deep cleaning (e.g., if an employee tests positive)
- Provide personal protective equipment where needed (e.g., facemasks, gloves)

Interventions should be assessed and evaluated across key dimensions including:

- Effectiveness of dealing with the pandemic
- Implementation difficulty
- Disruptions to business

1. Any steps on safety should be taken in accordance with CDC / local Department of Health guidelines

Source: CDC, OSHA

China example: Protocols specifically tailored by sector can also help lower transmission (1/2)

Examples of protocols in manufacturing sector in China

Factory worker safety

Staggered working shifts, arrival times and lunch breaks; temperature screening and sanitizers; physical distancing seating arrangements; worker space decontamination; required to issue personal protective equipment to all workers; wear masks at all times

Maximize worker availability

Cover costs for travel/relocation for dislocated workers returning to work (with 14-day quarantine for those returning from high risk provinces); flexible work hours; proactive assessment of worker health codes (green/yellow/red)

Inbound supply

Suppliers, manufacturers, and customers have shared resources proactively, given mutual dependence including PPE (masks, disinfectants), idle transportation asset, and personnel; manufacturers have simplified offerings to high running items, shifting focus to locally supplied SKUs, and key input suppliers are more closely tracked

Logistics

Change in operating model, including running multiple drivers per truck asset with staggered timings to fully utilize asset; segregation of drivers, transfer points, and rest/cleaning checkpoints; drivers wearing full protective equipment; ensure distribution center safety measures

Non- manufacturing function

Implemented work-from-home accommodations to roles that are able to; flexible work schedules and teleworking; staggered work times to ensure availability of research spaces while maintaining physical distancing

Large Electronic Manufacturer

A large electronics manufacturer has introduced frequent temperature testing and plans to give tens of thousands of coronavirus tests to workers along with an equally large number of chest x-rays. Workers with elevated temperature are immediately taken to a hospital, and those around them are closely watched.

Car manufacturer

After shutdown was lifted, a car manufacturing facility gradually resumed operations and has now returned to full activities. Among other measures, employees are also prohibited from sharing apartments and provided isolated accommodations instead.

Workers sit spaced out and facing the same direction during lunch to reduce risk of infection

Some precautionary measures include:

Body temperature checks at arrival

Regular factory disinfection

Workers having lunch in isolation

Having a mask disinfection cabinet every 200m.

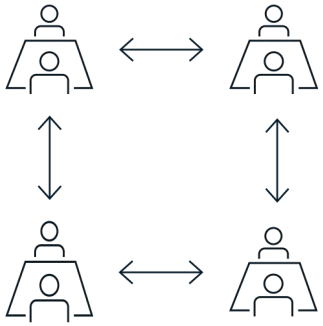
Source: Interviews with plant managers in China on March 21-24, 2020

Singapore example: Protocols specifically tailored by sector can also help lower transmission (2/2)

Examples of protocols in food and restaurants businesses in Singapore

Pre-lockdown, food & restaurants across the country rolled out several health safety measures to prevent contagion

One restaurant **moved out around 10% of tables** to ensure adequate spacing, **ensure 1m spacing** between customers by placing 1m stickers at queue line, and **collected customer contact details** for contact tracing.

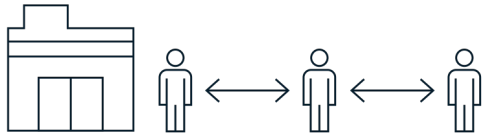


One restaurant **spaced their touchscreen kiosks 1m apart with staff will disinfect the screens every 15-30 mins.** They will have **1m floor markers** along with **safe distancing signages** at various spots in stores. **Staff are also required to wear masks and are prohibited from accepting personal cups.**

Shopping malls and public venues continue to operate with crowd control and physical distancing measures

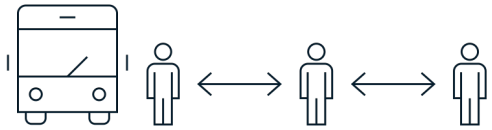
Crowd control measures in full force at malls, attractions and public venues, sealing entrances

Limit capacity and disperse groups of more than 10



Malls **limiting capacity of visitors** with queue for entrance screening

Public areas implementing at least **1 metre physical distancing** with **seat markers**



physical distancing at **public** transportation **stops**

Source: Interviews with plant managers in China on March 21-24, 2020

Approach for effective return to sustainable operations for a corporation

Goals

Define near-term roadmap to restore sustainable workplace operations

In parallel, re-imagine the long-term workforce to align with new post-COVID strategic objectives

Approach

Define post-COVID workforce impacts in 2020 time frame in different scenarios

Define longer-term scenarios, and portfolio of strategic actions over time

Segment employees into relevant categories

Refresh future of org plan to include post-COVID 'next normal' thinking

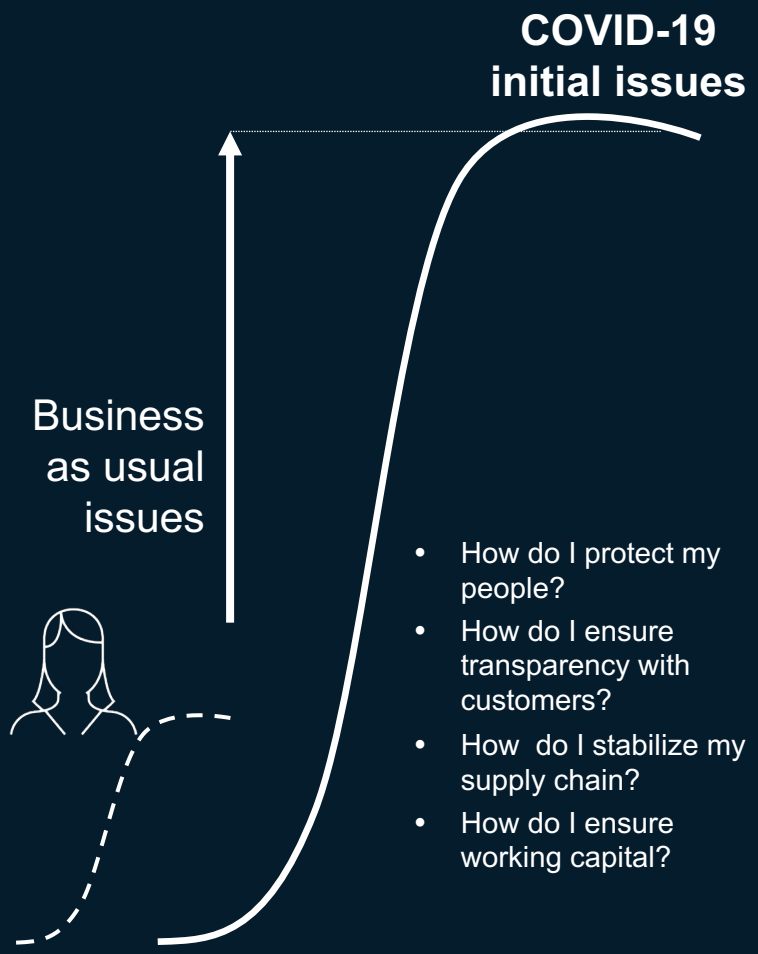
Defined detailed plans for each segment

Define roadmap to connect & align near-term plan to longer-term goals

Nerve center

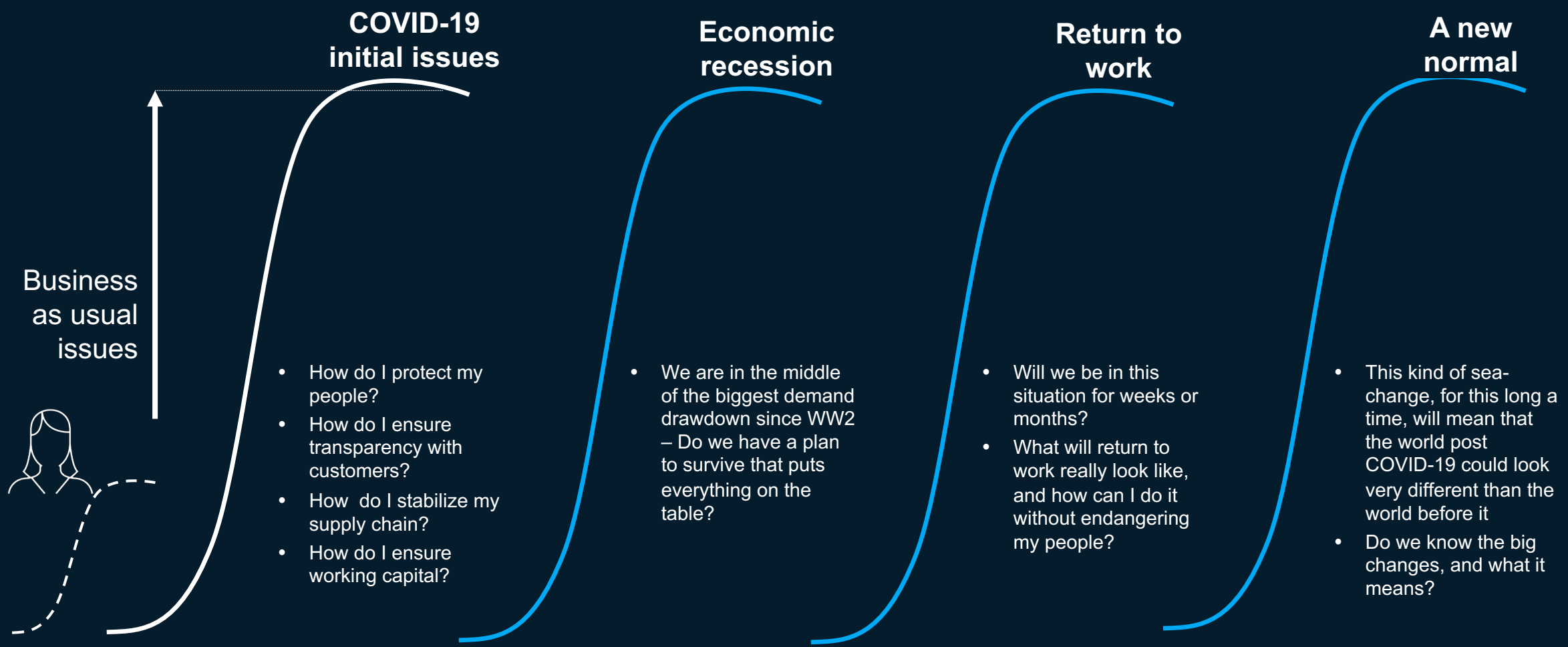
Managing across the 5Rs requires a new architecture based on a team-of-teams approach.

Many leaders are experiencing a big increase in COVID-19 issues…



- How do I protect my people?
- How do I ensure transparency with customers?
- How do I stabilize my supply chain?
- How do I ensure working capital?

…but there is a tsunami of ever-more-complex issues that lie ahead



When facing such a tsunami, companies make four mistakes

Inadequate Discovery

Optimism bias, lack of adequate ‘sensing mechanisms’ (e.g., escalation failures), over-reliance on past patterns, risk rationalization

Industrial manufacturer: pushed out fix timelines for failed product more than 12 times. Top management optimism bias was called out multiple times by regulators, politicians and other observers

Constrained Solution Design

Many crises have a technical core, which needs new solutions to be invented (e.g., BP top hat) or imported anew into the sector/ geography

Energy company: Many public failures to fix process safety issue before success. Challenge was that the fix needed new engineering innovation

Slow or Bad Decision Quality

Groupthink, political pressures, high-emotion situations; Unfamiliarity – pattern recognition-driven thinking fails; Desire to wait for more facts slows response

Challenger disaster: NASA engineers pressured Thiokol to change their ‘no-launch’ recommendation (Thiokol shifted their stance to satisfy their biggest customer) in-spite of a well-understood technical failure on O-rings.

Inadequate Delivery (Execution failure)

Chaos during disruptions frequently translates to lack of accountability and direction, ‘operations addiction’ on the part of top management, leading to failures of execution

Automotive manufacturer: Was criticized for multiple aspects of recall activity (e.g., unclear terms and conditions, inadequate call center staffing, other challenges)

The central question

How can I increase my organization's capacity and speed to respond decisively to today's issues…

…while uncovering the truth about the future, and shoring up defenses to meet it?

Nerve centers are a specific organizational construct, meant for institutions that are facing existential, high-velocity disruptions, that are designed to address this question

How Nerve Centers achieve this – "team of teams" made of 4 teams

Deliver, Decide, Discover, Design

Deliver quickly & flawlessly on priorities provided by "Decide" team

Team 1 – Deliver

Execution team(s)

Team 3 – Discover

Scenario Planning team

Evaluate possible scenarios – near-term to long-term & derive implications; craft one planning scenario for other teams

Present focus → **Plan Ahead**

Ensure "Deliver" goals are current & progress is occurring; decide whether to trigger a strategic move

Team 2 – Decide

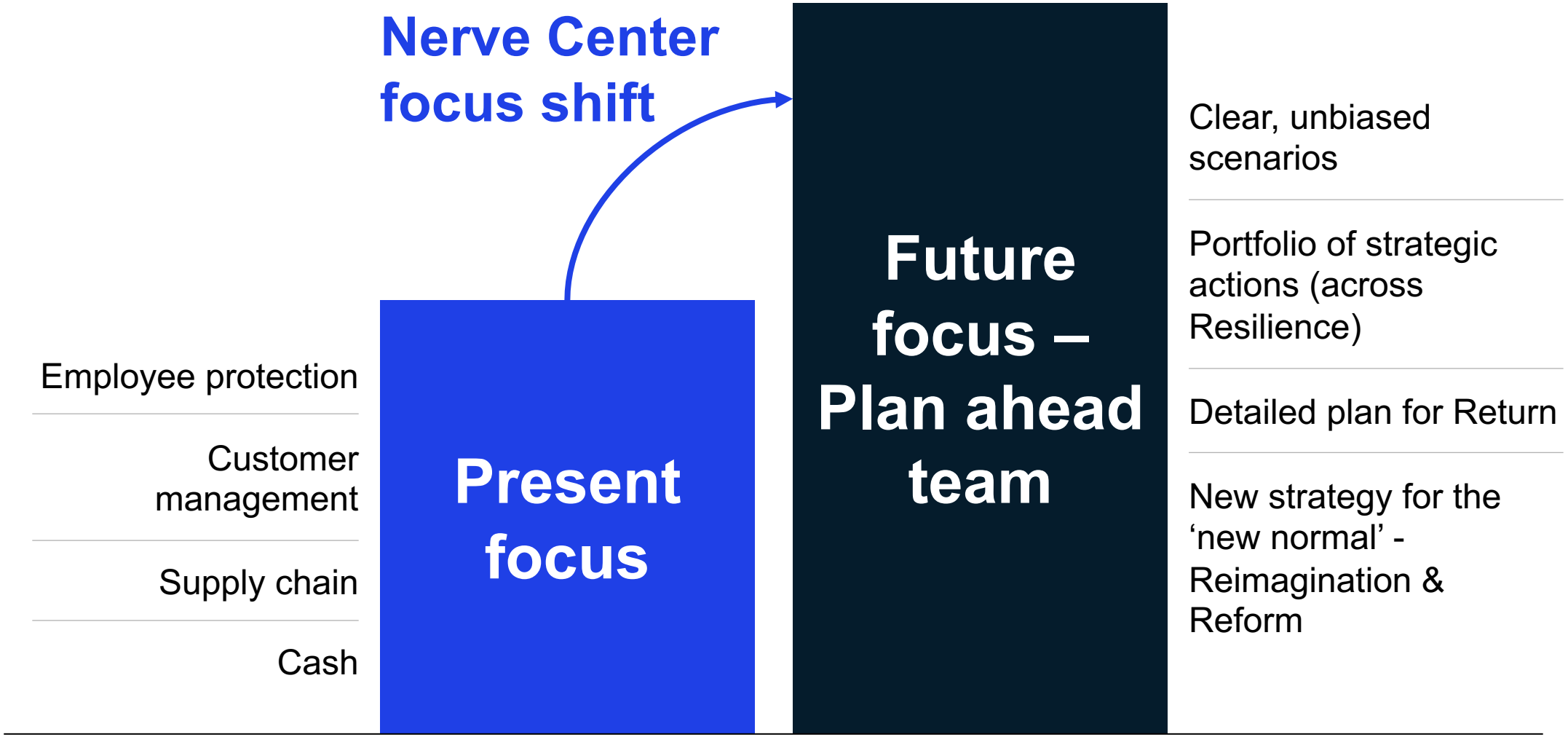
Integrated Operations team

Team 4 – Design

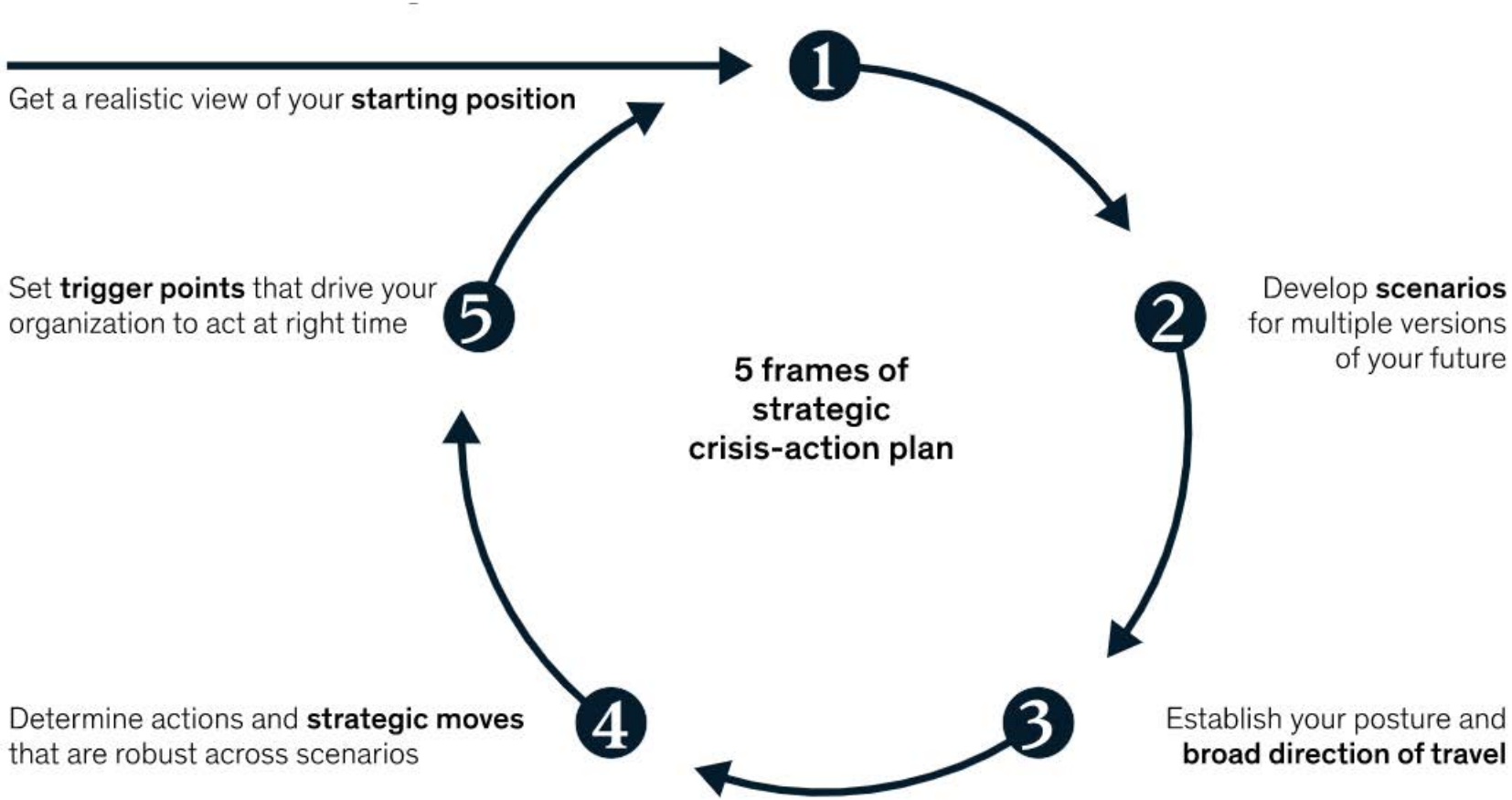
Strategic Moves team

Craft a portfolio of strategic actions with clear trigger points

Nerve Center needs to evolve from present focus to include plan ahead teams



A plan ahead team can offer quick responses to rapidly changing circumstances using 5 frames



Please refer to this link to read the full article

Source: Getting ahead of the next stage of the coronavirus crisis, April 2020

Nerve Center design is based on military command principles

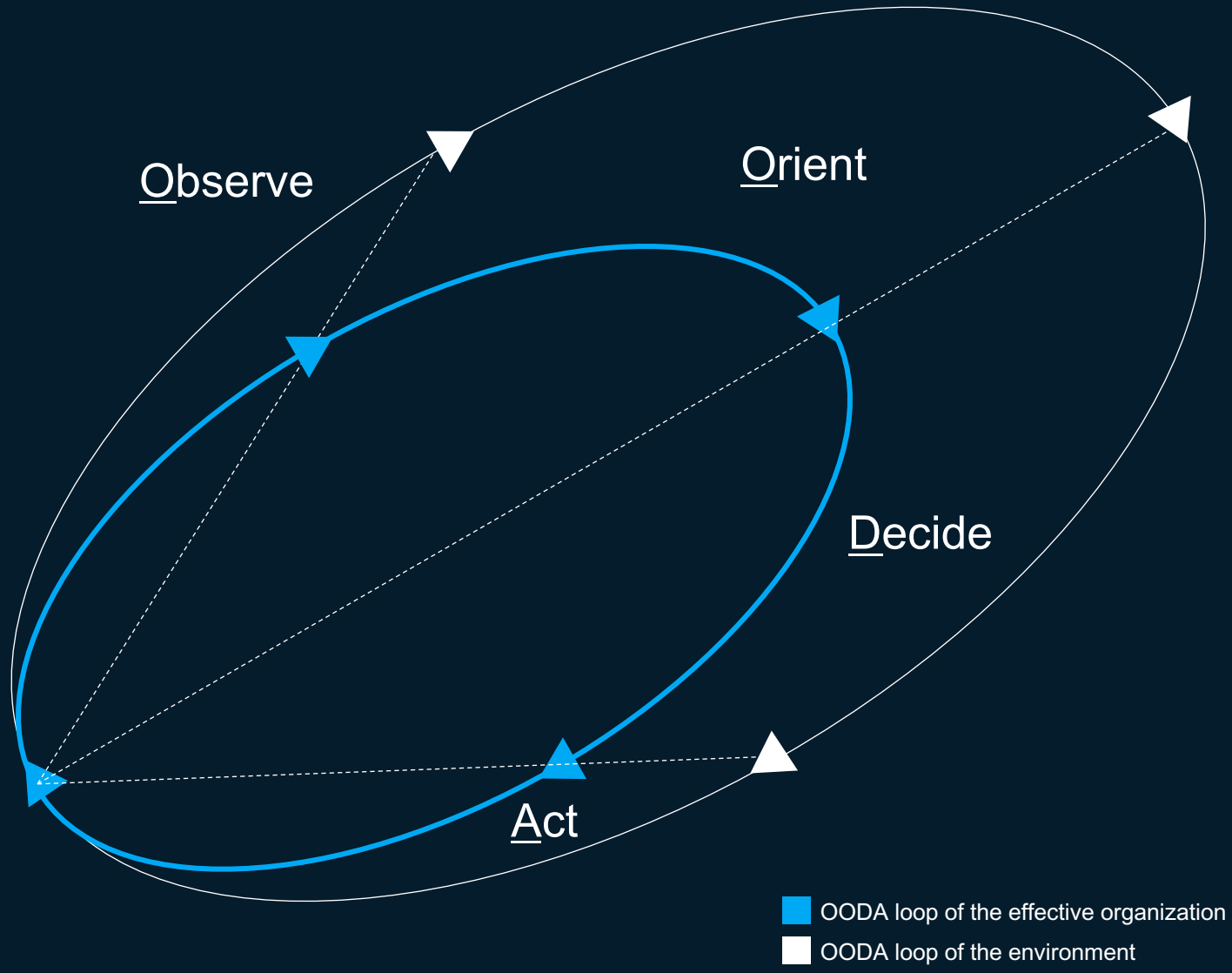
Core concept: Create an organization that can Observe, Orient, Decide and Act faster than the environment

John Boyd's OODA loop

John Boyd was a Colonel in the U.S. Air Force, whose ideas on the art of war revolutionized U.S. military thinking, especially after the Vietnam War

Boyd's key concept: The OODA loop.

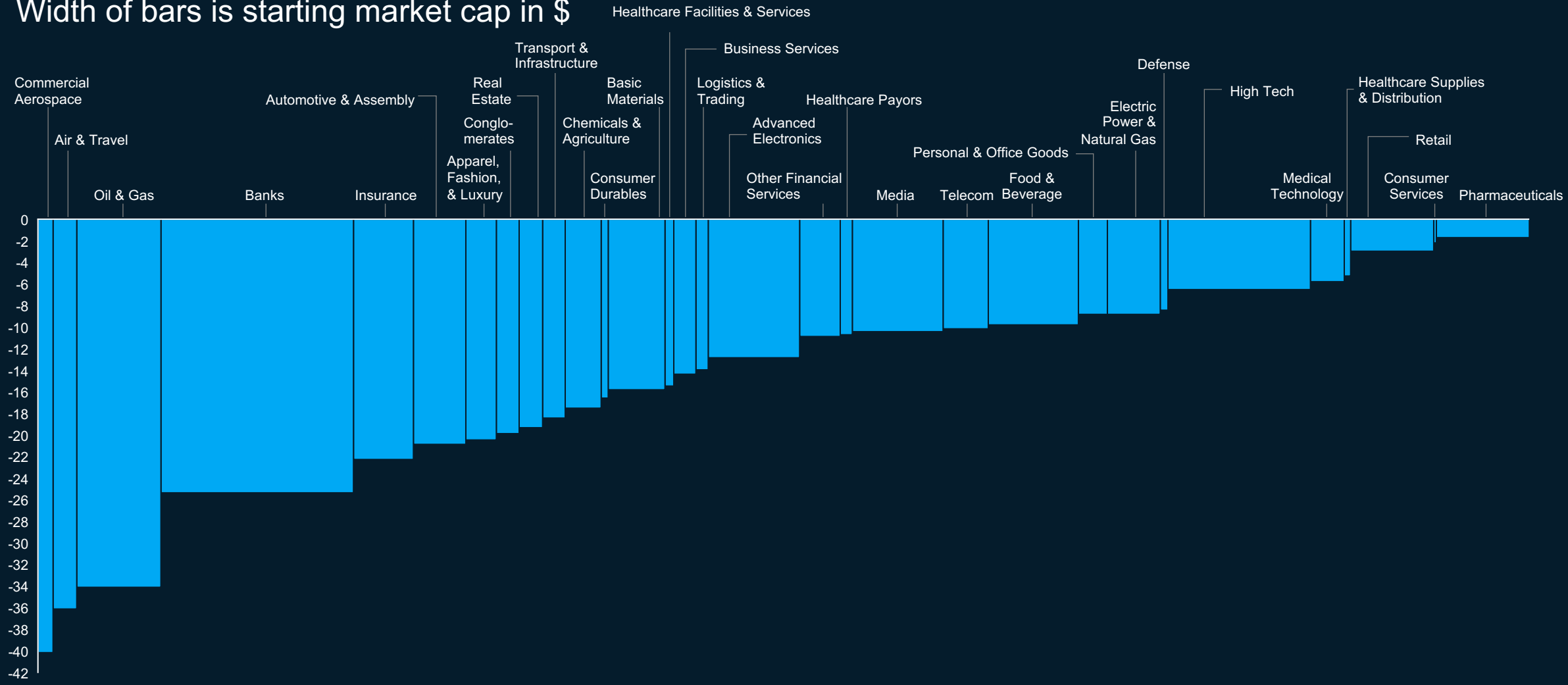
The key to victory is to be able to make appropriate decisions faster than the rate at which the environment evolves



Contents

Market capitalization has declined across sectors, with significant variation to the extent of the decline

Weighted average year-to-date local currency total shareholder returns by industry in percent[1].
Width of bars is starting market cap in $

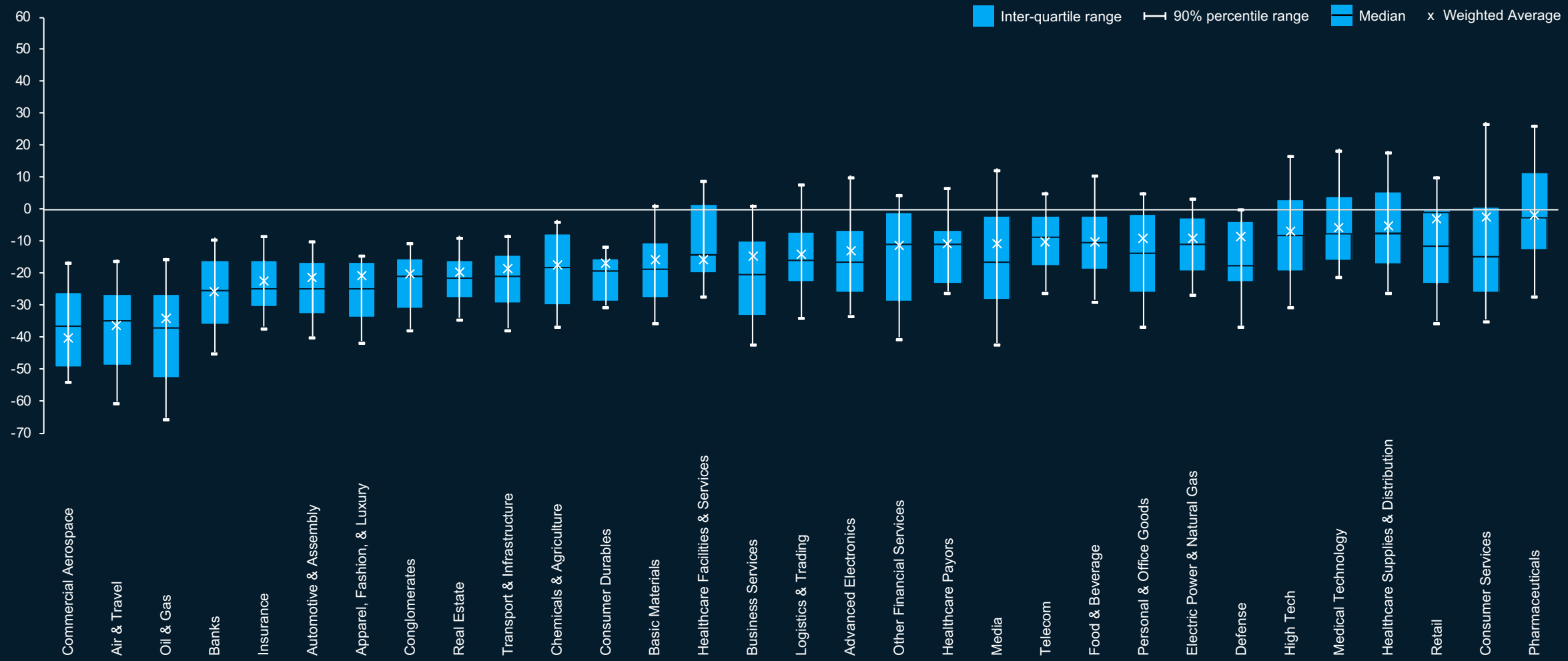


1. Data set includes global top 3000 companies by market cap in 2019, excluding some subsidiaries, holding companies, companies with very small free float and companies that have delisted since

Source: Corporate Performance Analytics, S&CF Insights, S&P Global

Even within sectors, there is significant variance between companies

Distribution of year-to-date total shareholder returns by industry percent[1]



1. Data set includes global top 3000 companies by market cap in 2019, excluding some subsidiaries, holding companies, companies with very small free float and companies that have delisted since

Source: Corporate Performance Analytics, S&CF Insights, S&P Global

Preliminary views of some of the hardest hit sectors

Based on the partially effective scenario

	Commercial Aerospace	Air & Travel	Oil & Gas	Insurance Carriers	Automotive
Avg. stock price change[1]	**-40%**	**-36%**	**-34%**	**-22%**	**-21%**
Industry specific examples	Preexisting industry conditions, challenges with airlines' balance sheet resilience, and high fixed costs cause **near-term cash flow issues and long-term growth uncertainty**. It may take years to recover from production and supply chain stoppages, due to critical vendors located in areas impacted by the virus and liquidity challenges especially amongst Tier 3 suppliers. Long order backlogs mitigate some concerns, especially on narrowbody aircraft, though widebody demand could be structurally impacted in the near-term	**Deep, immediate demand shock 5-6x greater than Sept 11**; ~70-80% near-term demand erosion due to int'l travel bans & quarantines now prevalent in 130+ nations N. Hemisphere summer travel peak season deeply impacted since pandemic fears coincide with peak booking period US gov't is providing both grants and loans to the travel industry as part of a broader package; **analysts estimate grants will last major carriers ~2-6 months** Recovery pace faster for **domestic travel** (~2-3 quarters); slower for **long-haul and int'l travel** (6+ quarters)	**Oil price decline** driven by both short-term demand impact and supply overhang from OPEC+ decision to increase production **Oversupply expected to remain in the market even after demand recovery**, and post 2020, unless OPEC+ decides to cut production **Erosion of gas demand driven by reduced power and industrial activity**, combined with **historically high storage levels**, puts downward pressure on overall gas price levels. **Cash cost gas price economics expected in the next 1-2 years**, with potential volatility in the 2023-2024 horizon	**US insurers have been strongly affected**, especially reinsurers and life & health insurers **Reduced interest rates** and investment performance **impacting returns – esp. for longer-tail lines** **Disruptions expected in new business and underwriting processes** due to dependence on paper applications and medical underwriting **Lock-downs** around the world **forced insurers to extend grace period for renewing the policies** from 15 to 30+ days that will lead to drop in premiums in 2020	**Existing vulnerabilities** (e.g., trade tensions, declining sales) **amplified by acute decline in global demand** Mar. 26 Survey of US auto consumers indicates 70% of car buyers are deferring by ~6 mo. or no longer intending to purchase; **~15% of Chinese light vehicle volume loss in 2020** under current recovery trend, and **~25-30% in EU and US markets** Despite ongoing Chinese economic restart, where most Chinese factories open again with production ramping up, there is **continued supply chain and production disruption** as majority of EU and US OEMs have temporarily closed plants until mid-to-late April

1. In last 30 days for selected sector indices

Source: IHS Market, McKinsey Global Institute, Subject matter experts, press reports, Corporate Performance Analytics, S&CF Insights, S&P Capital IQ

Air & Travel

9/11[1], YoY change Sept 2000 vs. 2001 | **2008 Fin. Crisis**[2], YoY change Feb 2008 vs. 2009 | **Now,** YoY change Mar 2019 vs. 2020

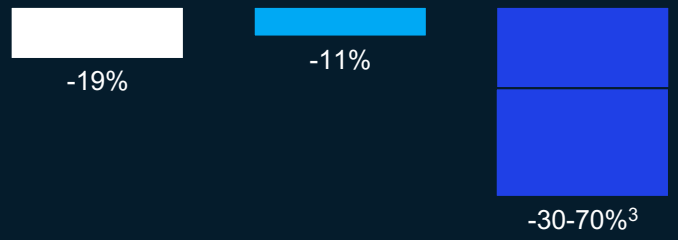
Current Impact

COVID-19 is an unprecedented crisis

The initial demand shock is worse than 9/11 or the 2008 Financial Crisis

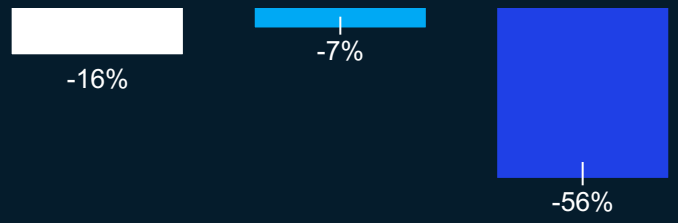
US airline capacity (ASM)

7x bigger drop vs. Fin. Crisis



US hotel occupancy

8x bigger drop in occupancy vs. Fin. Crisis



Medium-term expectations (through 2020)

70-80% Capacity reductions in April

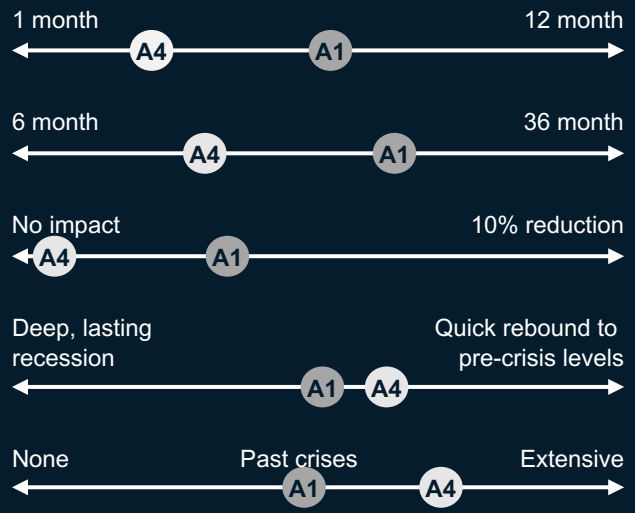
Flights to and from Europe, Middle East, and Africa were among the hardest hit ; Intra-regional flights within the Americas are least impacted to date, but likely to decline further

31%-45% reduction in airline travel demand is estimated in the two most likely scenarios, **returning to pre-crisis status quo over a 1-2 year period**

A4 - Virus contained; strong growth rebound

A1 - Virus re-surgence; slow long-term growth

Airline demand recovery dimensions for scenarios A1 and A4



Early thoughts on evolution post-COVID

Convergence of remote work technologies, biosecurity issues, and sustainability concerns could structurally shift demand curves downward

Government intervention though a stimulus package, to ensure there is not a liquidity crisis, may have implications for industry structure as increasingly involved interventions may impact strategy and operations (e.g. equity stakes, conditions for support)

Given low oil price expectations for the short-term, operating costs may be reduced but could also impact aircraft leading market

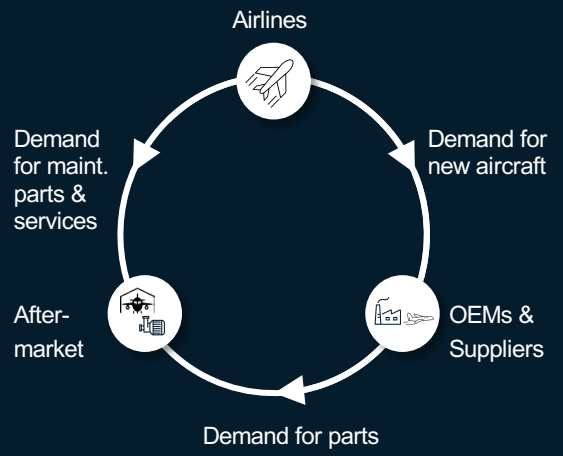
1. For capacity, load factor, and occupancy, YoY change of Sept 2001 | 2. For capacity, YoY change of Feb 2009, for airline load factor and hotel occupancy rate, YoY change of March 2009, for hotel stocks | 3. Based on latest capacity adjustment announced by AA/DL/UA | 4. Based on forecast from United Airlines

Source: USDOT T100, STR (Week of March 15-March 21), press search

Commercial Aerospace

Current Impact

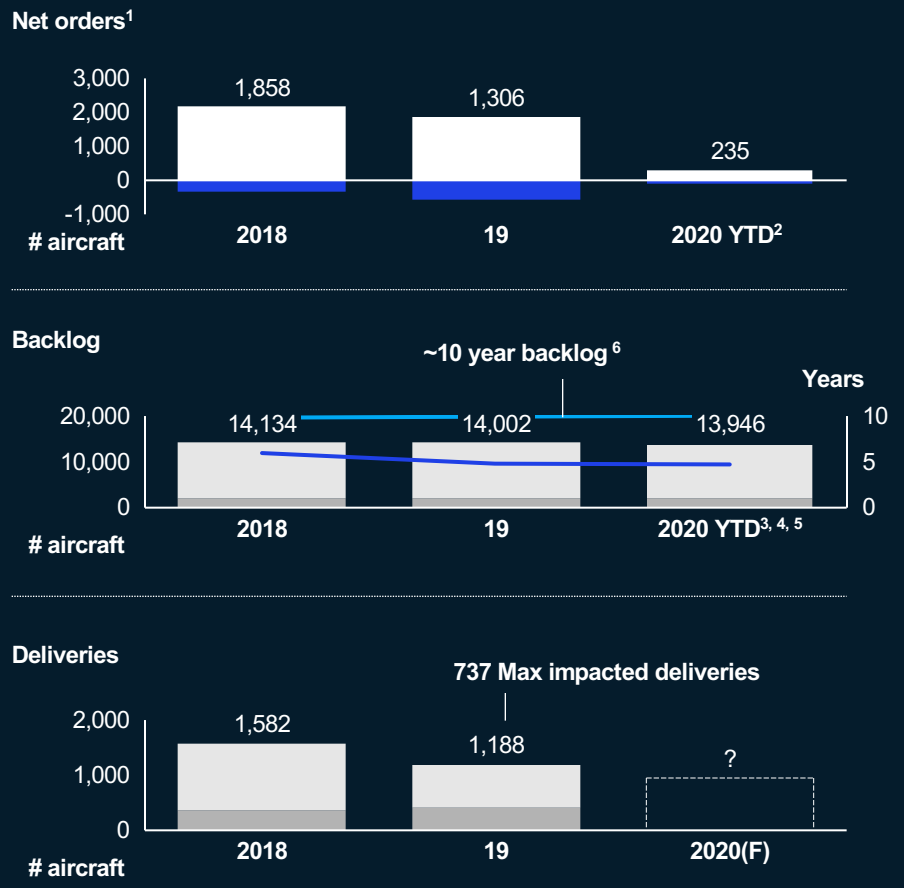
The underlying drivers for commercial aircraft equipment and services is driven by airlines; Airlines have significantly reduced capacity and grounded fleets



1. Narrow body orders declined 21% and wide body orders declined 18% from 2017 – 19. Narrow body cancellations grew 4% and wide body cancellations grew 5% during the same period
2. Boeing reported 18 gross wide body orders in Feb. and 43 737 MAX (narrow body) cancellations. Airbus reported 287 total gross orders and 13 cancellations as of 3/15
3. Assumes 2020 YTD backlog = '19 backlog – '20 cancellations YTD (56 cancellations YTD from Boeing and Airbus)
4. 2020 backlog years figures assume 2020 deliveries remain at 2019 levels
5. Calculates backlog years assuming no dip in 2019 and 2020 deliveries (deliveries remain at 2018 levels)
6. Actual backlog is 14.6 years (backlog shown in chart assumes no dip to deliveries in 2019)

Medium-term expectations (through 2020)

19-20YTD commercial aircraft orders, backlog, backlog years & deliveries



Early thoughts on evolution post-COVID

Intrinsic demand for aircraft likely disappears in 2020

Airline balance sheet concerns will lead to restructuring of order books; cash conservation efforts at airlines constrain capital set aside for delivery payments

Low fuel price expectations for the short-term could extend life of older assets, but not into major heavy maintenance check cycles

Government intervention may mitigate near-term risk of employee furloughs and supply chain insolvencies

Source: Cirium

Oil & Gas

Current Impact

LNG

COVID-19 has affected regions that account for over 80% of global LNG demand; Chinese LNG imports (17% of global imports) fell by 7% yoy Jan-Mar 2020; buyers have triggered Force Majeure, cancelled cargoes and engage in contract renegotiations

Oil

Demand decline due to COVID-19 (5.4-11.4mbd for 2020 under A3 & A1 scenarios) and OPEC+ deal failure pushed oil prices under $30/ bbl.

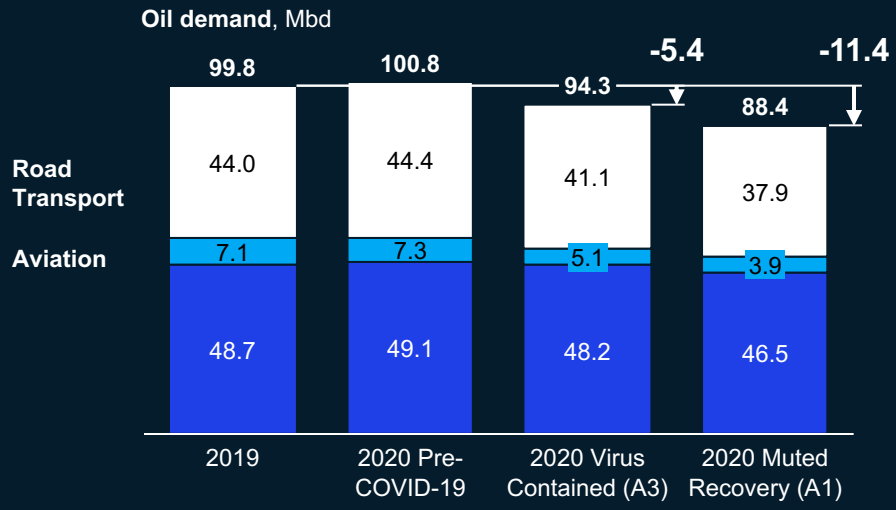
Short term demand destruction (potential to be 20mbd for April) **could lead to storage constraints and regional prices to fall even sharper,** while US drilling activity has already been cut (90+ fewer rigs running, -10+% in the last 2 weeks).

Medium-term expectations (through 2020)

Based on our global COVID-19 scenarios**, LNG demand will decline by 3-10% compared with pre-COVID-19 case** to 320-350mtpa (compared with 380mtpa supply capacity). Near-term LNG prices will be driven by cash cost economics (with gas prices in Europe and Asia at $1-2/mmbtu premium to US gas prices)

Global oil demand substantially reduced due to restrictions in road transport and **capacity declines in airlines** across the world through Q3 2020

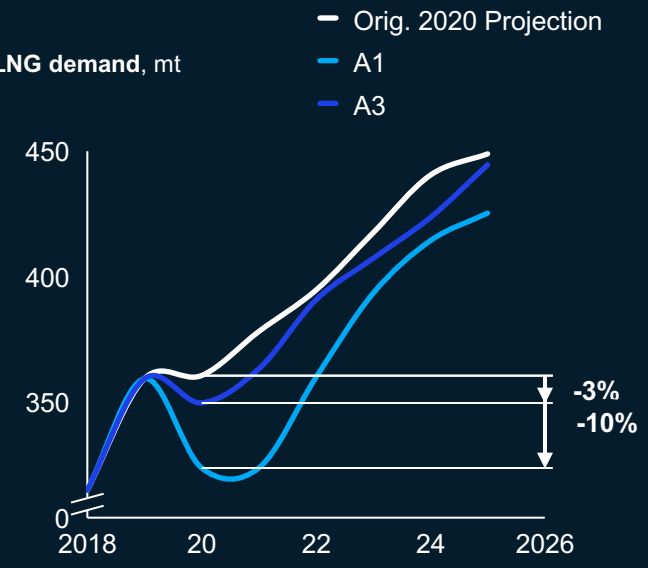
Low short-term oil prices are expected to continue for most of 2020 unless we see a large supply cut. Production shut-ins could start to materialize in the short term and help to balance the market. Potential OPEC+ deal could be reached in the next few weeks



Early thoughts on evolution post-COVID

Following the sharp oversupply, volatility in the market in the 2023-2025 horizon with sporadic tightness, followed by a period of oversupply (given 80+mtpa LNG capacity taking FID in the last 2 years)

Short term price dynamics that do not involve an OPEC+ intervention increase the likelihood of having an under-investment scenario play out in the medium-term, resulting in a new price up-cycle



Source: Bloomberg, press search, McKinsey Energy Insights Global Energy Perspective, McKinsey analysis

Appendix

Leaders need to think and act across 5 horizons

1

Resolve

Address the immediate challenges that COVID-19 represents to the institution's workforce, customers, technology, and business partners

2

Resilience

Address near-term cash management challenges, and broader resiliency issues during virus-related shutdowns and economic knock-on effects

3

Return

Create a detailed plan to return the business back to scale quickly, as the virus evolves and knock on effects become clearer

4

Reimagination

Re-imagine the "next normal"—what a discontinuous shift looks like, and implications for how the institution should reinvent

5

Reform

Be clear about how the regulatory and competitive environment in your industry may shift

Nerve center

Managing across the 5Rs requires a new architecture based on a team-of-teams approach.

1

Resolve

Address the immediate social and mental challenges that COVID-19 represents to the institution’s workforce, customers, and business partners, and take basic steps to protect liquidity.

Resolve: Making hard decisions on immediate challenges

Resolve employee, customer, supply chain, immediate liquidity, and technology concerns

Private sector focus

	Employees	Customers	Supply chain
Emerging concerns	How do we manage safety for the returning workforce (e.g. in research labs, production facilities)? How do we offboard in socially responsible ways? Is there potential for employer controlled testing for employees?	How do I stay in touch with customers and remain relevant to them when they don't desire or need my services? How do I inspire loyalty in my customers?	How do we create transparency across the supply chain and customer demand?
Example actions	**Implement physical mechanisms** to reduce transmission (e.g., cleaning, staggering shifts) **Invest in facility and employee level equipment** and supplies (e.g., cleaning) **Over-communicate with all employees** on current and future plans to keep employees safe **Reskill and redeploy instead of offboarding** employees where possible **Explore creative employment solutions** (e.g., loan talent to other orgs, divest business line) **Leverage and educate employees on applicable government** support and benefits programs **Screen employees, visitors and clients** based on temperature checks, travel history and self-reported or visible symptoms **Offer testing or covering the cost of testing** motivated by symptoms, contact tracing, travel history, etc.	**Demonstrate flexibility to customers** during times of hardship • **Major airlines** are offering change/cancel flexibility. Most are also allowing passengers to reseat themselves on the plane in accordance with physical distancing Going out of their way to **keep customers and employees safe** regardless of impact to balance sheet • **Hotels in Europe and Asia** are providing "quarantine" service (e.g., room reservation with nobody next door) • **Grocery stores** are limiting purchases of essential items, limiting the number of customers in store, and temporary closing locations for deep cleans, among other safety measures Demonstrate **commitment to healthcare** • **Coffeehouse chains, car rentals and shoe companies** are offering free products and services to healthcare workers • Furniture distribution centers are being repurposed as testing centers for NHS workers Other examples of companies **being 'agile' in attracting customers** • **Rideshare companies** are pivoting to delivery • **Local restaurants and restaurant chains** are offering free and contact-free food deliveries	**Monitor supply disruption risks by mapping supplier and sub-tier connectivity** to COVID-19 associated shocks **Monitor extending lead times** to gauge performance and capacity against supplier promises **Map inventory end to end across the supply chain** to identify current days of inventory and to predict impacts of disruptions **Validate realistic final demand** with customers and ensure customers aren't exhibiting bad behaviors **Predict production capacity, logistics capacity, and availability of supply** **Establish four control towers** to guide demand/capacity/S&OP decisions and manage supply chain risks working with the Corporate Nerve Center

Employees: Companies should invest and prioritize to protect the safety and morale of employees unable to work from home

Private sector focus

Non-WFH employees face a unique set of concerns…

Perceived unfairness: having to continue going into work while other employees stay home with their families

Safety risk: significant increase in potential exposure to disease (e.g., commute, customers and other employees in the workplace)

Perceived value: Don't feel as valued by company and that their safety is not prioritized

Fear of illness: In addition to clinical harm (e.g., fever, body aches), fear of being isolated from their families if ill

However, best-in-class companies are finding new ways to address employee concerns while protecting them from unnecessary risk:

MajorU.S. retailer	Food delivery companies	Leading UK retailer	Leading Italian banks	Global coffee shop retailer
Flexible work policies including relaxing absenteeism policy (i.e. allowing workers to stay home for personal reasons)	**Minimizing contact** between deliverers and customers (e.g., cashless payment only, leaving bags at door, all employees provided masks and gloves)	**Extending benefits** to include back-up child and elderly care (up to 25 days) and mental health benefits (e.g., teletherapy sessions)	**Limiting operating hours** for all branches with access granted only upon pre-arranged appointment to minimize contact and increase sanitization time	**Offering 14 days of "catastrophe pay"** forU.S. workers exposed to COVID-19, over 60, pregnant, or have underlying health issues (in addition to existing sick pay)

Source: company websites, press search

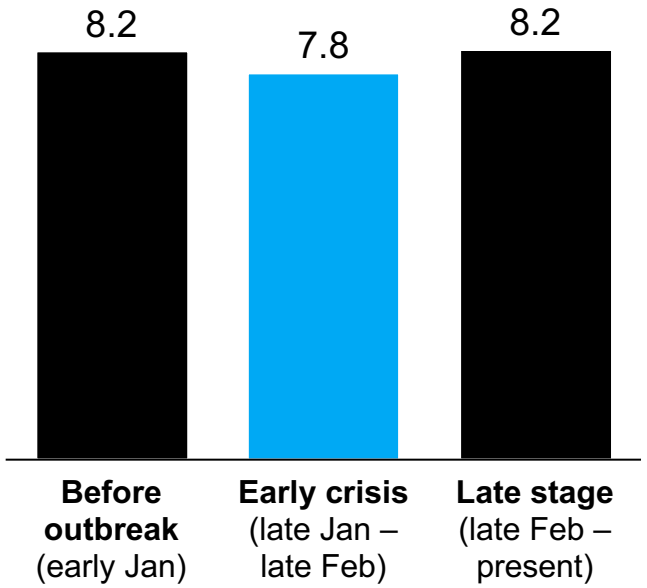
Employees: We have observed 4 key levers to maximize engagement & productivity of work from home colleagues

Private sector focus

A study China demonstrated a decrease in energy level during the pandemic

Energy Value

"What is your energy level from 1-10?" asked to 1,300 employees across 50 companies in China spanning 8 sectors



Respondents to the survey attributed the declining energy value to 3 primary factors

Blurred boundary between work and life

Anxiety deepening as the epidemic unfolded

Telecommuting unsuitable for current work flows

Energy levels started to improve as increasing normalcy was established aided by 4 levers that companies used

People	**Provide psychological safety** (e.g., delegate decision making powers, role model empathy)
	Communicate practical WFH tips (e.g., family communication, physical and mental need mgmt.)
Structure	Define **clear objectives and key results** (OKRs) to effectively set and communicate goals and outcomes
	Allow high degree of autonomy in decision making with collaboration across BUs
Process	**Establish a clear cadence** (e.g., pre-scheduled daily and weekly meetings, frequent check-ins)
	Define **clear and integrated workflows,** align strategic goals and clarify roles and responsibilities
Technology	Leverage a **suite of digital tools / new media** to address specific work needs
	Setup an **effective ergonomic, digitally enabled remote working environment** to ensure productivity

Source: McKinsey GC Org Team

Customers: Set up agile Rapid Revenue Response squads to drive progress during the pandemic for B2B & B2C companies

Private sector focus

Deep-dive to follow

Phase 1: Reset and calibrate

- **Understand which trends and pockets are growing** by analyzing customer insights, sentiment, and demand signals
- **Diligence all your current commercial activities** - from sales to communications to expenses
- **Align on value proposition** and what truly aligns to the immediate needs of your customers or prospects

Phase 2: Activate key levers

Prioritize **B2B and B2C** commercial levers to pursue:

- **Sales and channel:** Identify realistic opportunities and high growth channels, build remote selling capabilities, invest in customer outreach and customer service preparedness
- **Pricing/Promo**: reset pricing / discounts to meet customers' evolving near-term needs
- **Marketing**: Reinvest marketing spend across opportunities and high-traffic channels that will drive highest ROI growth; ensure tone is sensitive, relevant and authentic
- **Product / CX**: Adjust offerings/SKUs to meet customers' demand signals; establish genuine connection with customer and employee needs
- **Commercial Cost/Cash:** Manage discretionary spend, both working and non-working, re-allocating rapidly

Phase 3: Read and respond

- **Evaluate performance of tactics activated**, likely re-setting ROI measurement approach
- **Continually optimize tactics** that work
- **Align on next wave of commercial tactics** by integrating new customer insights and market demand signals

Repeat and optimize: "Activate key levers" and "Read and respond"

Source: McKinsey Marketing & Sales Practice

Customers: Deep-dive on Sales & Channel and Pricing & Promotions for B2B and B2C companies

Private sector focus

	B2B	B2C
Sales and channel 	**Identify and prioritize highest ROI sales initiatives** **Review customer account coverage** based on the customer's new operating model **Empower sales teams to sell remotely** with remote trainings, adequate remote working equipment and a realistic view of pipeline opportunities **Invest in internal information** and update demand tracking and forecasting **Get creative with customer outreach** – pull in leadership, invest in company banners for video backdrops, shift some rewards and recognition to new work-from-home reality	**Identify existing high-growth channels** (e.g. eCommerce) and explore launching new and innovative channels— especially leveraging the gig economy with new workers are likely entering the workforce daily **Ensure digital shelf and assortment are fully represented** **Empower salesforce** for remote and virtual work **Optimize on-site performance** and double down on customer service preparedness
Pricing and discounts 	**Understand customers evolving needs** **Implement "flex pricing", value-focused messaging and loyalty rewards.** Think about way to meet near-term customer needs, without needlessly destroying long term value (e.g., de-bundle offering, one time discounts) **Ensure efficient deal execution process**. Stand up a "value council" to develop clear guidelines and objectives for the commercial team to follow	**Refresh item segmentation based on new shopping behaviors** **Cater promotions to the current context** with a focus on "if/then" plans, context specific products and services, eCommerce channels, etc. **Constantly reevaluate promotional effectiveness** through the crisis **Consider loosening return / cancellation policies and offering financing opportunities** for larger purchases

Source: McKinsey Marketing & Sales Practice

Supply chain: Actions to consider in response to COVID-19

Private sector focus

Immediate (1-4 weeks)

Understand exposure

Estimate how demand changes across customers

- ❑ Leverage **direct communication channels with direct customer** when determining demand signals
- ❑ Use market insights/external databases to **estimate demand for customer's customers**
- ❑ **Task S&OP team to build 3-6 plans under a range of demand scenarios month** to **determine required supply**

Determine how supply will be impacted and understand key risks

- ❑ **Work with tier 1 suppliers to understand supply chain risks throughout all tiers;** complement with outside-in analytics where tier 1s do not have transparency
- ❑ **Account for all inventory (e.g., in transit, in warehouses, in spares stock) and calculate inventory buffer**
- ❑ **Conduct scenario planning** to understand how inventory buffer changes in various disease scenarios
- ❑ Run **supply chain "stress tests" vs. supplier balance sheets** to understand when supply issues will start to stress financial or liquidity issues
- ❑ **Assess whether border closures or restrictions will disrupt supply chain**

Take action to address anticipated shortages

Evaluate any option for new supply sources

- ❑ **Identify alternative sources** if supplies are affected and accelerate exploration of additional options
- ❑ **Determine possible geographies and supplier shortlists** in case alternate supply is required
- ❑ **Identify ways to expedite qualification process** and/or insource for components where supply is threatened
- ❑ Contact authorities in areas where **customs clearance could become a challenge**
- ❑ **Determine what portion of supply can be swung to another site** if shutdown persists **based on sourcing strategy** (single, dual, multi)

Revise production plans as required based on:

- ❑ Expected supply shortages
- ❑ Products in most consumer need, with highest margin, or and highest opportunity cost / penalty production

Understand robustness of current supply chain logistics

- ❑ Estimate **available logistics capacity; pre-book air freight[1] / rail capacity** as required by current exposure
- ❑ **Collaborate** with all parties **to jointly leverage freight capacity**, **new/alternate supply** sources, etc.

Other actions

- ❑ **Watch for extending lead times** to gauge performance and capacity against supplier promises
- ❑ **Use after sales stock as bridge** to keep production running if needed

Protect employees and suppliers

- ❑ **Work with supplier to source personal protective equipment for production lines** operating in affected markets (e.g., glasses, gloves and masks)
- ❑ Engage with crisis communication teams to **clearly communicate to employees** on infection risk concerns (e.g., disseminate facts about virus from credible source) and work from home options
- ❑ **Consider short-term stabilization for suppliers** (e.g., low-interest loan) to allow for a faster restart

Mid-term (4-12 weeks)

Continuously improve material supply stability

Identify alternative options based on anticipated demand

- ❑ Evaluate **alternative sourcing options for all the materials impacted** – availability of suppliers, additional cost due to logistics, tariffs, estimate of price increase of the components
- ❑ Enhance the **demand verification process** to correct inflated demand to mitigate the bullwhip effect

Provide support for smaller suppliers

- ❑ Provide continuous **support for mid-small size tier 2-3 suppliers** in financial troubles
- ❑ Assess **regional risks** for current and backup suppliers

Kick off designing resilient supply chain for the future

Codify & digitize processes and tools

- ❑ **Codify the processes and tools** created during the crisis management as formal documentation
- ❑ **Digitalize process and tools** to integrate demand, supply, and capacity planning

Develop systems to "bullet proof" supply chain

- ❑ Convert war room into a **reliable supply chain risk management process**
- ❑ Ensure stakeholders **address vulnerabilities** across all parts of the supply chain
- ❑ Trigger the new supply network **design for resilience**

Build collaborative relationship w/ ext. partners

- ❑ **Work with government to ensure industry can ramp up as quickly as possible** as crisis resolves
- ❑ **Actively engage investors** and other stakeholders to build transparency on the situation and get help

1.Given costs, airfreight might not be an option for many industries; availability is already limited

2

Resilience

Address near-term cash management challenges, and broader resiliency issues

6 steps toward end to end resilience plan

01

Identify and prioritize key risks

Identify and prioritize key macro, sector and company idiosyncratic risks based on exposure and impact

02

Develop tailored scenarios

Develop company specific scenarios based on the range of outcomes of the highest priority risks

03

Conduct stress testing of financials

Stress test the P&L, Balance Sheet, Statement of Cash Flows to assess and frame the potential gaps for planning

04

Establish portfolio of interventions

Identify an end to end portfolio of interventions and trigger points

05

Set up a cash management dashboard

Improve cash transparency and implement tighter cash controls to mitigate downside scenarios

06

Build the resilience dashboard

Build the dashboard of key leading indicators to monitor that can be dynamically updated

1&2: Efforts require continuous re-evaluation of financial and market forecasts and corresponding actions

1. Identify key risks

Key activities

- Understand the **impact of key macroeconomic variables** (e.g., GDP, unemployment rate) on performance of your of PnL (e.g., revenue and cost)
- Impacted PnL variables could include:
  - **Volume:** consumer demand correlated with GDP
  - **Cost:** Commodity price evolution (e.g., oil and gas, food index) correlates with COGS
  - **Price:** housing prices and inflation correlate with price customers are willing to pay
- Refine a final list of no more than ~20 macroeconomic variables with **quantified impact** to key PnL items

Sample output

	Key risks identified	Impact	Likelihood
1: Macroeconomic risks	Economic (incl. currency) volatility		
	Downturn/recession in key markets (including level of disposable income, GDP growth, unemployment)		
	Inflationary pressures		
2: Market/ commodity price risks	Oil prices		
	Commodity prices of key raw materials		
	Indirect tax increases and/or significant restrictions on marketing		
3: Other/ Idiosyncratic risks	Failure to shape or participate in critical industry/consumer trends or consolidation eroding competitive position		
	Non-compliance with areas of higher regulatory scrutiny		
	Failure to manage key sustainability risks		
	Failure to deliver value from acquisitions		
	Cyber threats against most important digital assets		
	Unstable or hostile political environments		
	Data privacy breach harming trust/reputation		
	Changes in international tax environment		

2. Develop tailored scenarios

- **Develop scenario narratives** for Baseline and ~2-3 adverse scenarios, with overlay for duration and magnitude of Covid-19 near term shock
- **Contextualize scenarios with assumptions** on macroeconomic variables (e.g., in worst-case GDP declines 20%)
- For each scenario, **link macroeconomic projections back to PnL** (e.g., best-case scenario includes 10% drop in demand, 20% drop in price, and 30% drop in COGS)
- Ensure scenarios capture strategic, financial and operational risks with consideration of 2nd order impacts

Increasing severity

		Baseline	Adverse 1: […]	Adverse 2: Adverse 1 + […]	Adverse 3: Adverse 2 + […]
Growth	Global GDP	Growth rises to 2.5% in 2017	Growth slows to just over 2.2%	Growth slows to just over 2.2%	Same as Adverse 2
	Country specific	[…]	[…]	[…]	
Commodity Prices	Oil	Prices rise by ~70% by 2021	Prices rise by ~60% by 2021	Prices rise by ~60% by 2021, but are more volatile	
	[…]	Prices rise by 10%	Prices rise by just under 9%	Prices more volatile due to contagion	
Employment Costs	US	Wages flat	Wages fall in real terms	Wages fall in real terms	
	[…]	Wages flat	Wages flat	Wages fall in real terms	
Exchange rates	Major currencies	Euro and Pound weakening relative to Dollar	Near term Euro and Pound appreciation relative to Dollar	Near term Euro and Pound appreciation relative to Dollar followed by substantial weakening	
	Emerging market currencies	Stable	Stable	Stable	
[…]		No	No	No	[…]

Source: McKinsey Resilience tribe

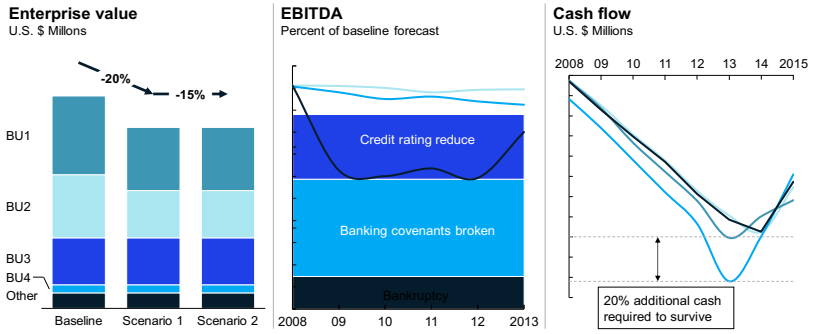
3&4: Efforts require continuous re-evaluation of financial and market forecasts and corresponding actions

3. Conduct stress testing of financials

Key activities

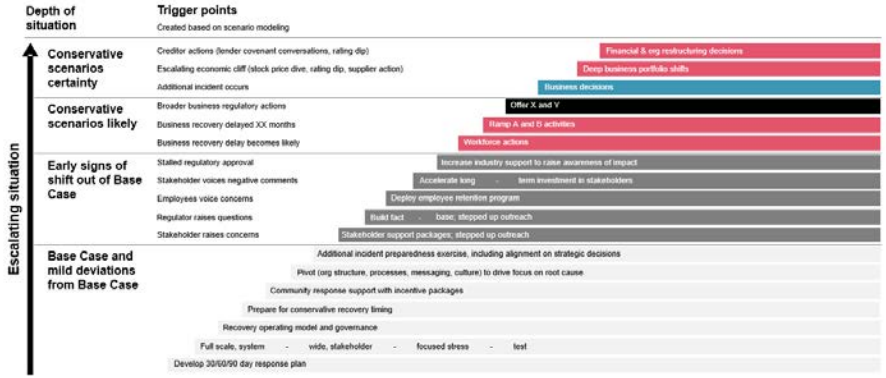
- For each scenario,
  - assess impact on the financial statements (P&L, Balance Sheet and Cash Flows)
  - assess gap relative to Baseline
- Run simulations at Corporate level to assess range of outcomes to assess impact on credit quality, cash and liquidity
- Run 'reverse stress-tests' to determine conditions for credit/liquidity crunch

Sample output



4. Establish portfolio of interventions

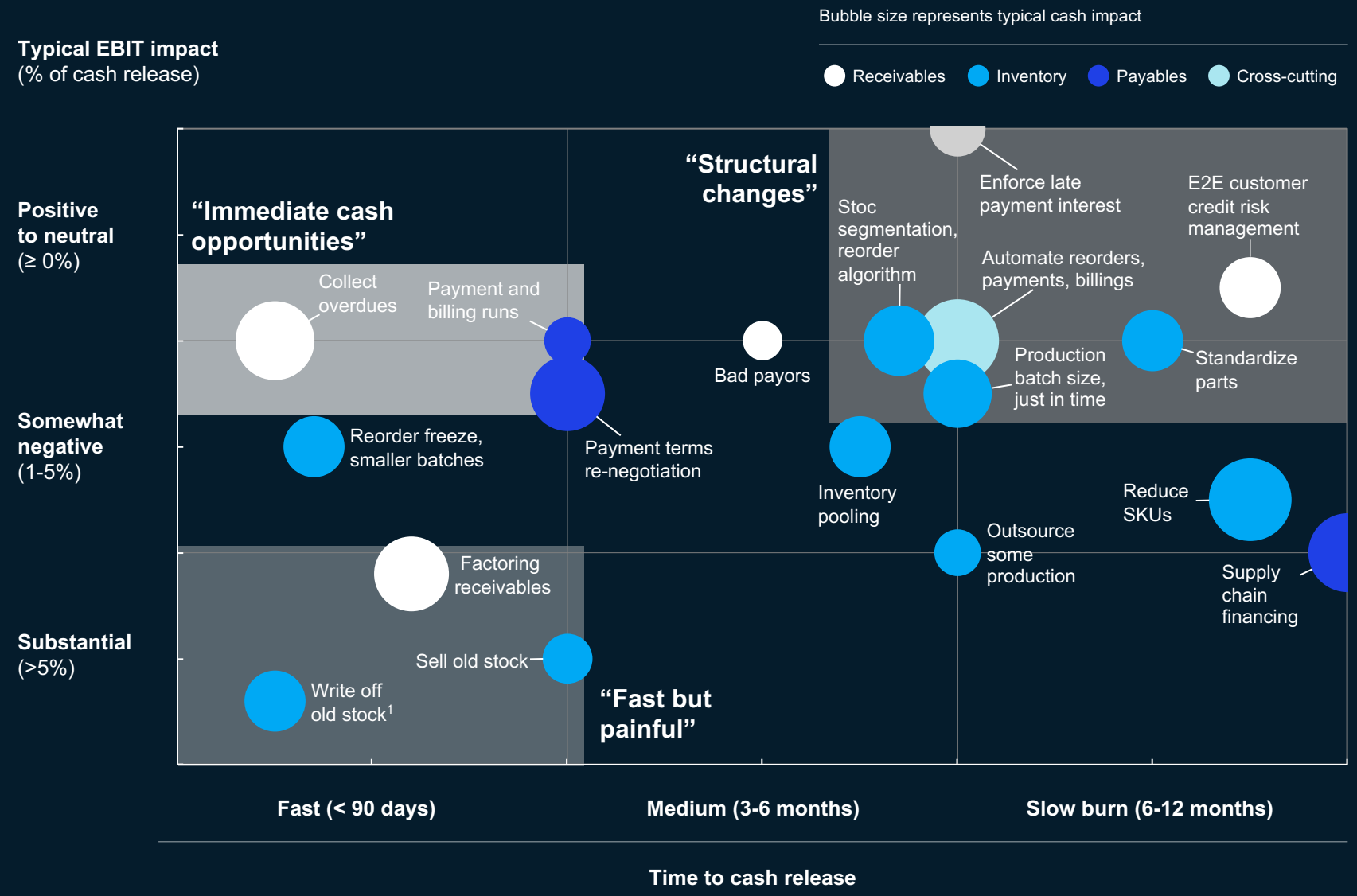
- Prioritize critical areas of **exposure** and areas of **lower/risk uncertainty**
- Define & size **portfolio of potential interventions** (across operations, supply chain, capital, targeted M&A and divestitures and customer engagement)
- Launch quick wins on **immediate stabilization** (supply and demand-side) related to Covid-19
- Identify which are “no regrets” vs. trigger based and get pre-approval for higher risk moves, with clear agreement on conditions for activation



Source: McKinsey Resilience tribe

5: Example cash management dashboard: Prioritization of initiatives related to cash

Not Exhaustive



1. No cash release

Source: McKinsey Transformation

6: Example resilience scorecard: Outside-in perspective & select benchmarks

"Inside assessment" would reveal "strengths & weaknesses" in Co 1's resilience

DISGUISED EXAMPLE

	Marker of resilience	Metric (outside-in metrics)	Metric performance					Rank
			Co 1	Co 2	Co 3	Co 4	Co 5	Co 1
Through cycle interventions: Revenue	Track record of growth	Short-term Sales growth, 2018-2020 CAGR %	-10%	5%	10%	-5%	5%	
		Long-term Sales growth, 2013-2020 CAGR %	-5%	5%	10%	5%	15%	
Through cycle interventions: Costs	Starting point of cost structure & track record of margin improvement	Gross Profit/Sales %, 2020	25%	10%	30%	15%	20%	
		SG&A/Sales %, 2020	6%	7%	9%	8%	5%	
		R&D/Sales, 2018-2020 avg	10%	8%	4%	6%	2%	
		Long-term Adj EBITA margin delta, 2020 vs 2013 %pts	2%	-5%	10%	-5%	2%	
	Long-term TRS track record	Long-term TRS, 2013-2020 avg (also revenue contribution indicator)	10%	-5%	10%	5%	25%	
Sharp Digital	[...] N/A outside-in measurement							
Unlock Balance Sheet	Healthy Balance Sheet with sufficient headroom	(Net debt and pension + OPEB) /market cap, 2020	0.5	0.2	(0.2)	(0.5)	0.2	
		(Net debt and pension + OPEB) /EBITDA, 2020	1.5	0.5	(1.0)	(2.0)	0.5	
Band of Leaders	C-suite and Board having diversity of background and relevant experience of leading businesses through a downturn	% of C-suite leaders who have been in C-suite roles during last recession	50%	40%	20%	50%	45%	
		% of Board members who have been CEOs of F-1000 companies during major crisis events/ downturns	30%	20%	0%	0%	10%	
		% of C-suite leaders who have a different background from the CEO	100%	70%	85%	75%	30%	
Organization Simplification	Lower Org complexity	FTE per Sales (# Employees per $M USD), 2020 (outside-in indicator)	1.0	1.2	1.5	1.5	1.8	
Resilience Nerve Center	Early, disciplined decisions in the past – indicator of a nerve center driven approach	Short-term change in Adj EBITA, 2020 vs. 2018 %pts	0%	-5%	5%	-5%	5%	
		Change in (Net debt and pension + OPEB) /EBITDA, 2020 vs. 2018 %	0%	50%	-10%	90%	-50%	

Source: McKinsey Resiliency Tribe

McKinsey
& Company