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 380,000 and are increasing quickly around the world, with concerns that a 15% hospitalization rate could drive hospital system overloads.

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.

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.

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

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.
## The global spread is accelerating with more reports of local transmission

Latest as of March 26, 2020

<table>
<thead>
<tr>
<th>Impact to date</th>
<th>&gt;480,000</th>
<th>&gt;20,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported confirmed cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;130 Countries or territories with evidence of local transmission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;30 Countries or territories with more than 1000 reported cases</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>199</th>
<th>199</th>
<th>199</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries or territories with reported cases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China’s share of new reported cases March 18–24</td>
<td>~0.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New cases per day in the U.S.</td>
<td>&gt;10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New countries or territories with cases March 18–24</td>
<td>35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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, CDC, news reports
The virus has spread worldwide despite containment efforts.

- **Europe**: Total cases >250,000, Total deaths >13,900
- **North America**: Total cases >87,000, Total deaths >1,000
- **South America**: Total cases >6,500, Total deaths >100
- **Middle East**: Total cases >32,000, Total deaths >2,100
- **Africa**: Total cases >1,900, Total deaths >30
- **China**: Total cases >81,000, Total deaths >3,200
- **Oceania**: Total cases >13,000, Total deaths <20
- **Asia (excl. China)**: Total cases >19,500, Total deaths >320

Current as of March 26, 2020

Propagation trend:
- >10,000 reported cases
- 1,000-9,999 reported cases
- 250-999
- 50-250
- <50

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

Source: World Health Organization, Johns Hopkins University, McKinsey analysis
Greatest share of recent cases comes from Europe, although U.S. cases are rapidly accelerating

Cumulative number of cases since March 1 – March 26
Thousands

Asia
Incremental cases for China and South Korea are now down to ~100 per day with continued focus on disease surveillance and management of imported cases and localized transmission.

Europe
Cases and deaths continue to increase across the region. Effects of national lockdowns are beginning to show effect in Italy (which recorded relatively flat incremental cases for the past 3-4 days); close monitoring should continue in upcoming days to understand the impact of distancing measures across European states.

United States
Dramatic rise in cases in the past week have led the U.S. to exceed all other countries (including China) in total cases; incremental cases are now above 10,000 per day with highest concentrations in New York, New Jersey and California.

1. U.S. data from Johns Hopkins University CSSE (March 26 data point from live tracker from 1600PT); 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**: After more than two weeks of national lockdown, incremental cases and deaths are flattening, indicating initial effects of public health measures on transmission.

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

- **United States**: Cases and deaths are accelerating rapidly amidst containment responses that vary at state and local levels; U.S. now has the highest number of confirmed cases in the world.

---

1. U.S. data from Johns Hopkins University CSSE (March 26 data point from live tracker from 1600PT); all other data from WHO Situation Reports.

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

Tests performed

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

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:** The effects of national lockdown on viral transmission are beginning to show as new case growth flattens

**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
Western countries are largely instituting the “Early China model,” focused on immediate containment while ramping up testing

### Characteristic actions

**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

### Countries’ responses

<table>
<thead>
<tr>
<th>Testing</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>XX = 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>

### Sources

**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
Imperatives for “timeboxing” the virus and the economic shock

1a. Suppress the virus as fast as possible
   - Find “cures”: treatment, drugs, vaccines

1b. Expand treatment and testing capacity
   - Safeguard our lives

1c. Safeguard our livelihoods

2a. Support people and businesses affected by lockdowns
   - Prepare to get back to work safely when the virus abates

2b. Approx. -8 to -13% economic shock

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

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

<table>
<thead>
<tr>
<th>Rapid and effective control of virus spread</th>
<th>B1</th>
<th>A3</th>
<th>A4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong public health response succeeds in controlling spread in each country within 2-3 months</td>
<td>Virus contained, but sector damage; lower long-term trend growth</td>
<td>Virus contained; strong growth rebound</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective response, but (regional) virus resurgence</th>
<th>B2</th>
<th>A1</th>
<th>A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public health response initially succeeds but measures are not sufficient to prevent viral resurgence so social distancing continues (regionally) for several months</td>
<td>Virus resurgence; slow long-term growth</td>
<td>Virus resurgence; return to trend growth</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Broad failure of public health interventions</th>
<th>B3</th>
<th>B4</th>
<th>B5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public health response fails to control the spread of the virus for an extended period of time (e.g., until vaccines are available)</td>
<td>Pandemic escalation; prolonged downturn without economic recovery</td>
<td>Pandemic escalation; slow progression towards economic recovery</td>
<td>Pandemic escalation; delayed but full economic recovery</td>
</tr>
</tbody>
</table>

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

**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)

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

Current as of March 25, 2020
Scenario A3 virus contained

Real GDP growth—COVID-19 crisis
Local currency units indexed, 2019 Q4=100

<table>
<thead>
<tr>
<th>Year</th>
<th>Real GDP drop 2019 Q4–2020 Q2</th>
<th>2020 GDP growth</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>Q3–2020</td>
</tr>
<tr>
<td>USA</td>
<td>-8.0%</td>
<td>-2.4%</td>
<td>Q4–2020</td>
</tr>
<tr>
<td>World</td>
<td>-4.9%</td>
<td>-1.5%</td>
<td>Q4–2020</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

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></th>
<th>Real GDP drop 2019</th>
<th>2020 GDP growth % change</th>
<th>Time to return to pre-crisis Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q4–2020 Q2</td>
<td>% change</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>-3.9%</td>
<td>-2.7%</td>
<td>Q2 – 2021</td>
</tr>
<tr>
<td>USA</td>
<td>-10.6%</td>
<td>-8.4%</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

Current as of March 25, 2020
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

<table>
<thead>
<tr>
<th>Depth of disruption</th>
<th>Length of disruption</th>
<th>Shape of recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>How deep are the demand reductions?</td>
<td>How long could the disruption last?</td>
<td>What shape could recovery take?</td>
</tr>
</tbody>
</table>

### Epidemiological Indicators

- 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

### Economic Indicators

- 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)

### Depth of Disruption

- 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

### Length of Disruption

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

### Shape of Recovery

- 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
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
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

Current as of March 25, 2020

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 hardest hit sectors based on partially effective scenario—subject to change**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Estimated degree of impact, in terms of duration</th>
<th>Estimated global restart</th>
<th>Average change 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 quick 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>Q1 / Q 2 2021</td>
<td>Q1 / Q 2 2021</td>
<td>-44%</td>
<td>Deep, immediate demand shock 5–6x greater than Sept 11; ~70–80% near-term demand erosion due to international travel bans and quarantines now prevalent in 130+ nations. Northern 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 international travel (6+ quarters).</td>
</tr>
<tr>
<td>Insurance carriers</td>
<td>Q 4 2020</td>
<td>Q 4 2020</td>
<td>-33%</td>
<td>US insurers have been strongly affected, especially reinsurers and life and health insurers. Reduced interest rates and investment performance impacting returns—especially 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>Q 3 2020</td>
<td>Q 3 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>Q 3 2020</td>
<td>Q 3 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 (&lt;6 weeks), supply chain complexity (therefore, minimal ability to shift).</td>
</tr>
<tr>
<td>Apparel/fashion/luxury</td>
<td>Late Q2/Q3 2020</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

---

*Current as of March 25, 2020*
Leaders need to think and act across 5 horizons

<table>
<thead>
<tr>
<th></th>
<th>Resolve</th>
<th>Resilience</th>
<th>Return</th>
<th>Reimagination</th>
<th>Reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Address the immediate challenges that COVID-19 represents to the institution’s workforce, customers, technology, and business partners</td>
<td>Address near-term cash management challenges, and broader resiliency issues during virus-related shutdowns and economic knock-on effects</td>
<td>Create a detailed plan to return the business back to scale quickly, as the virus evolves and knock on effects become clearer</td>
<td>Re-imagine the “next normal”—what a discontinuous shift looks like, and implications for how the institution should reinvent</td>
<td>Be clear about how the regulatory and competitive environment in your industry may shift</td>
</tr>
</tbody>
</table>

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><strong>Emerging concerns</strong></td>
<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>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Employees</th>
<th>Supply chain</th>
<th>Customers</th>
<th>Immediate liquidity</th>
<th>Technology</th>
</tr>
</thead>
</table>
| 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 | 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) | Strengthen the service desk to prepare for higher call frequency (e.g., home work setup, remote access, VPN) |

<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>Use market insights/external databases to estimate demand for customer’s customers</td>
<td>Leverage direct communication channels with direct customer when determining demand signals</td>
<td>Identify critical functions and roles and develop back-up plans</td>
<td>Design working model (people and processes) to “keep the lights on” in critical IT functions (particularly incident coordination)</td>
<td></td>
</tr>
</tbody>
</table>
Employee work from home deep dive (1/2)

Key challenge of remote teams (if left unmitigated) is reduced efficiency and cohesion

**Structure**
- Any lack of clarity in roles and responsibilities, decision rights or objectives is amplified in a remote environment
- Difficult of navigating large or hierarchical organizational structures

**People**
- Sense of lack of direction / isolation can degrade morale and performance
- Misunderstandings or lack of clarity on priorities leading to wasted work
- Isolation and lack of social interaction leading to lower employee motivation and less cohesion as a team

**Process**
- Lower communications efficiency due to missing in-person touch, time it takes to write vs. talk, finding time together, or bad connectivity
- Difficulty in self-organizing to address real-time challenges
- Risk to overlook dependencies and create island solutions

**Technology**
- Outdated architecture, slow VPN access
- Missing tooling (e.g. for VC, co-creation, DevOps) exacerbate collaboration challenges
- Impractical security inhibits remote work, leads to team members adopting insecure workarounds

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>
</table>
| Who to group into pods                 | Define the minimum size group to achieve desired production levels and minimize contact between employees and product | • Remove any floating workers from potential pods
• 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) |
| What job is done                       | Reclassify jobs/roles to improve ability to form pods and decrease inter-pod contact | • 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)
• Remove or adjust unnecessary line contact (quality checks done by line employees versus central quality) |
| How the pod works together             | Add additional safeguards within the pod to further limit exposure | • 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)
• Institute increased sanitation of pod and workplace (hand washing, deep cleaning after shift, etc…)
• Stagger break and lunch times/locations |
| When the pod performs work             | Change shift time and structure to limit exposure | • 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
• 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 |
| Where the pod performs work            | Move the location of work to create social separation between pods | • 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)
• Restrict access between pods, ideally with social barriers (card access, temporary walls)
• Move production lines to ensure adequate separation and consider temporary options (tents)
• Close public spaces (cafeterias, gyms) and find alternate locations for workers to eat and move around |
| Plan for pod event                     | Develop response scenarios for likely events such as a pod test positive | • Practice and train on likely scenarios (immediate and long-term response)
• Define production flexibility and back-up options if line goes down
• Define backup pod staffing (refresh skills matrix to see who could cover, consider keeping backup pod available in case of event) |

Note: Certain actions must be implemented together to ensure mitigation of risk
On-site employee safety—Manufacturing example (2/2)

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

Current situation – 3 shifts

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

<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>

Production “lines” are used for illustrative purposes but the reasoning can be extrapolated to manufacturing sites with the same products, different parts of a site, different steps in a process, etc.

Option 1 – Reduction in shifts

Description
16h x 5day 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

Description
24h x 5day 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

Description
24h x 5day 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

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

Resilience

Address near-term cash management challenges, and broader resiliency issues
Resilience:
Speed + discipline is key

“The Resilients”
Teams seeking to boost resilience during COVID-19 need to learn lessons from the companies that survived and thrived in the last recession.

Sector-specific power curves show dramatic differences in performance during the recession.

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

### EBITDA and revenues outperformance
- Resilients companies sustained\(^1\) organic revenue growth early and throughout the recession and on revenue in recovery

### Early and hard moves
- Resilients moved faster, harder on productivity; preserved growth capacity

### M&A activities outperformance
- Resilients divested more during the downturn and acquired more in the recovery

### De-leveraging outperformance
- Resilients cleaned-up their balance sheets ahead of the downturn

### How Resilients performed relative to Non-Resilients:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Resilients Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in revenue</td>
<td>30%</td>
</tr>
<tr>
<td>Reduction in operating costs</td>
<td>3x</td>
</tr>
<tr>
<td>Divestiture in the downturn</td>
<td>1.5x</td>
</tr>
<tr>
<td>Deleveraged before trough</td>
<td>~5% pts.</td>
</tr>
</tbody>
</table>

\(^1\) 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
3

Return

Create a detailed plan to return the business back to scale quickly
**Return:** Companies must prepare

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
  - Explore contractual features like take-or-pay to pool risk while rebuilding demand

- **Reinstate or revise?**
  - 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?

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

Why a “new normal” may be possible

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 Resilients’ 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 the 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

<table>
<thead>
<tr>
<th>Team 1 - Discover</th>
<th>Team 2 - Design</th>
<th>Team 3 - Decide</th>
<th>Team 4 - Deliver</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discover</strong></td>
<td><strong>Design</strong></td>
<td><strong>Decide</strong></td>
<td><strong>Deliver</strong></td>
</tr>
<tr>
<td>Scenario planning team</td>
<td>Strategic moves team</td>
<td>Integrated operations team</td>
<td>Workforce, SC, customer, cash</td>
</tr>
<tr>
<td>Maintains multiple scenarios; provides one planning scenario. Facilitates future state exercises</td>
<td>Uses planning assumptions (&amp; scenarios) to craft trigger based portfolio of strategic moves</td>
<td>Maintains operating cadence, risk maps, situation reports, tracks progress, and ensures ownership</td>
<td>Ensures extreme clarity &amp; builds a cross-functional team to achieve outcome</td>
</tr>
<tr>
<td><strong>Owns</strong></td>
<td><strong>Owns</strong></td>
<td><strong>Owns</strong></td>
<td><strong>Owns</strong></td>
</tr>
<tr>
<td>Reform</td>
<td>Resilience</td>
<td>Timing &amp; facilitation of strategic decision-making</td>
<td>Resolve</td>
</tr>
<tr>
<td>Input to</td>
<td>Reimagination</td>
<td>Input to</td>
<td>Return</td>
</tr>
<tr>
<td>Reimagination</td>
<td>Resolve</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Input to</strong></td>
<td><strong>Input to</strong></td>
<td><strong>Input to</strong></td>
<td><strong>Input to</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All 5 Rs</td>
</tr>
</tbody>
</table>

**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 leadership team**
- COVID-19 board sub-committee

**Advisory Panel**
- Epidemiological
- Economic/Business projections
- Political
- Legal

**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 and 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 and payables
- Inventory
- Procurement
- Organization
- Balance sheet restructuring/external funding

---

McKinsey & Company
Leaders should expect Nerve Center to evolve as crisis shifts

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

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

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

4. Reimagination
   Reform

Basic structure and operating principles of Nerve Center remain unchanged, but leadership time dedication changes
Supply chains are being disrupted around the world, but the full impacts have not yet been felt

<table>
<thead>
<tr>
<th>Supply—production</th>
<th>Logistics—transportation</th>
<th>Customer demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Situation today</strong></td>
<td>1.4M idle containers</td>
<td>60% China flights suspended&lt;br&gt;5.5% of global container capacity affected by reduced demand&lt;br&gt;Or&lt;br&gt;60% truck staff available&lt;br&gt;Or&lt;br&gt;20.5% decline in retail sales&lt;br&gt;China consumer sentiment since January sharply lower; online/express deliveries up</td>
</tr>
<tr>
<td>~80% plants restarted&lt;br&gt;Across China, ex-Hubei, with large enterprises restarting, albeit with partial capacity, at much higher rate than smaller ones</td>
<td>66% BDI increase&lt;br&gt;Baltic Dry Index 166% higher since CLNY2 but at 10% lower levels compared to March 2019&lt;br&gt;Or&lt;br&gt;2x TAC index&lt;br&gt;TAC index rate +27% for U.S.–China, +93% EU–China2, +37% China–U.S., and +45% for China–EU since CLNY2</td>
<td>Medium&lt;br&gt;Demand for express last-mile delivery has spiked in China due to quarantine and social distancing&lt;br&gt;Medium&lt;br&gt;Europe and U.S. sentiments evolving, but localized</td>
</tr>
<tr>
<td><strong>What to expect</strong></td>
<td>7,000 TEU/week reduction&lt;br&gt;Volumes will return as factories restart, may see peak for restocks&lt;br&gt;Future capacity 2.3% reduction for a Asia-U.S. route from May due to sea freight alliance revisions</td>
<td>5% global air traffic decrease4&lt;br&gt;Decline in capacity available due to travel ban on commercial flights&lt;br&gt;YoY global air freight belly capacity reduction of 14% in March 20204&lt;br&gt;Rates likely to continue to increase</td>
</tr>
<tr>
<td>Medium&lt;br&gt;Parts and labor shortages leading to further supply chain disruptions (e.g., decreased production capacity)&lt;br&gt;Other regions will be facing production capacity reductions&lt;br&gt;Customer pressure for prioritization</td>
<td>5.5% global air traffic decrease4&lt;br&gt;Decline in capacity available due to travel ban on commercial flights&lt;br&gt;YoY global air freight belly capacity reduction of 14% in March 20204&lt;br&gt;Rates likely to continue to increase</td>
<td>High&lt;br&gt;Demand slump may persist&lt;br&gt;Inventory “whiplash”—7–8 weeks for auto, 2–4 weeks for high-tech&lt;br&gt;Inventory hoarding and demand spikes due to uncoordinated actors exacerbate supply chain</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>Impact on freight will take an extended period of time to correct with slower ramp-up&lt;br&gt;Logistics capacity returns but faces constraints; near-term price increases</td>
<td>Medium&lt;br&gt;Demand for express last-mile delivery has spiked in China due to quarantine and social distancing&lt;br&gt;Medium&lt;br&gt;Europe and U.S. sentiments evolving, but localized</td>
</tr>
</tbody>
</table>

1. Assessment of risk premium to ship raw materials on a number of shipping routes, data as of 3/13<br>2. Frankfurt (FRA) to Shanghai (PVG) used as a proxy<br>3. End of extended Chinese Lunar New Year holiday (2/7–3/13 for BDI, 2/10–3/2 for U.S.–China TAC, 2/10–3/9 for other TAC routes)<br>4. Estimated prior to implementation of EU-US travel ban<br>5. Commercial flights from China<br>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. Møller-Maersk Group of Denmark, Agility Logistics, Press search

McKinsey & Company
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)²

<table>
<thead>
<tr>
<th>Province</th>
<th>Daily infection rate, per million</th>
<th>Crude case fatality ratio¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jiangsu</td>
<td>~0.02</td>
<td>~4.6%</td>
</tr>
<tr>
<td>Shandong</td>
<td>~1x</td>
<td>&gt;4x</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Guangdong</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Hubei</td>
<td>14pt decline in Feb</td>
<td></td>
</tr>
<tr>
<td>China other (avg.)</td>
<td>~0.02</td>
<td>~1.1%</td>
</tr>
</tbody>
</table>

Return to work index (largest manufacturing cities by output in mainland China³)

<table>
<thead>
<tr>
<th>City</th>
<th>Return to work index</th>
<th>PMI manufact.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing⁴</td>
<td>8% decline in Beijing⁴</td>
<td>14pt decline in Feb</td>
</tr>
<tr>
<td>Shenzhen⁴</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>Guangzhou⁴</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>Wuhan⁵</td>
<td>63%</td>
<td></td>
</tr>
<tr>
<td>Shenzhen⁶</td>
<td>61%</td>
<td></td>
</tr>
</tbody>
</table>

Air pollution (NO₂ level)

<table>
<thead>
<tr>
<th>Location</th>
<th>Air pollution (NO₂ level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing⁶</td>
<td>12</td>
</tr>
<tr>
<td>Shenzhen⁶</td>
<td>56%</td>
</tr>
</tbody>
</table>

PMI manufact.

<table>
<thead>
<tr>
<th>PMI manufact.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6%</td>
</tr>
</tbody>
</table>

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

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

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


Current as of March 25, 2020

Small businesses face more labor disruption

Hubei ex-Hubei (avg.)
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

### Example country

<table>
<thead>
<tr>
<th>Country</th>
<th>Epidemiological Indicators</th>
<th>Economic/policy indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date of initial case</td>
<td>Number of countries/territories restricting travel</td>
</tr>
<tr>
<td></td>
<td>Total number of cases</td>
<td>Number of airlines suspending service to country&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>New cases in last 14 days</td>
<td>Traffic congestion&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>5-day new case trend</td>
<td>School closures</td>
</tr>
<tr>
<td></td>
<td>Crude case fatality ratio&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>02/20</td>
<td>142</td>
</tr>
<tr>
<td></td>
<td>23,049</td>
<td>x9</td>
</tr>
<tr>
<td></td>
<td>15,007</td>
<td>Data N/A</td>
</tr>
<tr>
<td>Rest of region</td>
<td>02/15</td>
<td>4,166</td>
</tr>
<tr>
<td></td>
<td>4,166</td>
<td>1.3%</td>
</tr>
<tr>
<td></td>
<td>3,630</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

### Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cases</td>
<td>23,049</td>
</tr>
<tr>
<td>5-day new cases trend</td>
<td>1,411</td>
</tr>
<tr>
<td>Crude case fatality ratio</td>
<td>7.3%</td>
</tr>
<tr>
<td>Traffic congestion</td>
<td>x9</td>
</tr>
<tr>
<td>School closures</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: 03/25/2019
- Alert level 2: 03/25/2020
- None: 03/25/2020

### Source

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

---

<sup>1</sup> Calculated as the number of deaths due to the disease divided by the total number of confirmed cases.

---

<sup>2</sup> To calculate the 5-day new case trend, the total number of cases over the past 5 days is divided by 5.

---

<sup>3</sup> A country's government may choose to limit travel to outbreak-affected regions.

---

<sup>4</sup> Indicated by a red line and data points on the graph.

---

<sup>5</sup> Traffic congestion levels are based on the analysis of GPS data and traffic patterns.

---

<sup>6</sup> Data not available for the Rest of region.

---

<sup>7</sup> Epidemiological indicators include date of initial case, total number of cases, new cases in the last 14 days, 5-day new case trend, and crude case fatality ratio.

---

<sup>8</sup> Data N/A indicates that data is not available for the Rest of region.
Europe

**Example country**

<table>
<thead>
<tr>
<th>Epidemiological Indicators</th>
<th>Economic/policy indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date of initial case</strong></td>
<td><strong>Number of countries/territories restricting travel</strong></td>
</tr>
<tr>
<td><strong>Total number of cases</strong></td>
<td><strong>Number of airlines suspending service to country</strong></td>
</tr>
<tr>
<td><strong>New cases in last 14 days</strong></td>
<td><strong>Traffic congestion</strong></td>
</tr>
<tr>
<td><strong>5-day new case trend</strong></td>
<td><strong>School closures</strong></td>
</tr>
<tr>
<td><strong>Crude case fatality ratio</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td>01/31</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>France</strong></td>
<td>01/25</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Germany</strong></td>
<td>01/28</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spain</strong></td>
<td>02/01</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rest of region</strong></td>
<td>01/29</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

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

**Current as of March 25, 2020**

**Warning level 3**

**Alert level 2**

**None**

**Traffic congestion**

**CDC travel health notice**
### Americas

#### Example country

<table>
<thead>
<tr>
<th>Country</th>
<th>Epidemiological Indicators</th>
<th>Economic/policy indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>Date of initial case: 01/23</td>
<td>Number of countries/territories restricting travel: 111</td>
</tr>
<tr>
<td></td>
<td>Total number of cases: 42,164</td>
<td>Number of airlines suspending service to country: 69</td>
</tr>
<tr>
<td></td>
<td>New cases in last 14 days: 41,468</td>
<td>Traffic congestion: 9</td>
</tr>
<tr>
<td></td>
<td>5-day new case trend: 3,355, 4,777, 0, 16,354, 10,591</td>
<td>School closures: Local</td>
</tr>
<tr>
<td>Rest of region</td>
<td>Date of initial case: 01/27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total number of cases: 7,280</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New cases in last 14 days: 7,069</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-day new case trend: 772, 829, 808, 977, 1,837</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crude case fatality ratio: 1.0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crude case fatality ratio: 0.9%</td>
<td></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

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

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

#### Example country

<table>
<thead>
<tr>
<th>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>South Korea</td>
<td>Prior to 01/20</td>
<td>9,037</td>
</tr>
<tr>
<td>Japan</td>
<td>Prior to 01/20</td>
<td>1,128</td>
</tr>
<tr>
<td>Singapore</td>
<td>01/24</td>
<td>507</td>
</tr>
<tr>
<td>Rest of region</td>
<td>Prior to 01/20</td>
<td>4,161</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

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

---

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

---

McKinsey & Company
<table>
<thead>
<tr>
<th>Epidemiological indicators</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small number of cases identified</td>
<td>Disease spread and sustained local transmission</td>
<td>Disease spread widely and sustained local transmission</td>
<td>Case growth and stretched health systems</td>
<td>New cases drop, while surveillance continues to monitor subsequent waves</td>
</tr>
<tr>
<td></td>
<td>No sustained local transmission</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic indicators</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No significant impacts</td>
<td>Minor impact, primarily on supply side</td>
<td>Government interventions are instituted, impacting consumption</td>
<td>Consumption slump and inventory “whiplash” due to quarantine measures</td>
<td>Consumption begins to rise, as quarantine begins to be rolled back</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social indicators</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity remains normal</td>
<td>Governments may begin coordinating containment activities</td>
<td>Shifts in public behavior begin in response to and multi-sectoral government actions</td>
<td>Larger numbers of citizens remain at home in response to the implementation of gov’t contingency plans</td>
<td>Social activity begins to resume</td>
<td></td>
</tr>
</tbody>
</table>
References

COVID-19 leading indicator dashboard for China

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. Measures movement of population into destinations as of 3/22/2020
3. Wuhan included only for comparison
4. 7-day average (17–Mar to 24–Mar) compared to 2019
5. Car traffic only. Congestion reflects percentage increase in travel time compared to free-flow conditions

Region-specific details

1. Case fatality rate calculated as (deaths on day X) / (cases on day X). Dashboards before February 29 calculated CFR as (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
7. Epidemiological data current as of 3/24 WHO situation report

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