COVID-19: Briefing materials
Global health and crisis response
Updated: March 25, 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.
At the time of writing, COVID-19 cases have exceeded 380,000 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—among the deepest in recent times—that are being met by attempts at bailouts.

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.

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.

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.

Executive summary

The situation now

Actions that institutions can take

1. Resolve
   Address the immediate challenges that COVID-19 represents to the workforce, customers and partners

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

3. Return
   Create a detailed plan to return the business back to scale quickly

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 environment in your industry (regulations, role of government) could evolve

Establishing a Nerve Center can ensure speed without sacrificing decision quality across these five dimensions.

How the situation may evolve

Executive summary

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1. Resolve
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Establishing a Nerve Center can ensure speed without sacrificing decision quality across these five dimensions.
Contents

01 COVID-19: The situation now

02 Scenarios and path forward

03 Sector-specific impact

04 Planning and managing COVID-19 responses

05 Leading indicator dashboards
The global spread is accelerating with more reports of local transmission.

Latest as of March 25, 2020

Impact to date:

- Reported confirmed cases: >380,000
- Deaths: >16,000

Countries or territories with reported cases:
- 194

Countries or territories with evidence of local transmission:
- >115

Countries or territories with more than 100 reported cases:
- >75

China’s share of new reported cases March 18–24:
- 0.4%

Increase in reported cases March 18–24 from Europe:
- >160%

New countries or territories with cases March 18–24:
- 35

Sources: World Health Organization, John Hopkins University, CDC, news reports

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
<table>
<thead>
<tr>
<th>Region</th>
<th>Total cases</th>
<th>Total deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>&gt;195,500</td>
<td>&gt;10,000</td>
</tr>
<tr>
<td>North America</td>
<td>&gt;56,000</td>
<td>&gt;600</td>
</tr>
<tr>
<td>South America</td>
<td>&gt;4,000</td>
<td>&gt;50</td>
</tr>
<tr>
<td>Middle East</td>
<td>&gt;27,000</td>
<td>&gt;1,800</td>
</tr>
<tr>
<td>Asia (excl. China)</td>
<td>&gt;16,500</td>
<td>&gt;250</td>
</tr>
<tr>
<td>China</td>
<td>&gt;81,500</td>
<td>&gt;3,200</td>
</tr>
<tr>
<td>Oceania</td>
<td>&gt;1,800</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

Current as of March 25, 2020

The virus has spread worldwide despite containment efforts

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

1. Johns Hopkins data used for U.S., 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
Greatest share of recent cases comes from Europe, although U.S. cases are rapidly accelerating

Cumulative number of cases since March 1 – March 24

Thousands

Asia
Incremental cases for China and South Korea have slowed significantly, with majority of new cases in China categorized as imported versus local transmission.

Europe
In contrast, European transmission has increased significantly this month, led by Italy with nearly 60,000 total cases. Close monitoring of incremental case counts across a number of European countries in the upcoming days will be critical to determining if distancing measures are having effect.

United States
The U.S. has seen total cases increase nearly ~8x in the last week, from ~6,500 on March 17 to ~50,000+ on March 24; the U.S. now has the third largest number of total cases, following China and Italy and is growing at a rate of ~10k cases per day (March 23-March 24).

1. U.S. data from Johns Hopkins University CSSE (March 24 data point from live tracker from 1400PT); all other data from WHO Situation Reports

Sources: WHO situation reports, Johns Hopkins University, press search
Countries begin with similar trajectories but curves diverge based on range of measures taken

Cumulative number of cases

Select country detail

**Italy:** In response to the rapid increase in cases, a lockdown (first regional and then nationwide) was implemented and the country has since significantly expanded access to testing.

**South Korea:** Aggressive testing, contact tracing and surveillance, and mandatory quarantines are helping isolate virus clusters and dramatically slow spread of outbreak in Daegu.

**United States:** Accelerating transmission and recent scale up in testing have seen dramatic rise in cases at a rate higher than that of Italy; social distancing measures are being rolled out primarily at the state and local level.

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

1. U.S. data from Johns Hopkins University CSSE (March 24 data point from live tracker from 1400PT); all other data from WHO Situation Reports
South Korea: Rigorous investigation of outbreak clusters and rapidly scaled testing capabilities limited spread

Incremental cases per day and tests performed in South Korea

Number of reported cases

- Feb 4 – Government approves first test kit after 16 reported cases
- Feb 9, 16 – ‘Patient-31’ exposes ~1000 congregants in Daegu church
- Feb 24 – 15 countries impose travel restrictions on South Korea
- Mar 3 – Korea pioneers drive-through testing inspired by fast food chains
- Mar 9 – ~180,000 individuals tested
- Mar 20 – Localized outbreaks, including another infected church congregation, point to ongoing need for surveillance and response

China: Rapid lockdowns were employed to manage outbreak before ramping up testing and response capabilities

Incremental cases per day and total reported cases in China

Number of reported cases per day

Jan 23 – City of Wuhan is locked down and travel from nearby cities is restricted

Jan 24 – All tourist activity in Hubei canceled

Feb 3 – Hong Kong closes all but 3 of 14 border control points

Feb 7 – All students asked not to return to school following Chinese New Year

Feb 19 – China begins to sustain daily new case reports below 2,000

Feb 21 – Government eases traffic restrictions, encourages work to resume in less-affected areas

Feb 24 – 320,000 tests conducted to date in Guangdong

Feb 27 – Government eases traffic restrictions, encourages work to resume in less-affected areas

Mar 1 – 28 provinces (more than 4/5ths of total) have resumed normal inter-provincial passenger transport

Mar 10 – Closure of last of 16 temporary hospitals

1. Changes in new case tracking and reporting methodology yield spike in reported cases

Source: WHO situation reports, New York Times, Chinese government official notices and reports, press search
Italy: There are early signs that the number of cases are plateauing

Incremental cases and tests per day

Number of reported cases

- **Feb 21**: Cluster of 16 cases identified in northern Italy
- **Feb 23**: Officials lock down 10 towns in Lombardy after spike in cases
- **Feb 26**: Testing criteria are relaxed, allowing contacts of confirmed cases to be tested
- **Mar 6**: Authorities begin testing all 3,300 residents of northern town of Vò (new cases now zero)
- **Mar 8**: Lockdown extended to all of Lombardy and 14 other northern provinces
- **Mar 9**: Italy begins national lockdown; travel banned
- **Mar 20**: Italy testing at rate of ~3500 per million, amongst highest in western Europe

Source: WHO situation reports, CNN, New York Times, press search

Current as of March 25, 2020
Western countries are largely instituting the “Early China model,” focused on immediate containment while ramping up testing.

**Contain and restrict movement**

“Early China model”
- Border closures and city-level lockdowns, quarantines
- “Shelter-in-place” restrictions on individual movement
- Mandatory closures of businesses

**Test, track, and isolate**

“South Korea model”
- Aggressive testing of suspected cases, clusters (5000+ tests per million population)
- Contact tracing and isolation via surveillance
- Quarantine enforced by government monitoring

**Testing**

<table>
<thead>
<tr>
<th>Countries</th>
<th>U.S.</th>
<th>France</th>
<th>Spain</th>
<th>UK</th>
<th>Italy</th>
<th>Norway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests per million people</td>
<td>~310</td>
<td>~560</td>
<td>~640</td>
<td>~960</td>
<td>~3,500</td>
<td>~8,000</td>
</tr>
</tbody>
</table>

**Countries’ responses**

- **U.S.** State and city-level closures; testing lagging other countries
- **France** National lockdown with strict police enforcement; has performed targeted vs. widespread testing
- **Spain** National lockdown limiting non-essential movements; reported logistical issues limiting testing capabilities
- **UK** Early strategy focused on scaling testing vs. lockdowns, though officials began enforcing lockdown March 20
- **Italy** Imposed strict regional and national lockdowns early; testing per capita is ~4x most peer EU countries with some regions testing nearly full population
- **Norway** Quickly scaled testing, e.g. drive-through testing available 7 days after first confirmed case; instituted punishment for quarantine violations

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**Sources:**
University of Oxford, Sante Publique France, Istituto Superiore di Sanità (ISS), UK Department of Health and Social Care, Ministerio de Sanidad, Consumo y Bienestar Social, U.S. CDC, press search
Contents

01 COVID-19: The situation now
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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

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

**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**
Self-reinforcing recession dynamics kick-in; widespread bankruptcies and credit defaults; potential banking crisis

**Partially effective interventions**
Policy responses partially offset economic damage; banking crisis is avoided; recovery levels muted

**Highly effective interventions**
Strong policy responses prevent structural damage; recovery to pre-crisis fundamentals and momentum

**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)

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

**Current as of March 25, 2020**

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Source: “Safeguarding our lives and our livelihoods: The imperative of our time,” Sven Smit, Martin Hirt, Kevin Buehler, Susan Lund, Ezra Greenberg, and Arvind Govindarajan

McKinsey & Company 15
### Scenario A3 Virus contained
Real GDP, Local Currency Indexed

#### Real GDP Growth – COVID-19 Crisis
Local Currency Units Indexed, 2019 Q4=100

![Graph showing Real GDP Growth during COVID-19 Crisis]

<table>
<thead>
<tr>
<th>Year</th>
<th>World</th>
<th>Eurozone</th>
<th>USA</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td>-9.5%</td>
<td>-8.0%</td>
<td>-3.3%</td>
</tr>
<tr>
<td>2021</td>
<td>-4.9%</td>
<td>-2.4%</td>
<td>-0.4%</td>
<td></td>
</tr>
</tbody>
</table>

#### Time to Return to Pre-Crisis Quarter

<table>
<thead>
<tr>
<th>Region</th>
<th>Real GDP Drop 2019 Q4-2020 Q2 % Change</th>
<th>2020 GDP Growth % Change</th>
<th>Time to Return to Pre-Crisis Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>-3.3%</td>
<td>-0.4%</td>
<td>Q4 – 2020</td>
</tr>
<tr>
<td>USA</td>
<td>-8.0%</td>
<td>-2.4%</td>
<td>Q3 – 2020</td>
</tr>
<tr>
<td>World</td>
<td>-4.9%</td>
<td>-1.5%</td>
<td>Q2 – 2020</td>
</tr>
<tr>
<td>Eurozone</td>
<td>-9.5%</td>
<td>-4.4%</td>
<td>Q1 – 2021</td>
</tr>
</tbody>
</table>

1. Seasonally adjusted by Oxford Economics

Source: McKinsey analysis, in partnership with Oxford Economics
COVID-19 U.S. impact could exceed anything since the end of WWII

United States Real GDP
% total draw-down from previous peak

-8% Scenario A3
-13% Scenario A1

Source: Historical Statistics of the United States Vol 3, Bureau of economic analysis; McKinsey team analysis, in partnership with Oxford Economics
### Scenario A1 Muted Recovery
Real GDP, Local Currency Indexed

**Real GDP Growth – COVID-19 Crisis**
Local Currency Units Indexed, 2019 Q4=100

<table>
<thead>
<tr>
<th>Country</th>
<th>Real GDP Drop 2019 Q4-2020 Q2 % Change</th>
<th>2020 GDP Growth % Change</th>
<th>Time to Return to Pre-Crisis Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>-3.9%</td>
<td>-2.7%</td>
<td>Q2 – 2021</td>
</tr>
<tr>
<td>USA</td>
<td>-3.9%</td>
<td>-2.7%</td>
<td>Q1 – 2023</td>
</tr>
<tr>
<td>World</td>
<td>-6.2%</td>
<td>-4.7%</td>
<td>Q3 – 2022</td>
</tr>
<tr>
<td>Eurozone</td>
<td>-12.2%</td>
<td>-9.7%</td>
<td>Q3 – 2023</td>
</tr>
</tbody>
</table>

1. Seasonally adjusted by Oxford Economics

Source: McKinsey analysis, in partnership with Oxford Economics

**Graphical Representation**

- **Graph Title**: Real GDP Growth – COVID-19 Crisis
- **Y-axis**: Real GDP Growth
- **X-axis**: Quarters (Q1 to Q4)
- **Legend**: World, Eurozone, USA, China
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?

- Indicators to monitor
  - 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
  - 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)

**Length of disruption**

How long could the disruption last?

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

**Shape of recovery**

What shape could recovery take?

- Indicators to monitor
  - 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)
  - 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

- Epidemiological indicator
  - Economic indicator
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. Width of bars is starting market cap in $.

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

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 March 25, 2020.
Even within sectors, there is significant variance between companies

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

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
## The hardest hit sectors may not see restart until 2021

Preliminary views on some of the hardest hit sectors based on partially effective scenario - subject to change

<table>
<thead>
<tr>
<th>Industry</th>
<th>Estimated degree of impact, in terms of duration</th>
<th>Estimated global restart</th>
<th>Avg. chang in stock price</th>
<th>Industry specific examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Aerospace</td>
<td>Longest</td>
<td>Q3 / Q4 2021</td>
<td>-44%</td>
<td>Preexisting industry challenges, a drop in possible revenue, and high fixed costs cause near-term cash flow 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. Long order backlogs mitigate some concerns, though rapid adoption of remote work technologies may put a dent in high-profitability business travel.</td>
</tr>
<tr>
<td>Air &amp; Travel</td>
<td></td>
<td>Q1 / Q2 2021</td>
<td>-44%</td>
<td>Deep, immediate demand shock 5-6x greater than Sept 11; ~70-80% near-term demand erosion due to int'l travel bans &amp; quarantines now prevalent in 130+ nations. N. Hemisphere summer travel peak season deeply impacted since pandemic fears coincide with peak booking period. Recovery pace faster for domestic travel (~2-3 quarters), slower for long-haul and int'l travel (6+ quarters)</td>
</tr>
<tr>
<td>Insurance carriers</td>
<td></td>
<td>Q4 2020</td>
<td>-33%</td>
<td>US insurers have been strongly affected, especially reinsurers and life &amp; 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.</td>
</tr>
<tr>
<td>Oil and gas</td>
<td></td>
<td>Q3 2020</td>
<td>-48%</td>
<td>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.</td>
</tr>
<tr>
<td>Automotive</td>
<td></td>
<td>Q3 2020</td>
<td>-32%</td>
<td>Existing vulnerabilities (e.g., trade tensions, declining sales) amplified by acute decline in Chinese demand, continued supply chain and production disruption (in China, rest of Asia, EU) to amplify impact despite ongoing Chinese economic restart. Headwinds to persist into Q3 given tight inventories (~6 weeks), supply chain complexity (therefore, minimal ability to shift).</td>
</tr>
<tr>
<td>Apparel/fashion/luxury</td>
<td></td>
<td>Late Q2 / Q3 2020</td>
<td>-28%</td>
<td>Overall decline in private consumption and exports of services. Demand for apparel categories down sharply overall and expected to take longer to return than economic restart; online growth exists (though hampered by labor shortage). Retail stores temporarily closed in many parts of the world – high regional variation.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Employees</th>
<th>Supply chain</th>
<th>Customers</th>
<th>Immediate liquidity</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current mix of work-from-home and at-work social distancing &amp; worker safety concerns combined with economic anxiety is driving stress and reducing productivity</td>
<td>Supply chain shifting from initial concern about China restart, to, continuing logistics issues, and concern about macro-environment impact on demand planning</td>
<td>Extreme demand reduction raising need to assuage customer concerns and put in place strict protections</td>
<td>Revenue drops raising need to manage immediate liquidity</td>
<td>Need to sustain operations and enable remote working</td>
</tr>
</tbody>
</table>

## Emerging concerns

### Example, new ideas that leading organizations are experimenting with

**New team structures that work remotely**: smaller, cross functional network-of-teams vs. rigid top-down organization

**New rules for leading remotely**: clearly defined outcomes, multi-channel team communication; clear milestones or decision points; transparency

**Investing in the right collaboration processes**: active use of joint whiteboarding, polling, doc sharing, channel based communications

**Leveraging technology team to empower remote work capability**: online articles, collaboration tools, training on appropriate channels

**Caring culture**: acceptance of WFH realities such as “always on” professionalism; informal socializing (virtual “water cooler” chats); authenticity

**Tighter routines for productivity**: commit to norms, have team launches, clarify most critical meetings, set aside personal time & routine

**Enact “pods” for on-site personnel** and leadership to minimize employee exposure while on site

**Agree on adaptations required for collective bargaining units** (e.g., unions) and contractors

**Increase personal protective equipment** where employees come in close contact with surfaces that can spread the virus

**Conduct scenario planning** to understand how inventory buffer changes in various disease scenarios

**Task S&OP team to build 3-6 plans** under a range of demand scenarios month to determine required supply

**Leverage direct communication channels** with direct customer when determining demand signals

**Use market insights/external databases** to estimate demand for customer’s customers

**Identify critical functions and roles** and develop back-up plans

**Build a plan to prioritize & protect valuable customers**:  
- Understand what matters to them—and how their situation will evolve  
- Focus on cultivating the most important segments (e.g., highest margin, continuous customers, community needs, contractual obligations)

**Build customer trust through transparency**:  
- Don’t pursue “revenue at any cost”—judiciously choose where to invest, based on analysis and planning  
- Establish a rhythm of updates & engagement, offering more frequent update, targeted content, and/or individual outreach

**Understand current available cash and project change over extended shutdown**  
- Identify and execute immediate, low-risk levers to improve cash position (e.g., capital projects, voluntary spend, inventory working capital)

**Stand up teams to run rolling 13-week cash forecasts**, plan further action (e.g., monetize balance sheet), and control spend

**Strengthen the service desk** to prepare for higher call frequency (e.g., home work setup, remote access, VPN)

**Design working model** (people and processes) to “keep the lights on” in critical IT functions (particularly incident coordination)
Employee work from home deep dive (1/2)
Key challenge of remote teams (if left unmitigated) is reduced efficiency and cohesion

Key sources of inefficiency and reduced cohesion

<table>
<thead>
<tr>
<th>Structure</th>
<th>Lack of clarity in roles and responsibilities, decision rights or objectives is amplified in a remote environment</th>
<th>Problem: Reduced efficiency, cohesion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difficult of navigating large or hierarchical organizational structures</td>
<td></td>
</tr>
<tr>
<td>People</td>
<td>Sense of lack of direction / isolation can degrade morale and performance</td>
<td>Problem: Reduced performance</td>
</tr>
<tr>
<td></td>
<td>Misunderstandings or lack of clarity on priorities leading to wasted work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Isolation and lack of social interaction leading to lower employee motivation and less cohesion as a team</td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>Lower communications efficiency due to missing in-person touch, time it takes to write vs talk, finding time together, or bad connectivity</td>
<td>Problem: Reduced efficiency, cohesion</td>
</tr>
<tr>
<td></td>
<td>Difficulty in self-organizing to address real-time challenges</td>
<td></td>
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<tr>
<td></td>
<td>Risk to overlook dependencies and create island solutions</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>Outdated architecture, slow VPN access</td>
<td>Problem: Reduced efficiency, cohesion</td>
</tr>
<tr>
<td></td>
<td>Missing tooling (e.g. for VC, co-creation, DevOps) exacerbate collaboration challenges</td>
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<tr>
<td></td>
<td>Impractical security inhibits remote work, leads to team members adopting insecure workarounds</td>
<td></td>
</tr>
</tbody>
</table>

Productivity decay with # of sites
Complexity units per man-week, indexed

1 site: 100
2 sites: 76
6 sites: 48

Sources: Press searches; Web pages; Interviews; McKinsey Numetrics; Team analysis
Employee work from home deep dive (2/2)
Approach to building effective teams in a distributed, online environment

Structure
Nature of work (e.g. real-time collaborative, vs. standardized individual; type of data accessed) influencing work-from-home arrangements and structure
Smaller, cross-functional teams with clear roles and responsibilities as well as synchronization mechanisms
A mixture of OKRs and KPIs used to communicate goals to the team and track progress against deliverables

People
Leadership’s increased role in providing direction, energizing teams & connecting the dots
Focus on cultural elements at individual and group level that drive performance in remote work (e.g. proactiveness)
Investment into soft aspects to form a cohesive group identity despite social remoteness (e.g. through role-modeling, 1:1s, townhalls, retrospectives)

Processes
Cadence of meetings to synchronize work and remove blockers across teams
Clear decision and escalation paths, stage/quality-gates, workflows with roles & responsibilities to facilitate handovers
Tailored communication tools catering to different scenarios and accounting for topic complexity, output, reaction time, and team preference
Single digital source of truth across people (e.g. face book), content (e.g. standards, OKRs), performance (e.g. KPI dashboards) & process (e.g. task management boards)
Result-oriented performance management on all levels: individual, team and tribe enabled by digital dashboards

Technology
Technology setup and infrastructure for remote work (e.g. home office setup, VPN bandwidth, remote application access)
Adoption of suite of SaaS digital tools to facilitate effective co-creation, communication and decision making (e.g. VC, file-share, real-time communication, document co-editing, task management, etc.)
Automated delivery pipelines and collaboration tools to enable a remote product development environment
Strong and practical security standards and practices

Sources: Press search; interviews; McKinsey Numetrics; team analysis
### On-site employee safety – Manufacturing example (1/2)

Manufacturing workforce safety can be increased by creating operating pods, but design considerations apply.

<table>
<thead>
<tr>
<th>Design considerations to building a pod</th>
<th>General guidance on how to apply levers</th>
<th>Example actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who to group into pods</td>
<td>Define the minimum size group to achieve desired production levels and minimize contact between employees and product</td>
<td>Remove any floating workers from potential pods</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group pods vertically along production line and break inter line (workers working on multiple lines) and beginning/end of line transfer points (line employee picks up raw materials instead of a rover dropping off material)</td>
</tr>
<tr>
<td>What job is done</td>
<td>Reclassify jobs/roles to improve ability to form pods and decrease inter-pod contact</td>
<td>Reclassify jobs (can be temporary) vertically along production line so one worker does multiple jobs on same production line versus horizontally across multiple lines (line may need to slow)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remove or adjust unnecessary line contact (quality checks done by line employees versus central quality)</td>
</tr>
<tr>
<td>How the pod works together</td>
<td>Add additional safeguards within the pod to further limit exposure</td>
<td>Ensure job tasks within pod protect the pod from itself, including additional PPE and separation throughout the shift (tasks can be adjusted to ensure 6 ft. separation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Institute increased sanitation of pod and workplace (hand washing, deep cleaning after shift, etc…)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stagger break and lunch times/locations</td>
</tr>
<tr>
<td>When the pod performs work</td>
<td>Change shift time and structure to limit exposure</td>
<td>Adjust start/end times to avoid inter-pod contact for pods working at same time, if site has only day shifts for multiple lines – consider going to 24 hrs operation to limit lines on site at a time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adjust weekly schedule including going to 12-hr shifts and 2 week on/off to minimize the number of people on site over a day/week</td>
</tr>
<tr>
<td>Where the pod performs work</td>
<td>Move the location of work to create social separation between pods</td>
<td>Modify non-work arrangements to minimize exposure including where pod is housed and how they get to work (critical operations such as power plants and refineries are considering housing employees on site)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restrict access between pods, ideally with social barriers (card access, temporary walls)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Move production lines to ensure adequate separation and consider temporary options (tents)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Close public spaces (cafeterias, gyms) and find alternate locations for workers to eat and move around</td>
</tr>
<tr>
<td>Plan for pod event</td>
<td>Develop response scenarios for likely events such as a pod test positive</td>
<td>Practice and train on likely scenarios (immediate and long-term response)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Define production flexibility and back-up options if line goes down</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Define backup pod staffing (refresh skills matrix to see who could cover, consider keeping a backup pod available in case of event)</td>
</tr>
</tbody>
</table>

Note: Certain actions must be implemented together to ensure mitigation of risk.
### On-site Employee Safety – Manufacturing Example (2/2)

Changing shift patterns is an option to limit exposure.

#### Current Situation – 3 Shifts

- **24 hours x 5 days model**
- Operators dedicated to either Line 1 or Line 2

#### Option 1 – Reduction in Shifts

<table>
<thead>
<tr>
<th>Day</th>
<th>M</th>
<th>T</th>
<th>W</th>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Description

- **16h x 5 day model**
- 5 ramp ups per week
- Allows for deep cleaning on 3rd shift

### Pros

- Incremental change, easy to implement
- Dedicated people to each line
- Maintenance can be done in 3rd shift
- Flexible

### Cons

- Daily ramp ups and downs causing inefficiencies
- Process cycle time must be shorter than 16h if cannot be interrupted

#### Option 2 – Reduction in Pace

<table>
<thead>
<tr>
<th>Day</th>
<th>M</th>
<th>T</th>
<th>W</th>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Description

- **24h x 5 day model**
- Production run at lower speed (less FTEs assigned to lines)

### Pros

- Incremental change, easy to implement
- Dedicated people to each line
- Flexible
- One ramp-up and down per week

### Cons

- Depending on process, can result in inefficiencies

#### Option 3 – Dedication to a Line

<table>
<thead>
<tr>
<th>Day</th>
<th>M</th>
<th>T</th>
<th>W</th>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Description

- **24h x 5 day model**
- Operators are dedicated to line 1 and then to line 2 – creating time barrier for inter-line contact

### Pros

- Machines productive time/running time ratio is maximized
- One ramp-up and down per week

### Cons

- Cross training is needed for whole staff, more difficult to implement
- Needs good demand forecast

---

*Source: Adapting production shifts to low demand in asset-heavy industries*
2

Resilience

Address near-term cash management challenges, and broader resiliency issues
Speed + Discipline – the key to Resilience

Teams seeking to boost Resilience during COVID-19 need to learn lessons from the companies that survived & thrived in the last recession – the Resilients

Mean TRS for Automotive sector 2007-11

The top 20% of companies that emerged from the recession are called the Resilients

These resilients didn’t have any particular starting advantage (e.g., existing portfolio). Instead, they managed to achieve a small lead, which they then extended over the next 10 years

Two words that define their success: Speed & Discipline
# Speed+ Discipline – how the Resilients stood apart

<table>
<thead>
<tr>
<th>Speed</th>
<th>EBITDA &amp; revenues outperformance</th>
<th>Early &amp; hard moves</th>
<th>M&amp;A activities outperformance</th>
<th>De-leveraging outperformance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resilients companies sustained 1 organic revenue growth early and throughout the recession and on revenue in recovery</td>
<td>Resilients moved faster, harder on productivity; preserved growth capacity</td>
<td>Resilients divested more during the downturn and acquired more in the recovery</td>
<td>Resilients cleaned-up their balance sheets ahead of the downturn</td>
</tr>
</tbody>
</table>

Compared to Non-resilients,

- **Resilients increased revenue by 30%** …
- **Reduced operating costs by 3x** and moved 12-24 months earlier …
- **Divested by 1.5x** in the downturn & **acquired 1.2x** in the recovery …
- **Deleveraged ~5% pts. higher** before the trough

---

1 Resilients only lost 1% of organic revenue vs. 2007 level during 2009
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 war room / 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
Example prioritization of initiatives related to cash

Not Exhaustive
Return

Create a detailed plan to return the business back to scale quickly
## Companies should be prepared for the “return”

Look for some of the following…

| Decline in cases                      | • Sustained decline in the number of cases in your area without rebound  
|                                        | • No community transmission / very low levels in your area               |
| Health response ready                | • Relaxation of shelter-in-place / quarantine orders                    |
|                                        | • Testing widely available with fast turnaround                       |
| Herd immunity (will take time)       | • Availability of antibody testing – available workforce who have immunity |
|                                        | • Availability of an effective vaccine (Spring 2021 soonest)            |

Then start thinking about…

| Protect employees                    | • Controlled access to all job locations: mandatory temperature checks, hand-washing |
|                                        | • Targeted measures based on job function and “risk profile” instead of blanket shutdown |
| Reassure customers                   | • Invest in a “safe environment”: pre-flight tests of passengers and crew for airlines, in-store sanitizers for retail, transparent safety record e.g. “X days since last infection” |
| Restore supply chain                 | • Diversify supply chain and critical vendors to different geographic locations |
| Reinstall or revise?                | • Explore contractual features like take-or-pay to pool risk while rebuilding demand |
|                                        | • Consider the effects of business interruption or work-from-home – what business practices should be reinstated, revised, or even removed? |
Reimagination and reform

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

Be clear about how the regulatory and competitive environment in your industry may shift.
Reimagination: Could we really emerge in a new normal? Why this could be possible

The facts today (examples)

‘Shelter at home’ moves are causing the largest demand drawdowns modern economies have seen in decades

The virus spread, and public health and economic response vary widely across countries today

Consumers are recalibrating on spend, having experienced a new model of lower in-person & even higher virtual connections, while learning new skills

Doctors are pointing to the inherent challenges of providing hospital-centered care during pandemics

How this may evolve

A self-sustaining recession may occur if governments are not able to respond effectively to the new threats that economies face

The speed and effectiveness of countries response could reshape political and economic relationships globally

When consumer demand returns, it may be for different categories than what existed previously, and virtual services could get adopted far faster than originally expected

The world may move closer to a more community or patient centered model of healthcare, aided by newer advances in AI, health monitoring, telemedicine
Resetting to new normal is hard

Much like resilient’s research, our research on companies more broadly (Strategy Beyond the Hockey Stick) shows that most companies (80% of all corporations) did not add economic value beyond their cost of capital.

Only 8% of the companies studied were able to successfully move towards adding economic value consistently.

The ones that did so, did it through 5 moves that may be critical for companies to consider:

- **M&A**: Conduct deals adding to 30% of market cap over a decade.
- **Reallocation**: Reallocate 50% of capital among BUs over a decade.
- **Capex**: Top 20% in sector on capital spending per unit of sales.
- **Productivity**: Increase productivity to be in top 30% of industry.
- **Differentiation**: Increase gross margin to be top 30% of industry.
Reform: What does the “day after” look like?

The need for governments to intervene could drive meaningful changes to regulatory environment across sectors globally.

Will healthcare go through a regulatory driven reform movement, similar to the financial sector after 2008/09 financial crisis?

How will pre-existing concerns on trade barriers play out in the post-COVID environment?

To what degree will bailouts of sectors come with conditions that meaningfully change the landscape of that sector in the future?

Will concerns around supply chain resilience spur a large-scale nearshoring or en masse qualifications of other suppliers, partly a result of regulatory and government considerations?

Will the twin trends of remote work and gig economy mean that a move towards a new organizational social contract is accelerated, with new regulatory implications for worker rights?
Nerve center

Managing across the 5Rs requires a new architecture based on a team-of-teams approach.
Managing across 5Rs requires a new architecture: Nerve Center
“Team of teams” with clear roles, responsibilities, and decision authority

**Team 1 - Discover**
Scenario planning team
Maintains multiple scenarios; provides one planning scenario. Facilitates future state exercises

**Owns**
- Reform

**Input to**
- Reimagination
- Resolve

**Team 2 - Design**
Strategic moves team
Uses planning assumptions (& scenarios) to craft trigger based portfolio of strategic moves

**Owns**
- Resilience
- Reimagination

**Input to**
- Resolve

**Team 3 - Decide**
Integrated operations team
Maintains operating cadence, risk maps, situation reports, tracks progress, and ensures ownership

**Owns**
- Timing & facilitation of strategic decision-making

**Input to**
- All 5 Rs

**Team 4 - Deliver**
Workforce, SC, customer, cash
Ensures extreme clarity & builds a cross-functional team to achieve outcome

**Owns**
- Resolve
- Return

---

Divergent / creative thinking
5% of Nerve Center capacity

Divergent / creative thinking
5% of Nerve Center capacity

Mix – Divergent / convergent
10% of Nerve Center capacity

Convergent / linear thinking
80% of Nerve Center capacity
Managing across 5Rs requires a new architecture: Nerve Center
“Team of teams” with clear roles, responsibilities, and decision authority

**Integrated operations**
- Elevated decision authority
- Operating cadence
- Risk maps and situation reports
- Technology response

**COVID-19 board sub-committee**
- Advisory Panel
  - Epidemiological
  - Economic/ Business projections
  - Political
  - Legal

**COVID-19 leadership team**
- Integrated operations
  - Elevated decision authority
  - Operating cadence
  - Risk maps and situation reports
  - Technology response

**Scenario planning**
- Planning scenario
- Issue maps

**Strategic moves**
- Portfolio of Actions (incl. strategic moves; immediate, medium-term, long-term)
- Leading indicators (decision triggers)

**Workforce protection and productivity**
- Policies and Management
- Two-way communications
- Contractors
- Facilities management
- Tech and security backbone
- Health and govt. engagement
- Remote work morale + productivity

**Supply chain stabilization**
- Supplier engagement
- Inventory management
- Production and operations
- Demand management
- Logistics

**Customer transparency and support**
- Customer outreach
- B2B customer transparency
- On-site customer protection

**Cash and financial stabilization**
- 13 week cash workout
- Account Receivables & Payables
- Inventory
- Procurement
- Organization
- Balance Sheet restructuring/ external funding

**Scenario planning**
- Planning scenario
- Issue maps

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**Cash and financial stabilization**
- 13 week cash workout
- Account Receivables & Payables
- Inventory
- Procurement
- Organization
- Balance Sheet restructuring/ external funding
Leaders should expect Nerve Center to evolve as crisis shifts
Basic structure and operating principles remain unchanged, but leadership time dedication changes

Resolve
- Gets most leadership attention in early phase
- Can be integrated into ‘day to day’ operations over time

Resilience
Most critical post the earliest phase of the crisis (once the extent of impact is clearer, and rate of new news slows down)

Return

Reimagination
Starts to become critical post the earliest phase of crisis, as well as once early signs of a return begin to reappear

Reform
Supply chains are being disrupted around the world, but the full impacts have not yet been felt.

**Situation today**
- ~80% plants restarted
- Across China, ex-Hubei, with large enterprises restarting, albeit with partial capacity, at much higher rates than smaller ones

**What to expect**
- Parts and labor shortages leading to further supply chain disruptions (e.g., decreased production capacity)
- Other regions will be facing production capacity reductions
- Customer pressure for prioritization

**Supply—production**
- 1.4M idle containers
- 5.5% of global container capacity affected by reduced demand

**Logistics—transportation**
- 60% China flights suspended
- Commercial flights account for ~50% of air cargo capacity, some airlines converting flights for cargo

**Customer demand**
- 20.5% decline in retail sales

**MED**
- Demand slump may persist
- Demand for express last-mile delivery has spiked in China due to quarantine and social distancing

For more detailed information, please refer to the source links provided in the document.

1. Assessment of risk premium to ship raw materials on a number of shipping routes, data as of 3/13
2. Frankfurt (FRA) to Shanghai (PVG) used as a proxy
4. Estimated prior to implementation of EU-US travel ban
5. Commercial flights from China
6. Companies such as Cathay Pacific and Singapore Airlines now starting to fly empty passenger aircrafts as dedicated cargo planes

Source: Baidu, WSJ, Bloomberg, Alphaliner, Quartz, TAC index, IATA, Seabury Consulting, A.P. Moller-Maersk Group of Denmark, Agility Logistics, Press search
COVID-19 Leading indicator dashboard for China
Tracking toward economic restart

Hubei impact
How deep is the impact, and when could economic activity restart?

- Late Q2
  Hubei remains deeply impacted; return to economic activity tough to foresee until mid Q2

China economic restart
When could economic activity restart in China (ex-Hubei)?

- Late Q1
  Restart has begun, especially for larger companies, despite challenges such as labor shortages and movement of goods

Labor availability
(movement of workers to major industrial provinces)

<table>
<thead>
<tr>
<th>Province</th>
<th>02/25</th>
<th>03/03</th>
<th>03/10</th>
<th>03/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jiangsu</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Shandong</td>
<td>28</td>
<td>13</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>Zhejiang</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guangdong</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Return to work index
(largest manufacturing cities by output in mainland China)

<table>
<thead>
<tr>
<th>City</th>
<th>02/25</th>
<th>03/03</th>
<th>03/10</th>
<th>03/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td>8</td>
<td>26%</td>
<td>14pt</td>
<td></td>
</tr>
<tr>
<td>Shanghai</td>
<td>1</td>
<td>2%</td>
<td>19%</td>
<td>63%</td>
</tr>
<tr>
<td>Nanjing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wuhan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Air pollution (NO\textsubscript{2} level)

- 8% decline in Beijing\textsuperscript{4}
- 14pt decline in Feb

PMI manufact.

- China other (avg.)
- Hubei

Small businesses face more labor disruption

Hubei recovery milestones
- Steady decline in confirmed cases
- New suspected and confirmed cases rates consistent with other provinces
- Quarantine lifted
- Public transport resumes
- Factory activity returns to pre-outbreak levels

Daily infection rate, per million

- ~0.02
- ~4.6%
- ~1.1%
- >4x

Crude case fatality ratio\textsuperscript{1}

- ~0.02
- ~4.6%
- ~1.1%
- >4x

China consumer confidence
When will Chinese consumer confidence and purchasing activity return?

- Q2
  Consumer spending in China spend may lag behind economic restart
  Tourism and some other sectors impacted well into Q2

Earliest school restarts

- Shenzhen
  - 56%
  - 61%
  - 16
- Beijing
  - 43%
  - 63%
  - 3
- Shanghai
  - 38%
  - 58%
  - 12
- Nanjing
  - 50%
  - 51%
  - TBD
- Wuhan
  - 6%
  - 47%
  - TBD

Example consumer behavior metrics (anecdotal)

- Retail passenger car sales down 78% in February
- Smartphone sales expected to be down 40% Q1
- Sales decline of 86% for mid and high end hotels
- Food & drink spend down $60 billion in January & February


McKinsey & Company
COVID-19 leading indicator dashboard
Propagation of COVID-19 across new transmission complexes

1. Includes Western Pacific (excl China) and Southeast Asia WHO regions
2. Eastern Mediterranean WHO region
Note: All countries and regions have documented 3rd-generation cases

Source: WHO situation reports, TomTom traffic index, Baidu QianXi, CDC, IATA, BBC, New York Times, Japan Times, NPR, Reuters, press search
### Middle East

<table>
<thead>
<tr>
<th>Example country</th>
<th>Epidemiological Indicators</th>
<th>Economic/policy indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date of initial case</td>
<td>Total number of cases</td>
</tr>
<tr>
<td>Iran</td>
<td>02/20</td>
<td>23,049</td>
</tr>
<tr>
<td>Rest of region</td>
<td>02/15</td>
<td>4,166</td>
</tr>
</tbody>
</table>

### Current phase

- **Stage 1:** Small number of cases identified; no sustained local transmission
- **Stage 2:** Disease spread and sustained local transmission
- **Stage 3:** Government action and shifts in public behavior. Not all affected regions enter stage 3, but interventions and economic impact signal prolonged recovery
- **Stage 4:** Case growth and stretched health systems
- **Stage 5:** New cases drop, activity resumes

### CDC travel health notice

- **Warning level 3:** 03/25/2019
- **Alert level 2:** 03/25/2020
- **None**

### Traffic congestion<sup>b</sup>

- 03/25/2020

---

Source: WHO Situation Reports, TomTom traffic index, Baidu QianXi, CDC, IATA, BBC, NYT, Japan Times, NPR, Reuters, press research

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<sup>a</sup> Number of countries/territories restricting travel

<sup>b</sup> Data N/A

<sup>c</sup> Traffic congestion

<sup>d</sup> School closures
### Stage 1:
Small number of cases identified; no sustained local transmission

### Stage 2:
Disease spread and sustained local transmission

### Stage 3:
Government action and shifts in public behavior. Not all affected regions enter stage 3, but interventions and economic impact signal prolonged recovery

### Stage 4:
Case growth and stretched health systems

### Stage 5:
New cases drop, activity resumes

**Epidemiological Indicators**

<table>
<thead>
<tr>
<th>Example country</th>
<th>Date of initial case</th>
<th>Total number of cases</th>
<th>New cases in last 14 days</th>
<th>5-day new case trend</th>
<th>Crude case fatality ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>01/31</td>
<td>63,927</td>
<td>53,778</td>
<td>5,322</td>
<td>8.6%</td>
</tr>
<tr>
<td>France</td>
<td>01/25</td>
<td>19,615</td>
<td>17,841</td>
<td>1,834</td>
<td>3.4%</td>
</tr>
<tr>
<td>Germany</td>
<td>01/28</td>
<td>29,212</td>
<td>27,916</td>
<td>2,801</td>
<td>0.3%</td>
</tr>
<tr>
<td>Spain</td>
<td>02/01</td>
<td>33,089</td>
<td>31,450</td>
<td>3,431</td>
<td>5.2%</td>
</tr>
<tr>
<td>Rest of region</td>
<td>01/29</td>
<td>43,014</td>
<td>40,112</td>
<td>3,448</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

**Economic/policy indicators**

<table>
<thead>
<tr>
<th>Example country</th>
<th>Number of countries/territories restricting travel</th>
<th>Number of airlines suspending service to country</th>
<th>Traffic congestion</th>
<th>School closures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>143 x 18</td>
<td></td>
<td>60</td>
<td>Country-wide</td>
</tr>
<tr>
<td>France</td>
<td>126</td>
<td></td>
<td>71</td>
<td>Country-wide</td>
</tr>
<tr>
<td>Germany</td>
<td>127</td>
<td></td>
<td>59</td>
<td>Country-wide</td>
</tr>
<tr>
<td>Spain</td>
<td>123</td>
<td></td>
<td>46</td>
<td>Country-wide</td>
</tr>
</tbody>
</table>

**Current phase**

- **Stage 1**: Small number of cases identified; no sustained local transmission
- **Stage 2**: Disease spread and sustained local transmission
- **Stage 3**: Government action and shifts in public behavior. Not all affected regions enter stage 3, but interventions and economic impact signal prolonged recovery
- **Stage 4**: Case growth and stretched health systems
- **Stage 5**: New cases drop, activity resumes

**CDC travel health notice**

- Warning level 3
- Alert level 2
- None

Source: WHO Situation Reports, TomTom traffic index, Baidu QianXi, CDC, IATA, BBC, NYT, Japan Times, NPR, Reuters, press research

Current as of March 25, 2020
### Example country

#### Epidemiological Indicators

<table>
<thead>
<tr>
<th></th>
<th>Date of initial case</th>
<th>Total number of cases</th>
<th>New cases in last 14 days</th>
<th>5-day new case trend</th>
<th>Crude case fatality ratio&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>01/23</td>
<td>42,164</td>
<td>41,468</td>
<td>3,355 4,777 0 16,354 10,591</td>
<td>1.0%</td>
</tr>
<tr>
<td>Rest of region</td>
<td>01/27</td>
<td>7,280</td>
<td>7,069</td>
<td>772 829 808 977 1,837</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

#### Economic/policy indicators

<table>
<thead>
<tr>
<th>Number of countries/territories restricting travel</th>
<th>Number of airlines suspending service to country&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Traffic congestion&lt;sup&gt;4&lt;/sup&gt;</th>
<th>School closures</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td></td>
<td>69</td>
<td>9</td>
</tr>
</tbody>
</table>

### Current phase

- **Stage 1:** Small number of cases identified; no sustained local transmission
- **Stage 2:** Disease spread and sustained local transmission
- **Stage 3:** Government action and shifts in public behavior. Not all affected regions enter stage 3, but interventions and economic impact signal prolonged recovery
- **Stage 4:** Case growth and stretched health systems
- **Stage 5:** New cases drop, activity resumes

### CDC travel health notice

- Warning level 3
- Alert level 2
- None

### Traffic congestion<sup>5</sup>

- 03/25/2019
- 03/25/2020

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Source: WHO Situation Reports, TomTom traffic index, Baidu QianXì, CDC, IATA, BBC, NYT, Japan Times, NPR, Reuters, press research
### Asia (ex-China)

**Epidemiological Indicators**

<table>
<thead>
<tr>
<th>Example country</th>
<th>Date of initial case</th>
<th>Total number of cases</th>
<th>New cases in last 14 days</th>
<th>5-day new case trend</th>
<th>Crude case fatality ratio&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>Prior to 01/20</td>
<td>9,037</td>
<td>1,282</td>
<td>239</td>
<td>1.2%</td>
</tr>
<tr>
<td>Japan</td>
<td>Prior to 01/20</td>
<td>1,128</td>
<td>560</td>
<td>77</td>
<td>3.6%</td>
</tr>
<tr>
<td>Singapore</td>
<td>01/24</td>
<td>507</td>
<td>341</td>
<td>32</td>
<td>0.4%</td>
</tr>
<tr>
<td>Rest of region</td>
<td>Prior to 01/20</td>
<td>4,161</td>
<td>3,826</td>
<td>542</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

**Economic/policy indicators**

- **Number of countries/territories restricting travel**
  - South Korea: 9,037
  - Japan: 1,128
  - Singapore: 507
  - Rest of region: 4,161

- **Number of airlines suspending service to country**
  - South Korea: 141
  - Japan: 119
  - Singapore: 117
  - Rest of region: Not noted

- **Traffic congestion**
  - Japan: Data N/A
  - Singapore: 63
  - Rest of region: Not noted

- **School closures**
  - Japan: Country-wide
  - Singapore: Country-wide
  - Rest of region: Not noted

**Current phase**

- **Stage 1**: Small number of cases identified; no sustained local transmission
- **Stage 2**: Disease spread and sustained local transmission
- **Stage 3**: Government action and shifts in public behavior. Not all affected regions enter stage 3, but interventions and economic impact signal prolonged recovery
- **Stage 4**: Case growth and stretched health systems
- **Stage 5**: New cases drop, activity resumes

**CDC travel health notice**

- Warning level 3
- Alert level 2
- None

**Traffic congestion**

- 03/25/2019
- 03/25/2020

Source: WHO Situation Reports, TomTom traffic index, Baidu QianXi, CDC, IATA, BBC, NYT, Japan Times, NPR, Reuters, press research
## COVID-19 Stage Detail

<table>
<thead>
<tr>
<th>Stage</th>
<th>Epidemiological indicators</th>
<th>Economic indicators</th>
<th>Social indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Small number of cases identified</td>
<td>No significant impacts</td>
<td>Activity remains normal</td>
</tr>
<tr>
<td></td>
<td>No sustained local transmission</td>
<td></td>
<td>Governments may begin coordinating containment activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Activity remains mostly normal</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Disease spread and sustained local transmission</td>
<td>Minor impact, primarily on supply side</td>
<td>Governments may begin coordinating containment activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Activity remains mostly normal</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Disease spread widely and sustained local transmission</td>
<td>Government interventions are instituted, impacting consumption</td>
<td>Shifts in public behavior begin in response to and multi-sectoral government actions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Larger numbers of citizens remain at home in response to the implementation of gov’t contingency plans</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Case growth and stretched health systems</td>
<td>Consumption slump and inventory “whiplash” due to quarantine measures</td>
<td>Social activity begins to resume</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inventory hoarding due to uncoordinated actors exacerbating supply chain</td>
<td></td>
</tr>
<tr>
<td>Stage 5</td>
<td>New cases drop, while surveillance continues to monitor subsequent waves</td>
<td>Consumption begins to rise, as quarantine begins to be rolled back</td>
<td></td>
</tr>
</tbody>
</table>

Source: WHO Pandemic Stages
1. Case fatality ratio calculated as (deaths on day X) / (cases on day X). Previous versions of this dashboard calculated CFR = (deaths on day X) / (cases on day X–7) to account for incubation.

2. Assessment based on observed stoppage in growth of cases and medical community’s opinion validated by external sources.

3. Anecdotal reports of airline suspensions based on press searches.


5. 0 new reported cases in US on 3/22 likely a reporting anomaly and not indicative of overall trend.

6. Crude case fatality ratio likely to fall as testing becomes more widely available.


Note: All countries and regions have documented third-generation cases.