

COVID-19 PRIMER

Epidemiology, Scenarios, and Impacts

March 13, 2020 UPDATE

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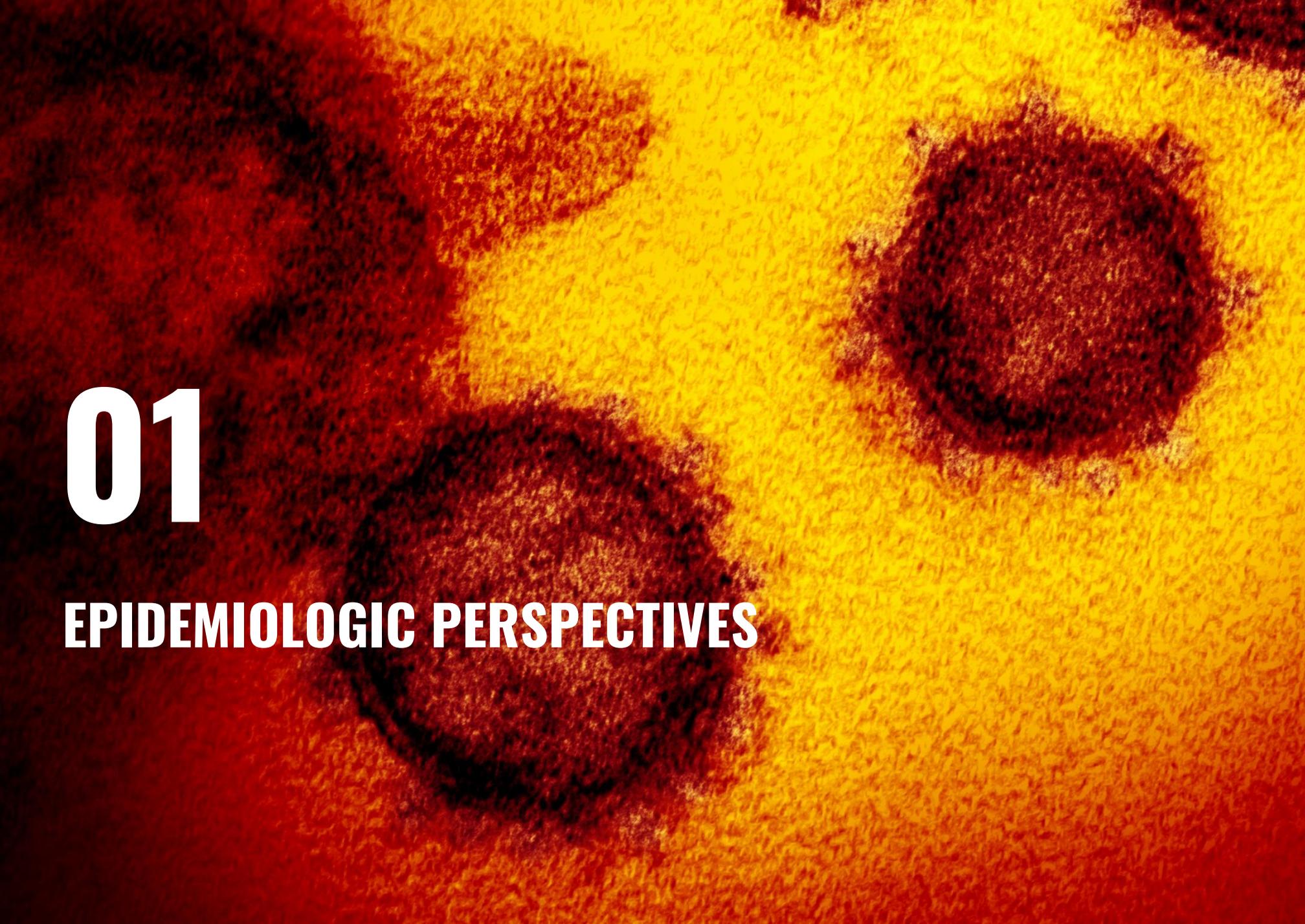
RESPONDING TO COVID-19

01 Epidemiologic perspectives

02 Supply chain impact

03 Financial Services impacts: China case study

04 Financial Services impacts: US perspectives



01

EPIDEMIOLOGIC PERSPECTIVES

SUMMARY

Context and Purpose

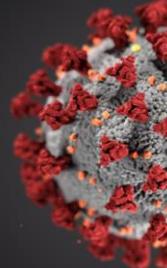


Context and purpose

COVID-19 has infected more than 125K people globally and is taking its toll on individuals, families, and economies as productivity drops and stock markets reflect increased global uncertainty

This document provides some baseline facts for business leaders and guidance as to critical questions to address in the immediate and near-term to ensure the continuity of their business and the safety, health, and wellbeing of their workforce and customers

What is it?



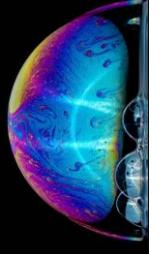
What is it?

COVID-19 is the name for the illness caused by the novel coronavirus that originated in Wuhan, China in December 2019

It is from the same family of viruses that cause some common colds, as well as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS)

It is considered similar to other respiratory infections such as influenzas; symptoms range from fever, cough, shortness of breath to more severe cases of pneumonia and organ failure

Are we overreacting?



Are we overreacting?

There's no need to panic, but there are a few characteristics that are important to understand:

- Early data suggests that COVID-19 may be 2–3 times as contagious as the flu with a much higher case fatality rate
- Approximately 19% of confirmed cases are considered “severe” or “critical”¹
- The incubation period for COVID-19 appears to be longer than that of the flu, at ~5 days² versus 2–4 days³; in addition, evidence suggests it can be transmitted asymptotically, making COVID-19 more complicated to contain

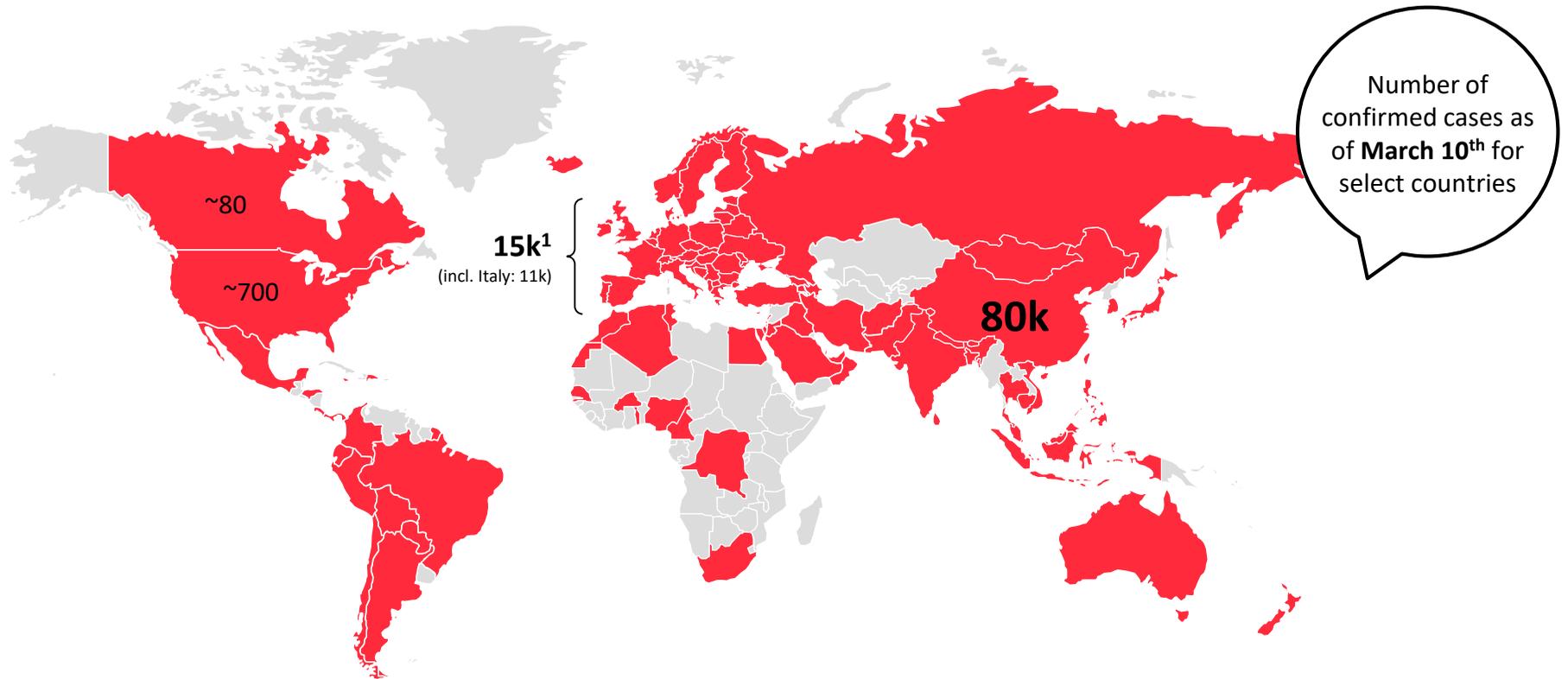
We don't yet know if COVID-19 is seasonal like the flu; half of coronaviruses appear to be seasonable, and half do not; there is no direct evidence yet to suggest this is seasonal

As more data is collected, we may come to understand that COVID's spread and severity are more like the seasonal flu; and there is reason to believe that vaccine and treatment pathways will lead to more effective responses for severe cases

1. China CDC; 2. London School of Tropical Medicine; 3. CDC.

COVID-19 WORLD-WIDE COVERAGE

The virus continues to spread



- First reported in Wuhan, China, on **December 31, 2019**
- Declared a public health emergency of international concern by the World Health Organization on **January 30, 2020**

As of March 11th, 2020:

- >125k cases reported in 110 countries and territories
- >4,500 reported deaths

1. Countries included: All Countries in "European Region" Sub-region in WHO Situation Report-50

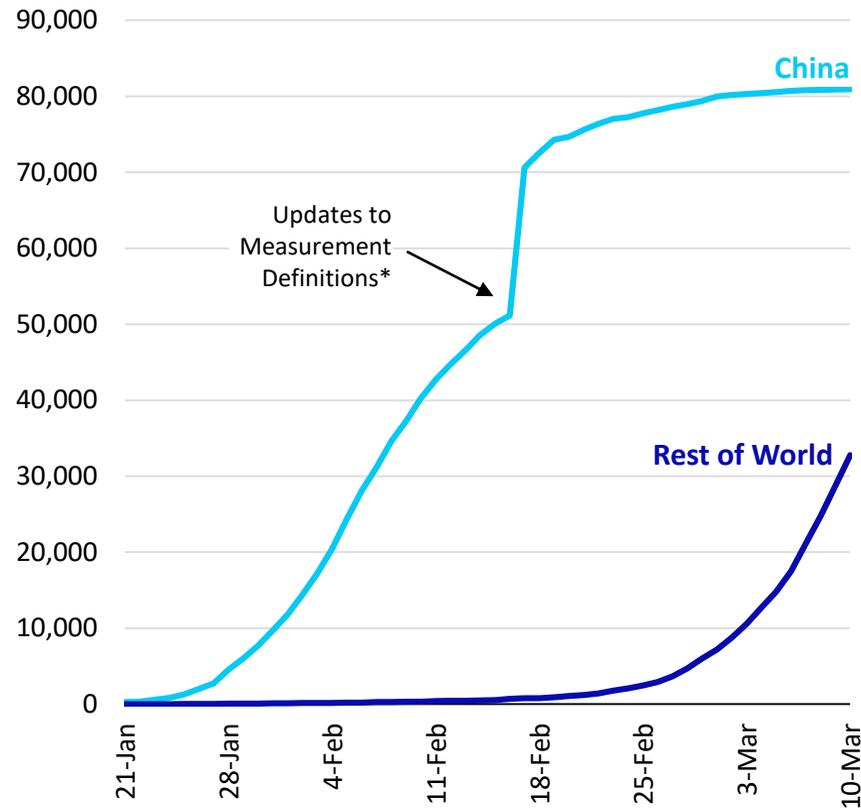
Source: Map from CDC ([link](#)), Numbers from WHO National Health Commission of the People's and Situation Report – 50 ([link](#))

COVID-19 TRENDS AND SPREAD OF THE DISEASE

The number of new cases in China has slowed – likely due to significant containment measures – as the outbreak spreads to other countries

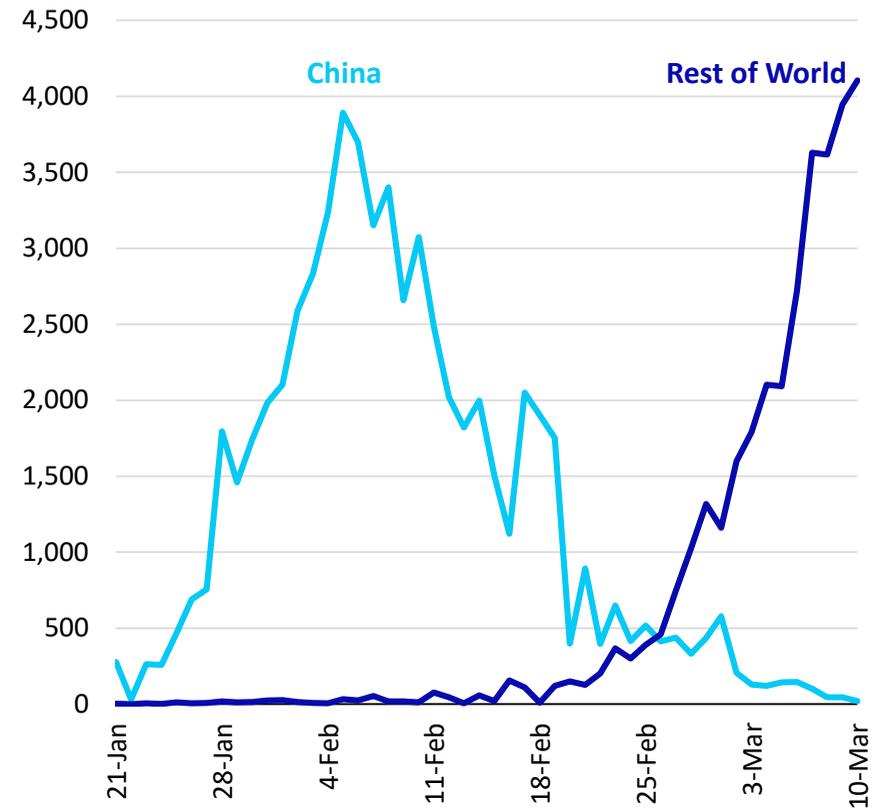
Confirmed Cases of COVID-19

Cumulative Number of Cases as of March 10



New Cases Per Day of COVID-19

New Cases Per Day as of March 10, 2020



Source: WHO Situation Reports ([link](#)), the first report release date was Jan 21, 2020

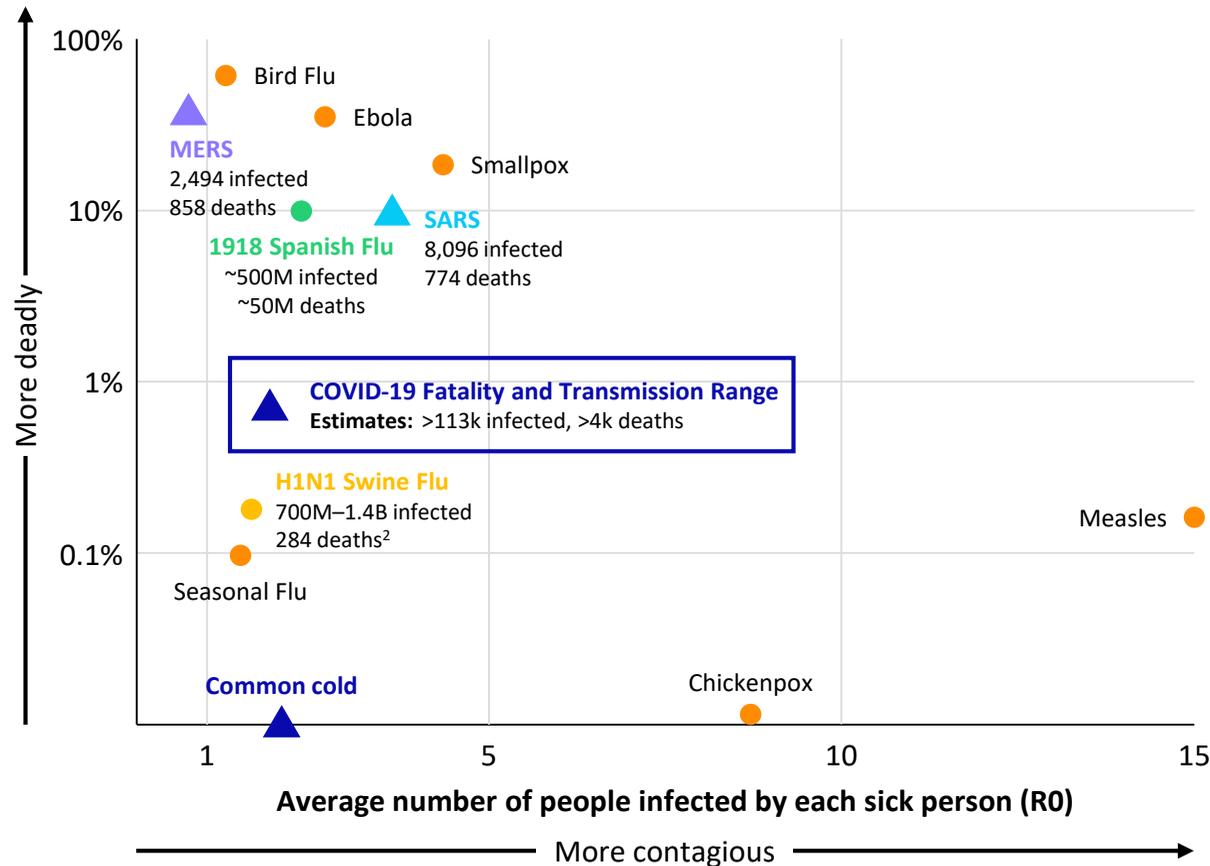
Notes: Until February 17, the WHO situation reports included only laboratory confirmed cases causing a spike in total cases. Some sources include this update as of February 13. The jump due to inclusion of non lab confirmed cases is not included in the new cases data in WHO situation reports. From January 21 through January 31, the WHO did not directly report new cases and values shown are extrapolated from totals.

HOW DOES COVID-19 COMPARE TO DISEASE OUTBREAKS?

COVID-19 is currently more deadly than the Flu, but the science on transmission and mortality continues to evolve

Fatality rate¹
Log scale

Key: ▲ Denotes
Coronaviruses



Additional details

- R-naught (R0) represents the number of cases an infected person will cause. R0 for COVID-19 is currently estimated at between 2 and 3 (with edge of range estimates closer to 1.4 and 3.5), which means each person infects 2-3 others³; R0 for the seasonal flu is around 1.3⁴
- The case fatality rate for confirmed COVID-19 cases is currently 3.53%⁵ according to the WHO versus 0.1% for the seasonal flu
- We expect case fatality rate to fluctuate as testing expands and more cases are identified

1. New York Times ([link](#)) for fatality and R-naught comparisons, CDC timelines for case numbers (selected link: CDC [SARS](#) timeline), 2. Updated CDC estimates ([link](#)), 3. The R0 for the coronavirus was estimated by the WHO to be between 1.5-2.5 (end of January estimate) ([link](#)), other organizations have estimated an R0 ranging between 2-3 or higher ([link](#)), 4. CDC Paper ([link](#)), 5. WHO 3/10/20 statement

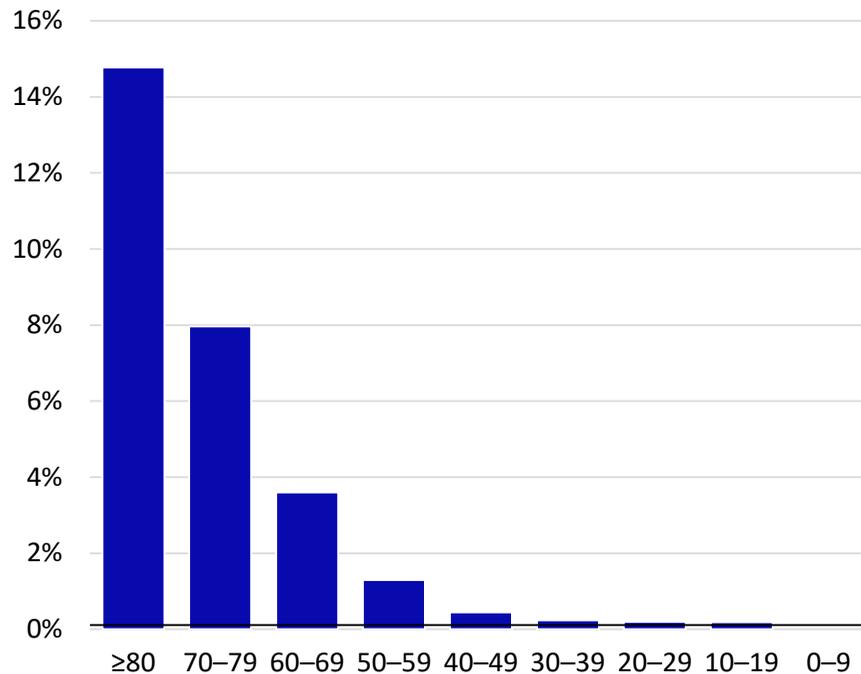
CASE FATALITY RATE (CFR) BY PATIENT CHARACTERISTIC

Significantly higher death rates occur among the elderly and those with underlying conditions

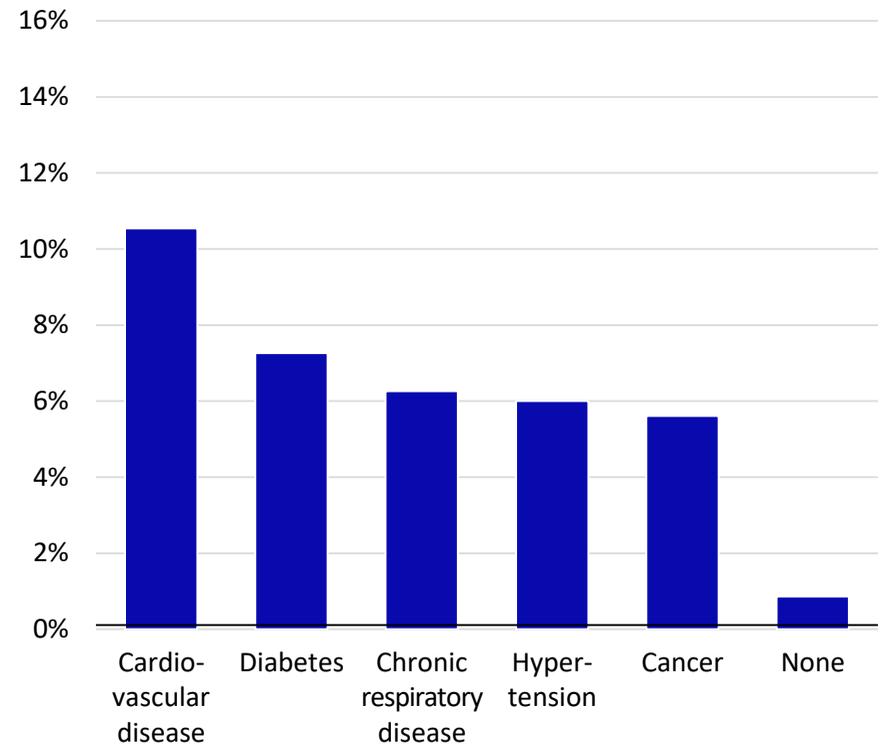
Case Fatality Rate by Specific Patient Characteristics

All confirmed cases in China as of February 11, 2020

by Age



by Comorbid Condition



Source: China CDC Weekly. Vital Surveillances: The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020.

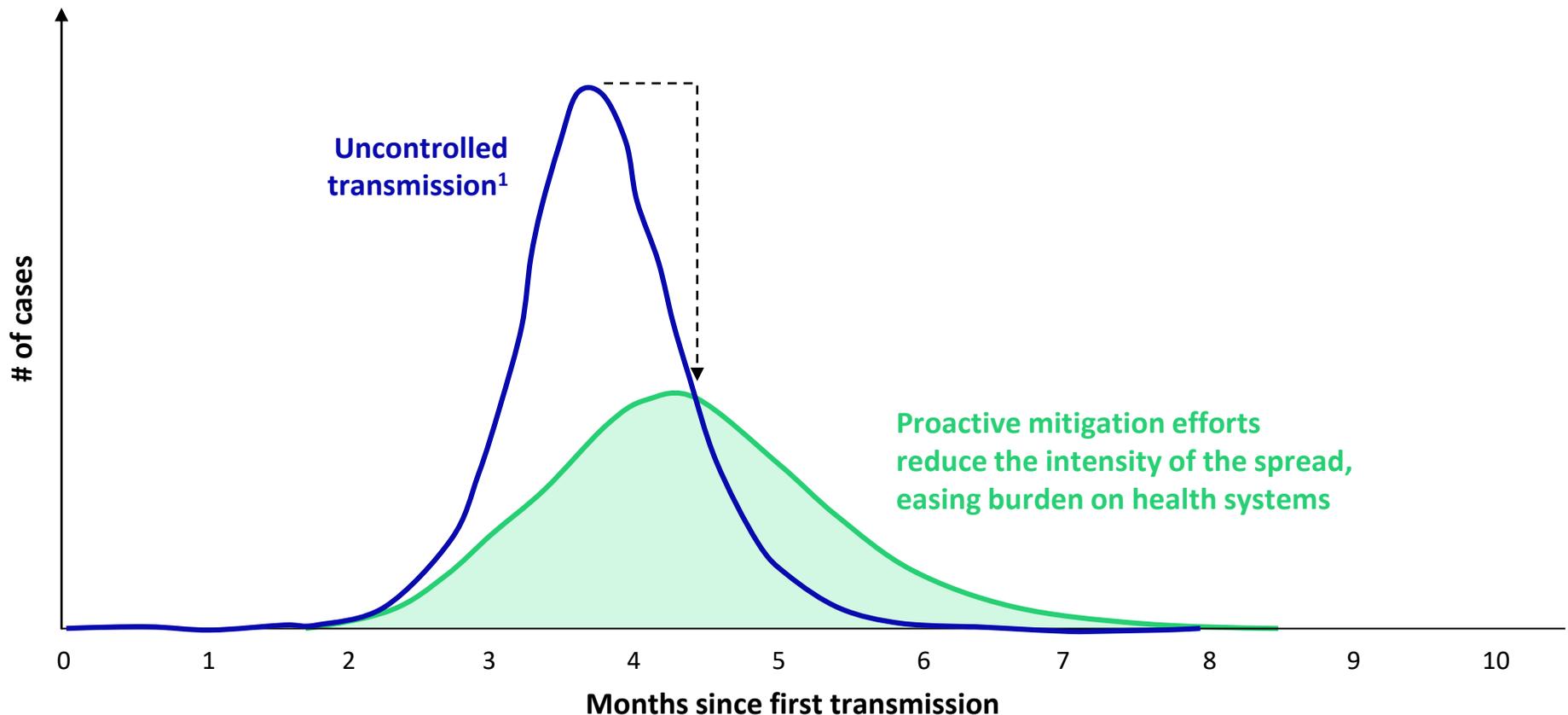
Notes: Data includes 44,672 confirmed cases reported through February 11, 2020.

HOW CAN MITIGATION MEASURES LOWER THE BURDEN OF THE PANDEMIC?

Proactive and swift mitigation measures (e.g., social distancing) are critical to control the spread and reduce the overall burden on the healthcare system, as ~15–20% of confirmed cases require hospitalization

Illustrative COVID-19 transmission with and without mitigation measures

Timing and width of peaks may vary between countries



1. Assuming case-based isolation only

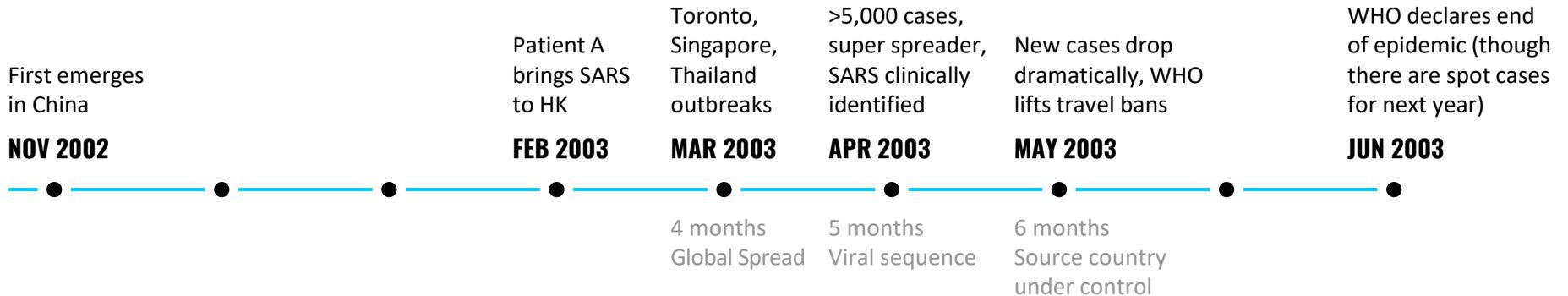
Source: Adapted from "How will country-based mitigation measures influence the course of the COVID-19 epidemic". Lancet. Mar 6 2020. [https://doi.org/10.1016/S0140-6736\(20\)30567-5](https://doi.org/10.1016/S0140-6736(20)30567-5)

WHERE ARE WE IN THIS PANDEMIC?

SARS, while smaller and more contained than COVID-19, is one analog to understand how the pandemic could unfold and how important public and public health response is to containment and mitigation

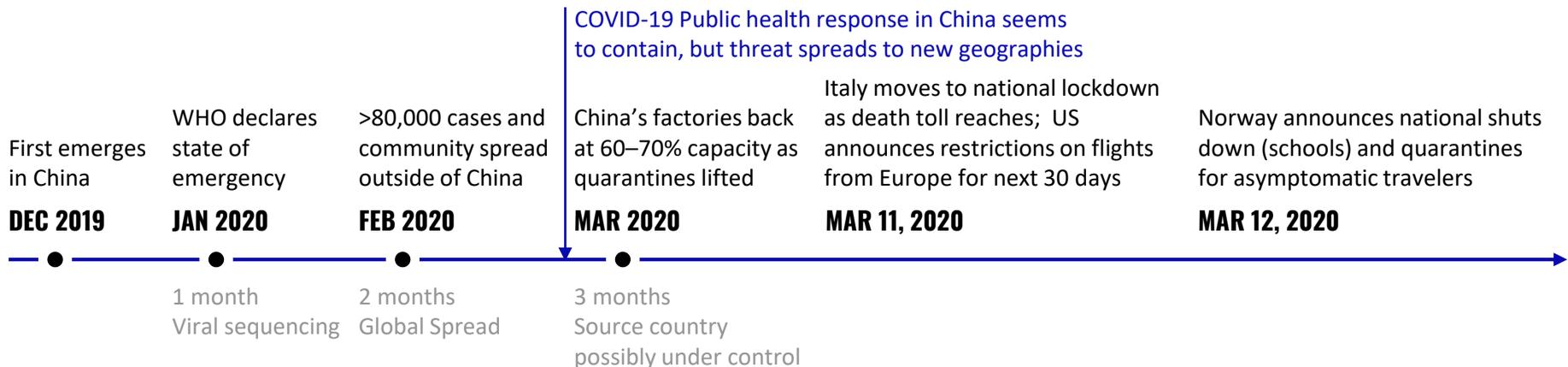
SARS¹

6 months critical, 8,096 infected, 774 deaths



COVID-19²

3 months & counting, >125,000 infected, >4,500 deaths



Sources: SARS timeline ([link](#)), COVID-19: CDC and WHO, and Asia Times ([link](#))

HOW LONG COULD THIS LAST? HOW MIGHT THIS PLAY OUT?

Two key questions, and a number of items to monitor, help define three potential scenarios

Q1: Will public health measures contain individual outbreaks?

China has demonstrated containment is feasible, but will containment be maintained, will other countries be willing and able to implement the necessary containment tactics, and will the public comply?

Key items to watch

- New case rates as China lifts restrictions: some new cases (a 'bump') are to expected, but a spike could be concerning
- Case growth in Italy: Italy has shown some worrying signs of veering off the China containment curve, bending the trend in the next 1–2 weeks is critical months; ongoing pandemic

↓
YES
↓

SCENARIO 1
Serial outbreaks
lasting 3–4 months

↓
NO
↓

Q2: Will a mitigating factor emerge to help dampen the effects of the virus?

If public health measures are insufficient in some or all countries, will we catch a break from a mutation that renders the virus less virulent, seasonality, or improvements in CFR?

Key items to watch

- Signs of seasonality: We will not know definitively if the virus is seasonal for 9-12 months, but diminishing outbreaks in the Northern Hemisphere as temperatures rise, and limited outbreaks in the Southern Hemisphere could be indicative
- Data on mutations and their impact: Very limited data is available on the impact of identified mutations of the virus on prevalence, transmission, or severity of disease

↓
YES
↓

SCENARIO 2
6–12 months to rein
in pandemic

↓
NO
↓

SCENARIO 3
12+ months;
ongoing epidemic

HOW LONG COULD THIS LAST? HOW MIGHT THIS PLAY OUT?

Scenario 1: Serial outbreaks lasting 3–4 months

What you'd have to believe

- New case rates spike with initial outbreak in a region and increased testing, but level off within ~8 weeks
- Public health officials enact aggressive containment measures to contain localized outbreaks (e.g., Italy, Seattle (USA), New Rochelle (USA)), learning from the “playbook” set by China, Singapore and refined by the next regions to experience outbreak
- Population largely complies with public health directives, slowing human-to-human transmission; health systems are not overwhelmed, CFR does not rise
- New case rates in China do not increase after quarantines and travel restrictions are relaxed and schools reopen

What we know so far

- Aggressive containment measures in China (100M under quarantine in February 2020, 59M remain so as of early March) contained spread within 8 weeks of identification
- New case rates in China have declined; similar compliance would be necessary in rest of world to contain
- China has not yet returned to “normal” (e.g., schools are still closed with staggered re-opening planned for Mar–May)

Anticipated business impacts

- Supply chain shocks reverberate into Q2 in some sectors; Chinese manufacturing shutdown in part tempered by inventories stockpiled in advance of Lunar New Year
- Corporate and government-mandated (e.g., US restriction on European travel announced 3/11) travel restrictions in affected regions lead to drop-off in demand in airlines, hotels and impact retail supply and demand
- Earnings dented post outbreak in a particular region, but swift recovery and rebounding consumer confidence allows companies to return to normal one to two quarters later
- Complete global recovery takes until Q4 or longer, given serial pattern of outbreaks and containment; recovery more rapid if virus proves to be seasonal

HOW LONG COULD THIS LAST? HOW MIGHT THIS PLAY OUT?

Scenario 2: 6–12 months to rein in pandemic

What you'd have to believe

- While some countries move rapidly to replicate aggressive containment measures, others either do not or are unable to drive compliance
- Countries with slower, less aggressive response and/or poor compliance are not able to contain the virus with case rates continuing to increase beyond expected 6–8 week window
- Some countries with initial containment see spike of cases after lifting containment measures
- Despite continued rise of cases, case fatality rate decreases because mitigating factor emerges (e.g., viral mutation affecting virulence, seasonality, early identification and improved treatment)
- As case fatality rate decreases, public begins to calm down despite ongoing outbreaks of disease

What we know so far

- Other countries may be unable (e.g., lack of resources to rapidly erect hospitals, lack of infrastructure and surveillance capabilities to track and isolate cases) or unwilling to mount the same public health response as China
- Compliance with public health recommendations is more difficult to enforce in many countries (e.g., broken quarantine of patient in New Hampshire, USA)
- Virulence-lowering viral mutations have been observed previously (e.g., SARS) and there is emerging evidence of at least two strains of COVID-19, one less virulent than the other
- While ~50% of coronavirus family have proved to be seasonal, no direct evidence yet indicates COVID-19 is seasonal
- Aggressive testing and documentation of effective treatment protocols has contributed to a dramatically reduced CFR in South Korea (0.8% as of 3/12) compared to that of other regions

Anticipated business impacts

- Employers reluctant to relax travel and WFH mandates without guidance from public health officials
- Vulnerable industries experience a continued drop in demand as consumer confidence wavers into Q2 and Q3 and take measures to stabilize balance sheets and ensure liquidity
- Supply chain shocks play out over a six month period, after which momentum could begin to stabilize and recover
- Pace of growth slows in impacted countries; larger, more diversified economies with less dependence on international trade and/or foreign income than other economies prove better able to weather slowing growth

HOW LONG COULD THIS LAST? HOW MIGHT THIS PLAY OUT?

Scenario 3: 12+ months; ongoing pandemic

What you'd have to believe

- Virus proves to either not be seasonal, or seasonal and endemic (rising, falling and returning seasonally by Hemisphere)
- Regions are unable to contain outbreaks; virus spreads widely, affecting ~20–60%¹ of adult population in next 2 years
- Mortality rates do not decline, placing significant strain on or overwhelming health systems and further increasing fatalities
- Vaccine is required to halt progress of disease

What we know so far

- Insufficient data to support scenario as of yet
- Multiple vaccines under development but at least 1 year out
- Unless “spike” of cases in a region can be smoothed over a longer period of time, health systems become overtaxed and cannot adequately meet all patients’ needs (e.g., Wuhan, Italy)
- As health systems become overwhelmed, transmission and case fatality increases

Anticipated business impacts

- Drops in demand (consumer confidence, access to supply, part-time/gig economy workers with less discretionary income) cause growth to slow into Q4
- Companies in particularly vulnerable industries (travel, energy, hospitality) require additional liquidity, and may trigger complications for related industries
- Government stimulus injected to protect vulnerable workers and, for instance, directly support SMEs (e.g. credit provision), perhaps on a scale of TARP or larger

WHAT SHOULD COMPANIES BE THINKING ABOUT RIGHT NOW?



Confirm Business Resiliency

All companies should be implementing business continuity plans to reassure employees and ensure readiness for **supply chain constraints, demand shocks, and impacts to business partners**, prioritizing critical business activities and creating contingency plans for disruption



Model Financial scenarios

Companies should be **evaluating their financial outlook, modelling supply and demand** across a number of scenarios, identifying potential interventions and contingency plans for subsequent impacts and/or sustained challenges (e.g. *strategies for managing variable costs, cash flow, liquidity*)



Reassure Customers

Consumer concerns need to be understood, mapped, and incorporated into the business continuity plan such that consumer needs are addressed and trust is maintained



Move to Digitization Rapidly

Some industries are likely to see a **massive acceleration in the use of digital channels**. Retail, Financial Services, and Healthcare companies have experienced 100–900% growth in key digital channels in China during the outbreak. Customers with positive digital experiences are unlikely to return to analog channels



Prepare for Long Haul

Pandemic business continuity plans will get companies through the next 2–4 weeks, but strategies may be required to get through 6–12 months (or more) of disruption if subsequent demand shocks exist. Companies should consider the nature and required timing associated with more structural changes to their operations



Convene Industry

Companies should consider which industry and government collaborations are necessary to address safety concerns, share best practices, stimulate demand, and rebuild consumer trust



02

SUPPLY CHAIN IMPACT

AIRLINE INDUSTRY: COMPARISON OF EVENT IMPACT

9/11 and the global economic crisis/H1N1 had similar recovery periods whereas the more regionally focused SARS outbreak had a more compact cycle

Overview of the current situation

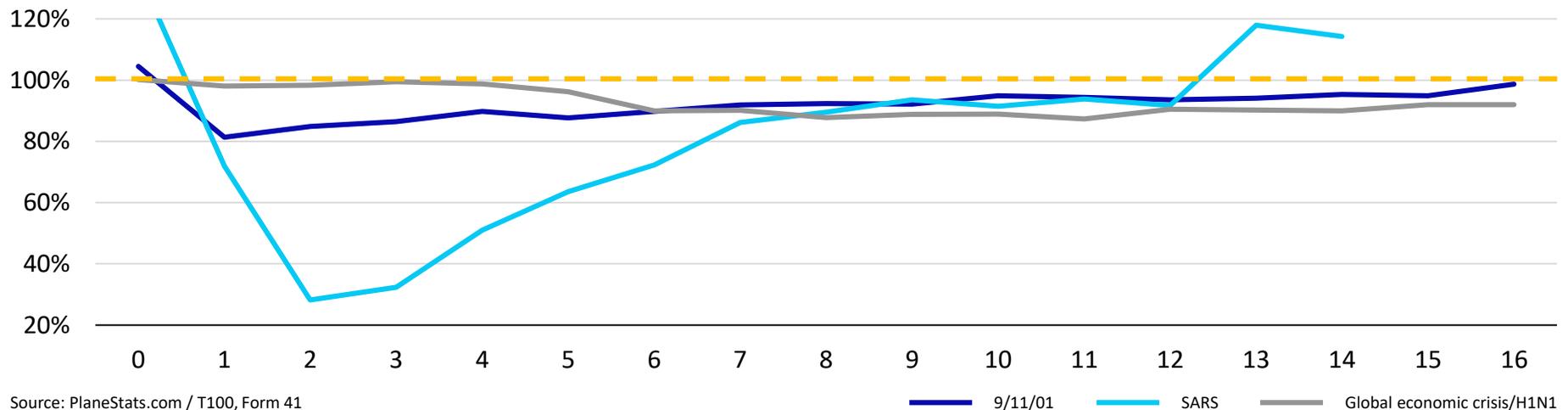
Global capacity growth of 4% has swung to an +8% decline, initially driven by reductions to/in China, but now spreading to US and EU domestic traffic as well

What to expect as the situation evolves

- The industry has historically reacted quickly to immediate and pronounced drops in demand but has taken a more cautious approach to slower evolving events, often reducing capacity at a slower rate than demand
- Large-scale events not contained to specific geography typically evolve asymmetrically at the market-level
- In the past, recovery periods have ranged from 12–18 months

Industry capacity change from base period

Monthly ASM (Available Seat Miles) index vs same month in baseline pre-event period; M0=month prior to event



Source: PlaneStats.com / T100, Form 41

AIRLINE INDUSTRY: CASH CONSERVATION HAS BECOME PARAMOUNT

With significant fixed costs, airlines are already considering temporary reductions in pay, staff furloughs, and suspension of discretionary projects and initiatives

- Latest forecasts suggest that global passenger airlines will lose \$63 BN to \$113 BN in 2020; ~\$100 BN swing from earlier forecasts of \$29.3 BN in profits¹
- Recent reduction in fuel costs may be a mitigating factor, but prices may quickly rebound if OPEC+ reaches an agreement on supply

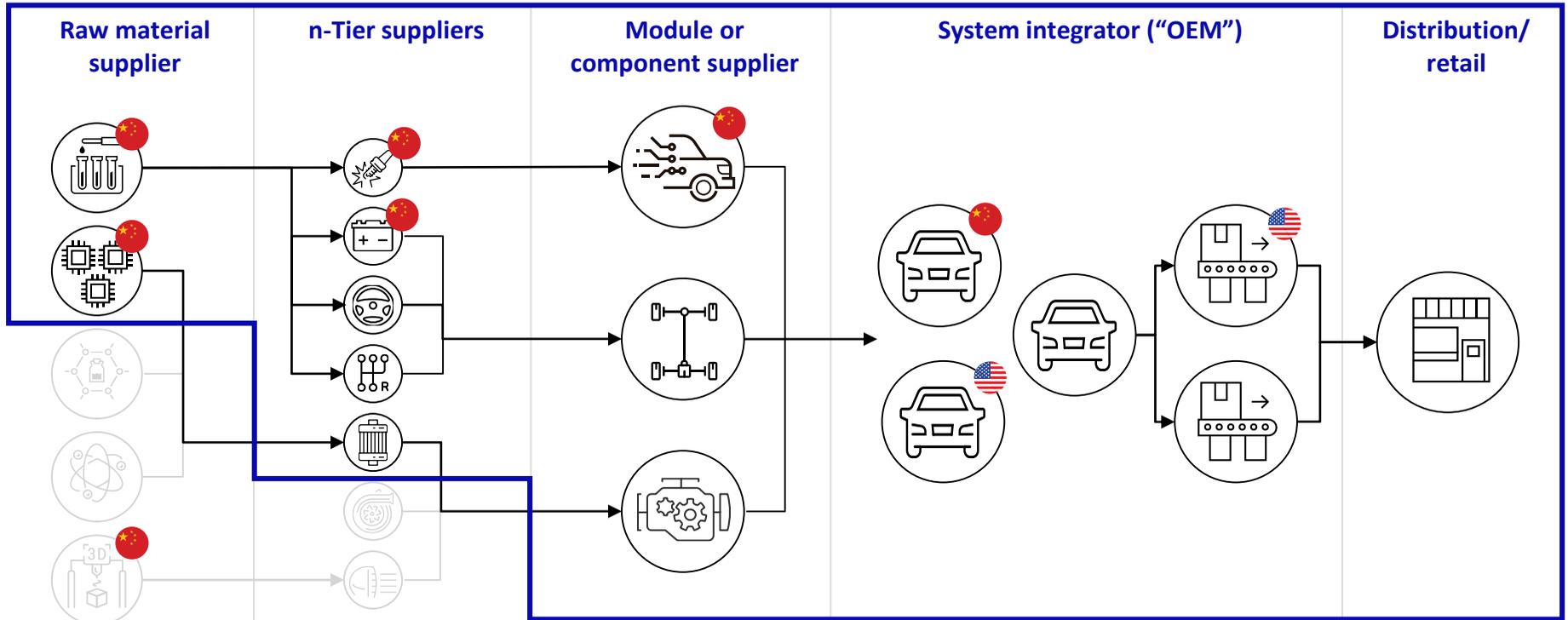
Airline	Capacity reduction ²	Other financial response actions ²
 American Airlines	7.5%	None announced
 DELTA	15%	Company-wide hiring freeze, offering voluntary leave options, parking aircraft, and evaluating early retirements of older aircraft
 jetBlue	5%	Reducing hiring of frontline and support center staff and limiting non-essential spending
 Southwest	None yet	Freeze hiring on non-frontline positions, and looking at freezing all hiring and voluntary leaves, an early out program, etc.
 UNITED	10%	Voluntary unpaid leave, suspending hiring through June 30, postponing pending salary increases for management and administrative personnel and offering pilots a month off at reduced pay
 CATHAY PACIFIC	30%	Asked all its staff to take three weeks of unpaid leave
 Lufthansa	50%	Offering staff voluntary, unpaid leave

1. Forecast from the International Air Transport Association (IATA)

2. Airline public announcements through March 5, 2020

MANUFACTURING INDUSTRY: OBSERVED IMPACT

Auto and Industrial companies have been buffeted in two waves: global supply chain disruption (in-process) and internal operational regional disruptions (potential)



Critical raw materials with limited global availability are affected, leading to long period of capacity shortage

n-tier supplier of critical component is affected and cannot ramp-up production fast enough

Supplier of components or modules suffers from undetected broken supply chain on n-tier level

Plants outside of affected areas are impacted by shortages of few crucial parts and have to completely shut down

As virus spreads to different regions, in-region production losses due to partial plant closures from worker shortages

Demand reduction due to short term supply constraints, containment measures, macro-economic factors, etc.

MANUFACTURING INDUSTRY: OBSERVED RESPONSE

Firms are developing a Response framework and associated measures in real-time

Response framework



**Outside/inside
the four walls**



**Virtual/non-virtualizable
activities**



**Near term vs. mid-term
demand impact**

Response measures

Operational

- Organized COVID-19 Response Management: formalize PMO activities, secure inventory, monitor internal facility status, proactive response planning, etc.
- Supply chain/vendor diversification (at the regional concentration level)
- Social distancing for virtualizable activities
- Non-virtualizable asset intensive activities
 - Call centers: non-essential visitors bans, worker monitoring
 - Warehouse/Manufacturing sites: non-essential visitors bans, worker monitoring, increased work-in-process and finished goods buffer inventory
 - ...

Financial

- Furloughs and shutdowns
- OEMs providing supplier liquidity assistance via expedited payments, advances, etc.
- Customer incentives (rebates, financing, etc.) to bolster demand

03

FINANCIAL SERVICES IMPACTS: CHINA CASE STUDY



SUMMARY OF WHERE WE ARE IN CHINA



Short term impact on mainland China

China is returning to work

- Unprecedented government action has brought new cases down rapidly; numbers remain small outside of Hubei
- Over 60% of production has resumed and 30% of migrants have returned to tier-1 cities

Q1 GDP growth will be dampened, but it has always been a slow quarter; Q2 and beyond will depend on government action

- Short term hit on the Chinese economy is inevitable with Q1 GDP ~4%; Government has introduced a series of stimulus policies to support growth
- We expect China GDP growth between 5.5%–6.0% in 2020, based on further expected stimulus Our downside estimate is 4.6%–5.5%

China will be heavily impacted by global slowdown

- Risk of pandemic-induced global slowdown, further escalation in trade war, and challenging US political narrative still present headwinds



Layered impact on Hong Kong

COVID-19 has 'layered' additional stress on an already challenged Hong Kong economy

- Geopolitical tension since mid-2019 has a strong negative impact on HK's economy, already leading it into a recession
- Although the number of confirmed cases in HK is still small, near-closure of the border with mainland has materially impacted retail sector; HK SMEs and retailers are now facing a far greater liquidity pressure than ever

Path forward more uncertain for HK

- Creative & targeted government support will be essential for HK's speedy recovery, however there is limited scope given currency peg for monetary policy
- Transmission from real economy to financial sector only now starting to happen, with uncertain future

IMPACT ON FINANCIAL SERVICES: RISKS

Failures in SMEs and a slower income growth may pose a deeper impact on the economy; at the same time, it is often difficult to target precisely with stimulus – defaults from those 2 sectors may pose significant further risks

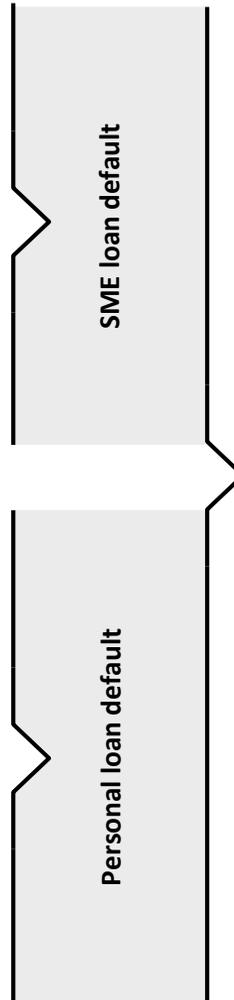
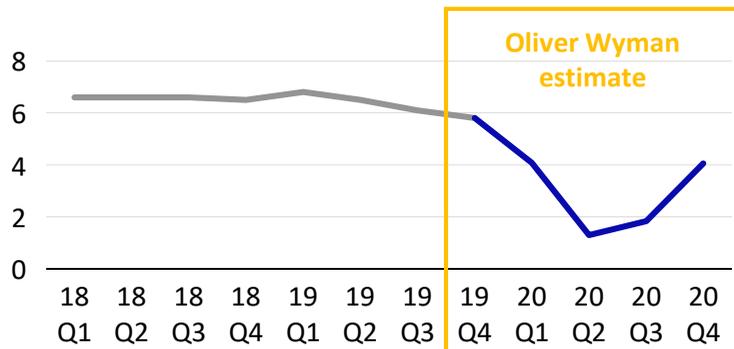
SMEs facing survival crisis in the outbreak

- SMEs are forced to shut down during the outbreak, and are hard to survive for more than 3 months due to cash flow constraints
 - >90% postponed their business re-open date
 - >50% delayed for 2+ weeks and have no clear re-open till now
- According to PBOC, MSMEs contribute
 - >60% GDP and >50% tax
 - >80% employment in China now

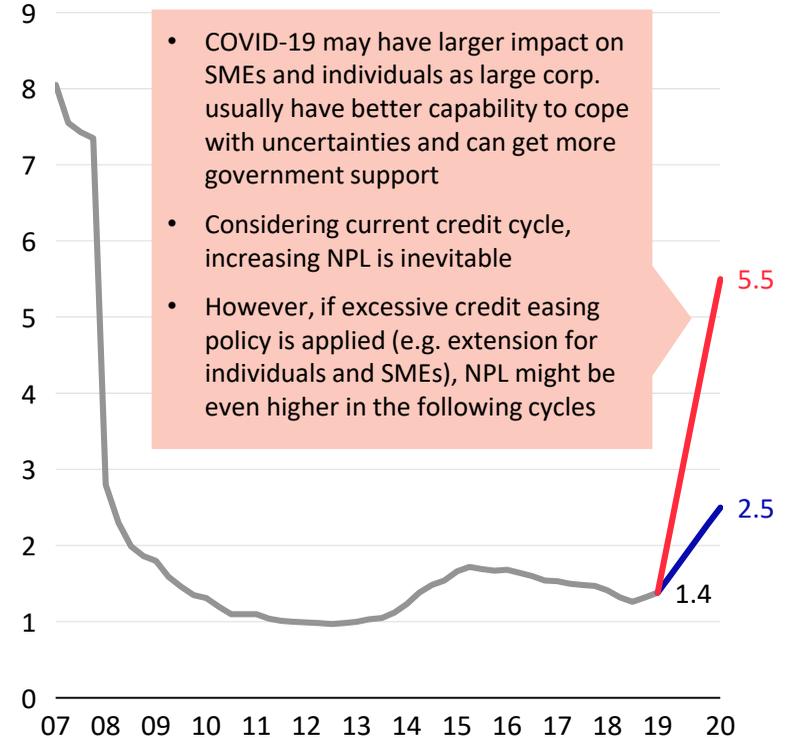


Higher unemployment and lower personal disposable income due to corporate layoff and SME failure

Disposable income growth rate (%)



China commercial bank NPL Ratio (%)



- COVID-19 may have larger impact on SMEs and individuals as large corp. usually have better capability to cope with uncertainties and can get more government support
 - Considering current credit cycle, increasing NPL is inevitable
 - However, if excessive credit easing policy is applied (e.g. extension for individuals and SMEs), NPL might be even higher in the following cycles
- Basic case (Defaults naturally caused by epidemic and the credit cycle)
 - Pessimistic case (Credit cycle overly suppressed caused by excessive counter-cyclical easing policy)

Source: WIND, National Statistical Bureau, PBOC, Economy Daily, Postal Savings Bank of China, and Oliver Wyman analysis

IMPACT ON FINANCIAL SERVICES: CHALLENGES AND PRIORITIES

While offline economy is hit hard by the outbreak, a window has opened for online businesses; it is also a key takeaway for financial institutions

Online booming in retail space

	Online healthcare	<ul style="list-style-type: none"> Ping'An Doctor daily consultation is 9 times the average number before the outbreak: total visitors reach 1.1BN 30% of consultation on DingXiangYuan is about COVID-19, and visitors reading COVID-19 info reaches 28MM 	 
	O2O E-commerce	<ul style="list-style-type: none"> Customers will be better educated for online fresh purchase after the outbreak For major players (incl. Miss Fresh, JDDJ, Hema, Dingdong, Yonghui), transactions during Spring Festival increased by 200%–350% compared to Spring Festival last year 	 
	Online education	<ul style="list-style-type: none"> Daily active users increased by 20%-100% for major online education applications after launching online courses during the outbreak 	
	Remote office software	<ul style="list-style-type: none"> New users drive increased growth rate¹ for remote office applications/software; growth rate reaches 580%+ during 2020 Spring Festival; Dingding, Zoom and corporate WeChat reaches 703%, 662% and 299% growth respectively 	 

Increasing usage of online financial services

Online financial service to fulfil daily demand

- Online banking & wealth management**
 - Alipay daily mutual fund purchase **increased by 400%** in first 2 weeks in Feb
 - China Merchants Bank online wealth management customer interactions reached **240K** in Feb
- Online insurance brokerage**
 - Ant Financial insurance premium income in Feb is expected to grow by **30%**
 - Zhong'An has realized up to **100% daily premium income growth** since Jan 2th



Payment/instalment service support for increasing online service transaction



To-B financial service

- 2B SaaS platform**
 - a 2B turnkey asset management platform signed a **dozen new service contracts** with FIs, including third-party wealth management, insurance, trust companies
- ERP system and cash flow management to support business continuity**

1. New user increase growth rate = (new user increase during 2020 Spring Festival – new user increase in 2019 Spring Festival)/new user increase during 2020 Spring Festival

Source: Questmobile, expert interview, internet data, Oliver Wyman analysis

KEY AGENDAS FOR CHINESE FINANCIAL INSTITUTIONS GOING FORWARDS

We observe 7 key agendas to capture new growth and defend positions

	Key Agenda	Rationale
Offensive	1 Digital acceleration	The outbreak future boosts online usage of financial services; traditional Financial Services players should consider where to compete in the value chain as tech players further flourishing
	2 Health insurance growth strategy	With the promotion of insurance awareness by the outbreak, there is potential for health insurers to optimize a well developed growth strategy
	3 Healthcare sector holistic solution	Develop sector specific solutions to ride with the potential healthcare boom after the outbreak will help banks generate substantial growth
Agenda	4 Supply chain migration considerations	As the outbreak accelerates global supply chain to diversify production and sourcing lines out of China, Chinese banks' role along the shift should be redefined for new business potential
	5 NPL Management	NPL management will be essential for Chinese banks to deal with increasing bad loans after the outbreak and retain long-term creditworthiness
	6 Business continuity management	The outbreak put extensive pressure on business continuity management (BCM), which should have been developed and tested periodically during normal time
Defensive	7 Recession readiness	As the global pandemic spreads, financial institutions and regulators should be prepared for a potential global recession

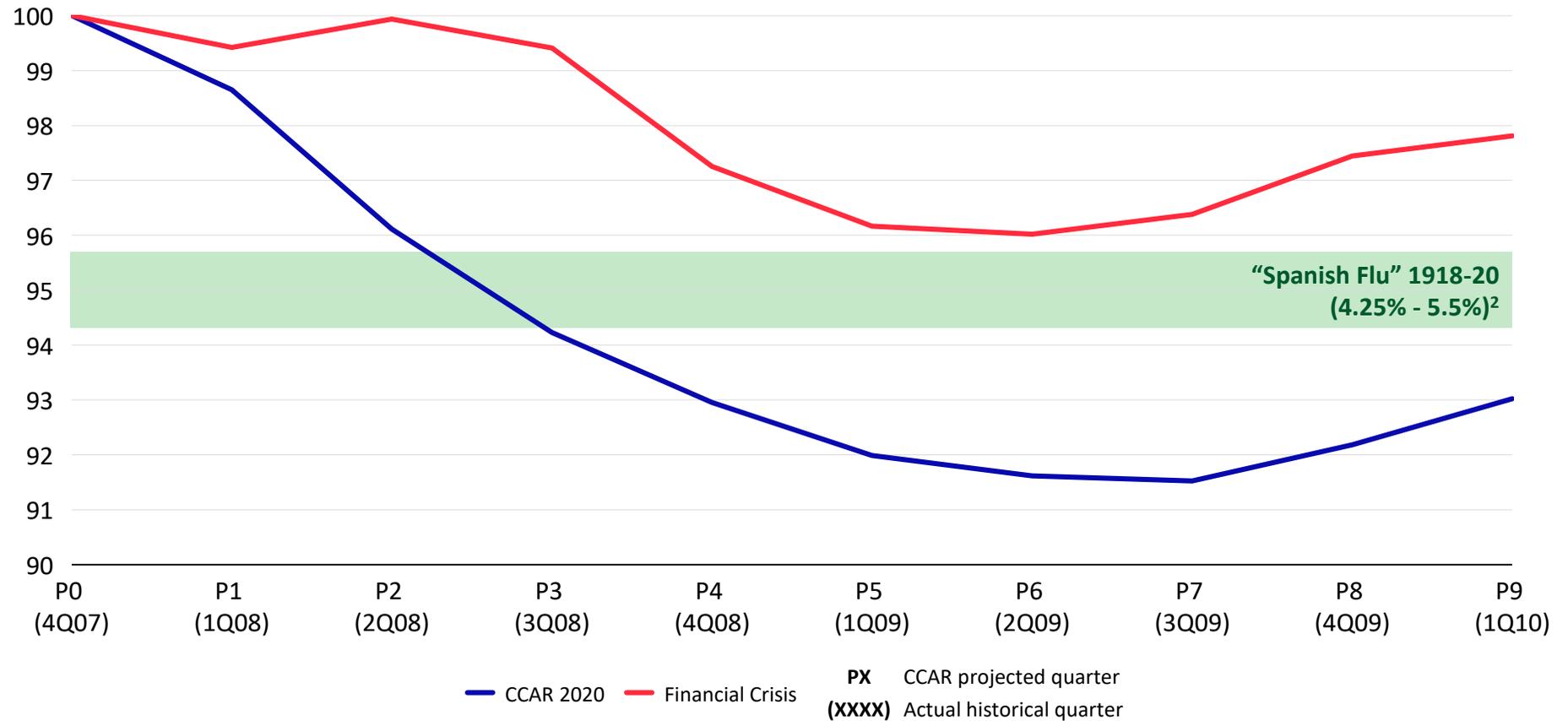


04

FINANCIAL SERVICES IMPACTS: US PERSPECTIVES

CCAR STRESS TESTING GDP DECLINE COMPARED TO 1918-20 GLOBAL PANDEMIC ESTIMATE

US GDP Indexed to P0 (CCAR 2020¹) and 4Q07 (Financial Crisis)



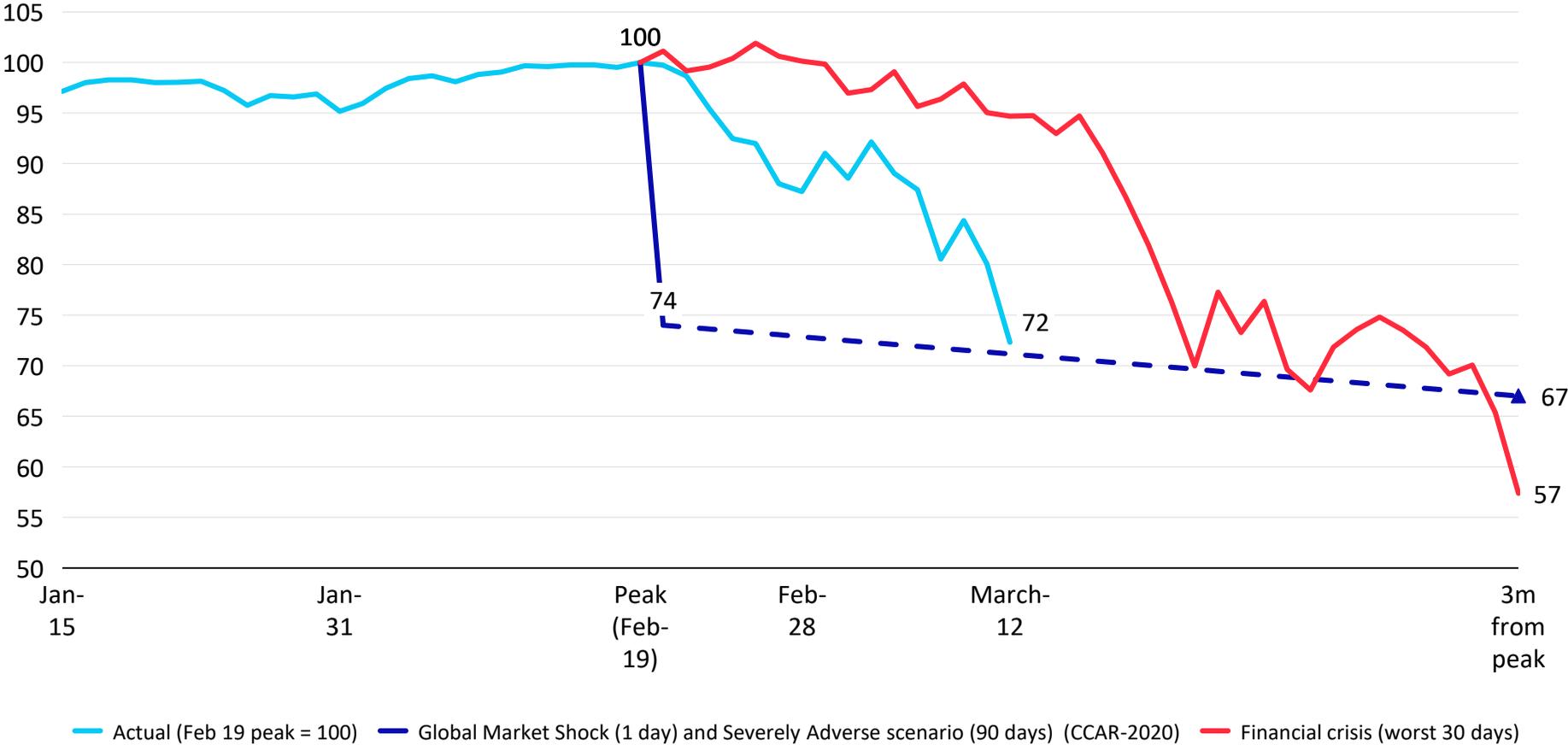
1. "CCAR 2020 data release" - Federal Reserve

2. "Economic Impact of an Influenza Pandemic on the United States" – Federal Reserve Bank of St Louis

PEAK-TO-TROUGH EQUITY PRICES COMPARED TO CCAR MARKET SHOCKS

Dow Jones Total Stock Market Index (Relative to peak on Feb-19)

As of March 12, 2020

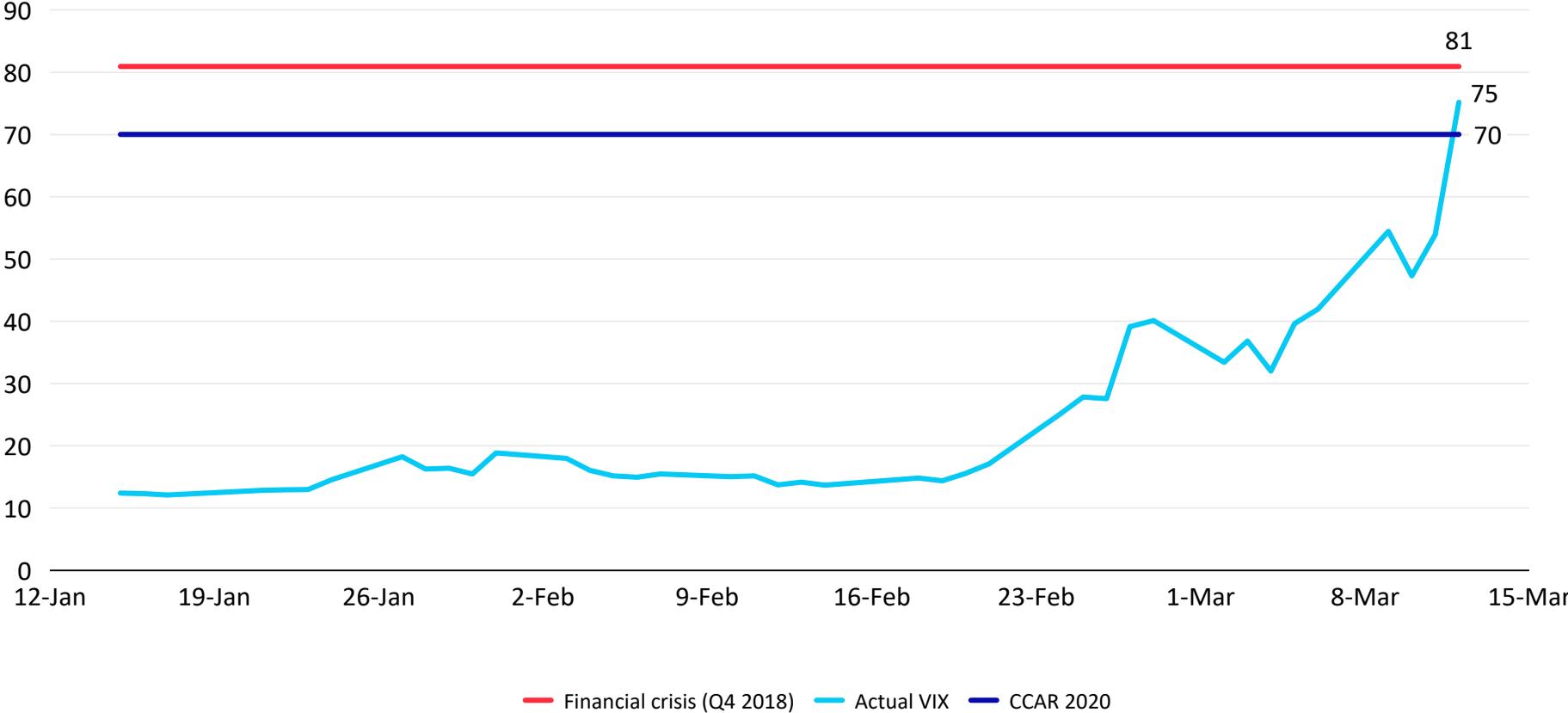


Sources: FRB CCAR 2020 scenario disclosures (<https://www.federalreserve.gov/supervisionreg/ccar-2020.htm>); Thomson Reuters Datastream

CURRENT MARKET VOLATILITY COMPARED TO FINANCIAL CRISIS AND CCAR 2020

CBOE Volatility Index (VIX)

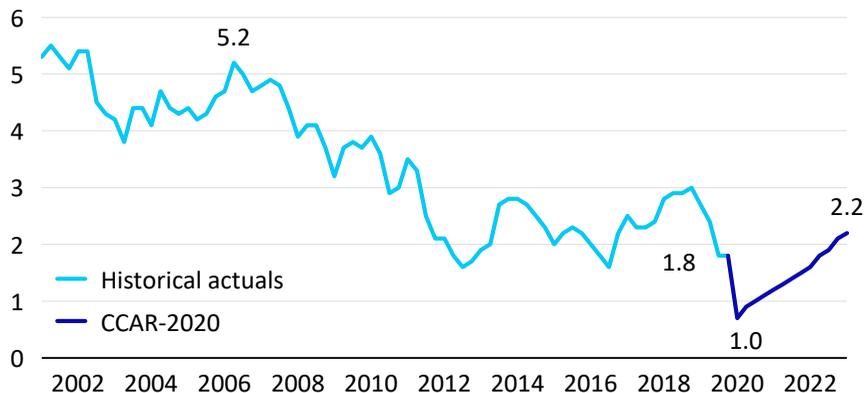
As of March 12, 2020



Sources: FRB CCAR 2020 scenario disclosures (<https://www.federalreserve.gov/supervisionreg/ccar-2020.htm>); Thomson Reuters Datastream

RATES: 10-YEAR TREASURY YIELD AND BBB YIELD

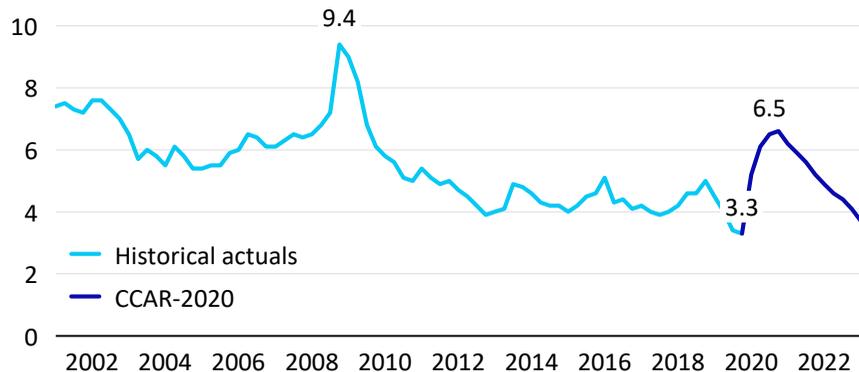
Historical 10-year Treasury yield



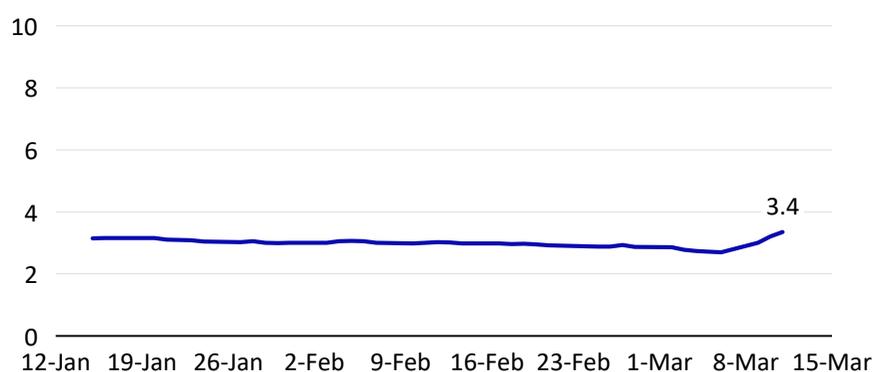
Most recent 10-year Treasury yield (Jan 15-March 12)



Historical BBB Corporate Yield



Most recent BBB Corporate Yield (Jan 15-March 11)



Sources: FRB CCAR 2020 scenario disclosures (<https://www.federalreserve.gov/supervisionreg/ccar-2020.htm>); Thomson Reuters Datastream

KEY ELEMENTS OF PANDEMIC BUSINESS CONTINUITY PLANS

Every company should have a business resiliency team fully activated and focused on these key elements:

Protect your people first

- ✓ Ensure that your staff understand what to do (personal actions) to protect themselves, and to stop the spread
- ✓ Ensure your staff know to stay away from work if unwell and seek medical help; promote use of telehealth
- ✓ Stay up to date on the latest travel advice as it could change quickly
- ✓ Be conscious that your staff may have caregiving responsibilities for ill family
- ✓ Listen to and respond to staff concerns – anxiety can be more disruptive than the virus itself
- ✓ Institute work from home policies if warranted

Look after your business interests

- ✓ Know which business processes and activities are critical and require protection
- ✓ Pay special attention to customers; determine how best to protect and assure them
- ✓ Plan for how to continue operations if you experience significant staff absences
- ✓ Prepare for reductions (especially consumer confidence) or increases in demand (i.e., cleaning services, e-commerce)
- ✓ Review your relevant insurance policies, coverage, and claims processes

Secure your supply chain

- ✓ Clients need to develop an end-to-end supply chain x-ray
- ✓ Identify your critical suppliers and their locations, especially if in heavily impacted areas or with less support resources available
- ✓ Confirm the status and location of expected deliveries/shipments
- ✓ Understand what your suppliers' plans are and work together to protect both of your interests, particularly if a smaller business

COVID-19 RESOURCES



WHO COVID-19 Situation Reports

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>



CDC Resources

<https://www.cdc.gov/coronavirus/2019ncov/index.html>



Oliver Wyman Perspectives

<https://www.oliverwyman.com/coronavirus>

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