McKinsey & Company

Seamless urban mobility in a COVID19 world

AmCham Automotive Conference

26.08.2020

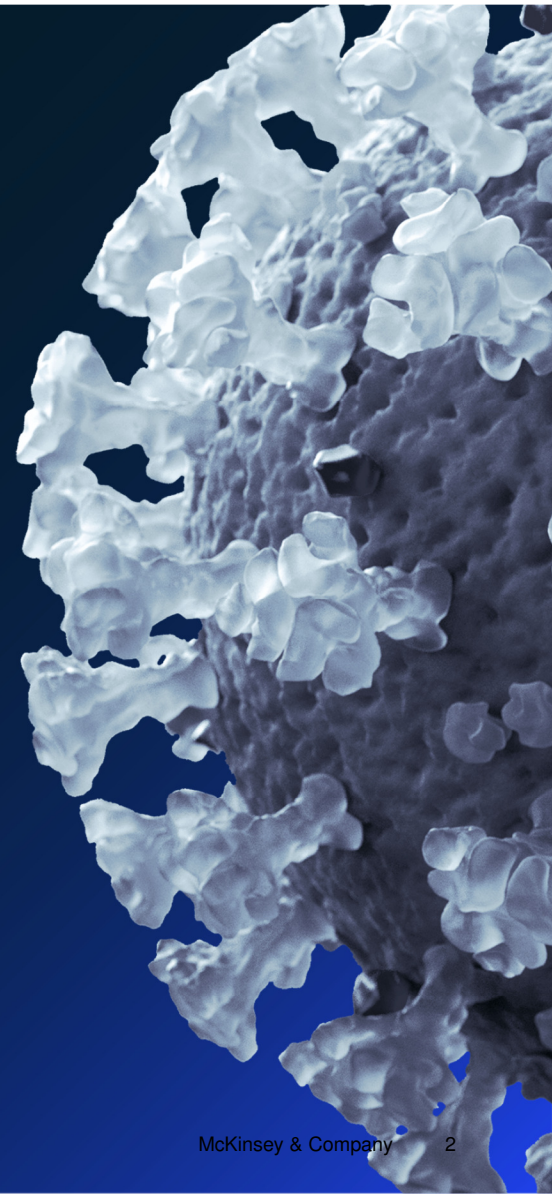
COVID-19 is, first and foremost, a global humanitarian challenge.

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

Companies around the world need to act promptly.

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

Read more on McKinsey.com →



The Imperative of our Time

"Timeboxing" the Virus and the Economic Shock

Imperatives

1

Safeguard our lives

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

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

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

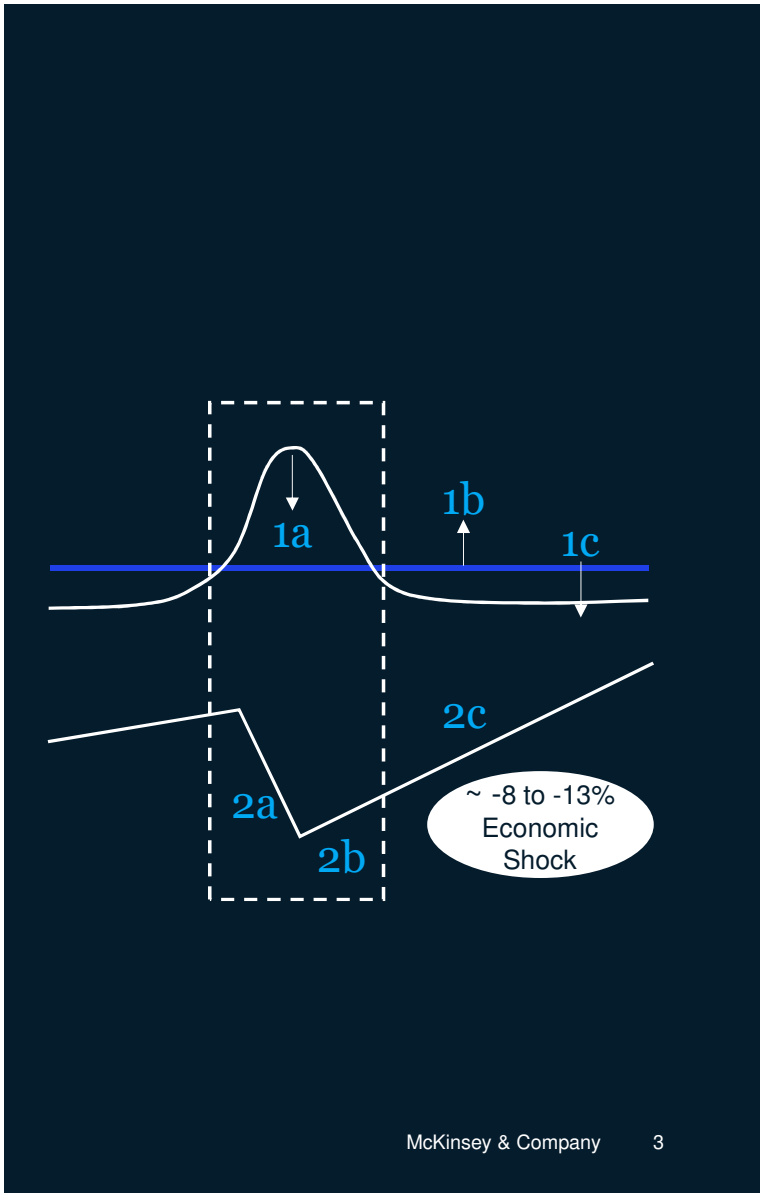
2

Safeguard our livelihoods

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

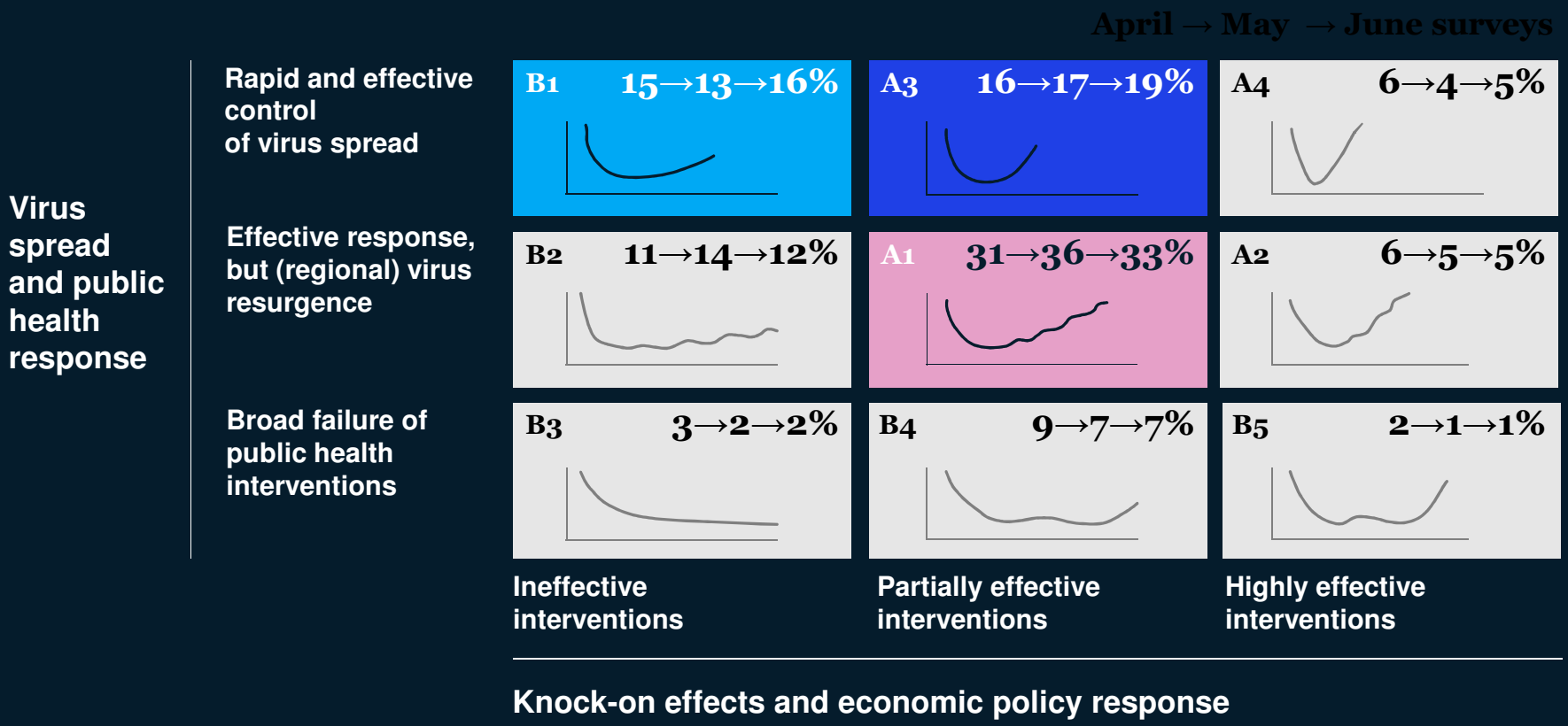
2b. **Prepare to get back to work safely** when the virus abates

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



Source: McKinsey analysis, in partnership with Oxford Economics

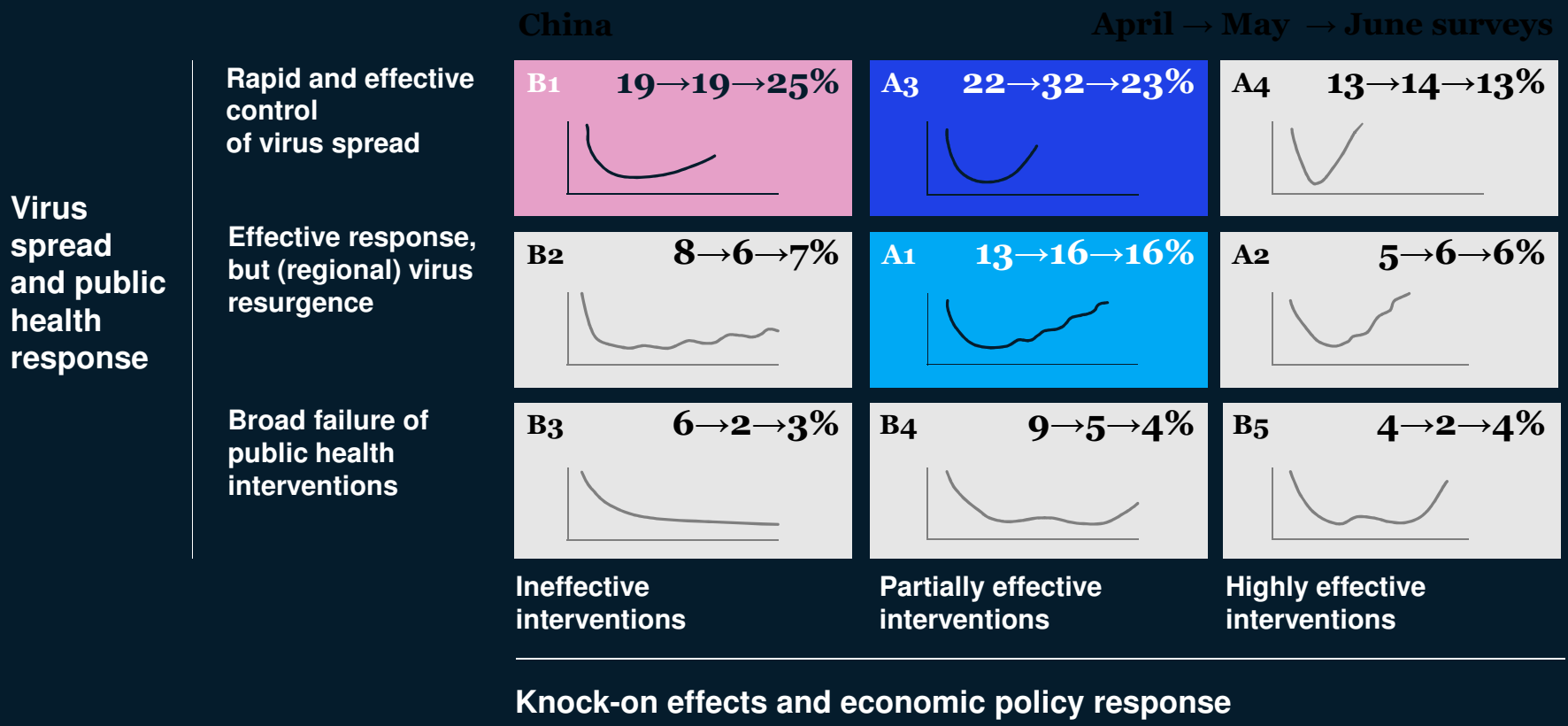
Executives have wide-ranging expectations of global outcomes: Global economy



1. "Thinking globally, please rank the following scenarios in order of how likely you think they are to occur over the course of the next year"; % of total global respondents; Monthly surveys: April 2–April 10, 2020, N=2,079; May 4–May 8, 2020, N=2,452; June 1–5, N=2,174

Source: McKinsey surveys of global executives

Executives have wide-ranging expectations of global outcomes: China



1. Monthly surveys: April 2–April 10, 2020, N=2,079, 113 in China; May 4–May 8, 2020, N=2,452, 133 in China; June 1–5, N=2,174, 118 in China

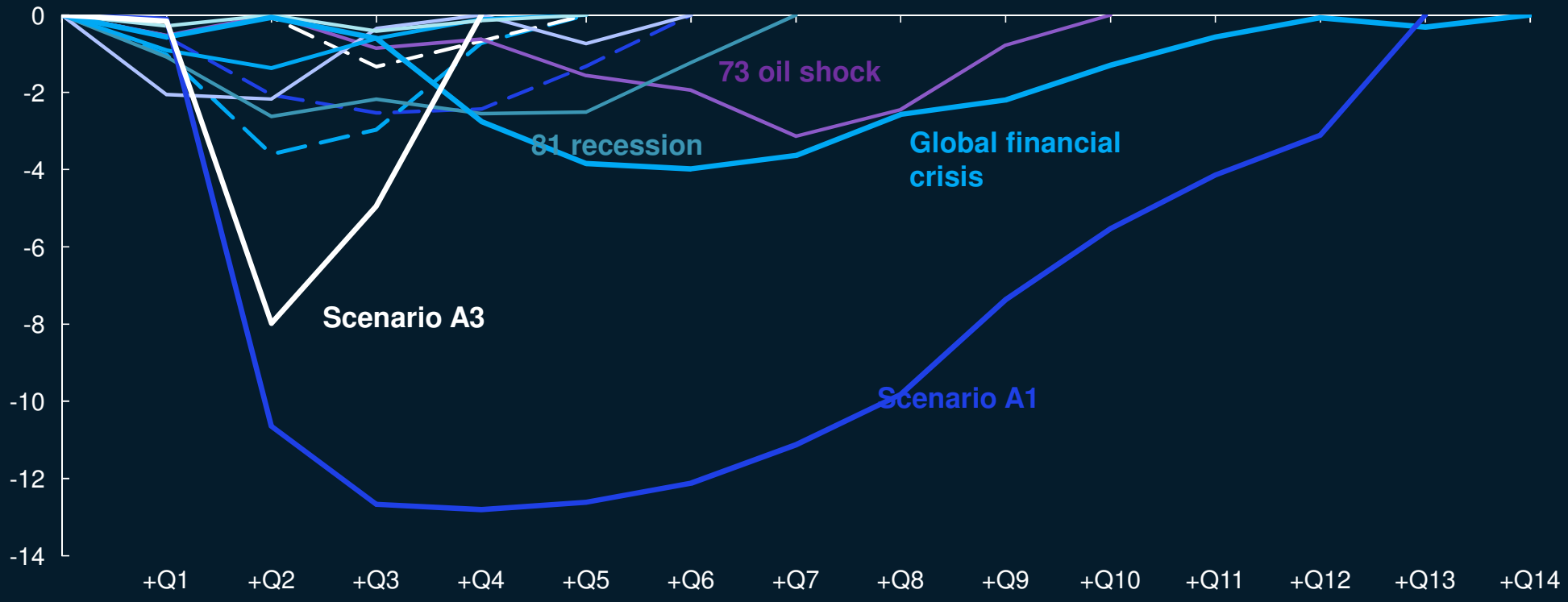
Source: McKinsey surveys of global executives

Pace of decline of economic activity in Q2 2020 is likely to be the steepest since decline since WWII

High frequency indicators for the US-based example show the drop has already started in Q1

United States, comparison of post-WWII recessions

% real GDP 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

Getting ahead of the crisis

What we know for sure

Macro-economic disruption on a scale not seen since our grandparents

By and large, radical acceleration of existing trends

Discrete events disruption industries and businesses

That will take a long (unknown) time to fully play out and will evolve in stages, there is no one finish line

On the other side of the long tunnel, we come out in a different world

Implications

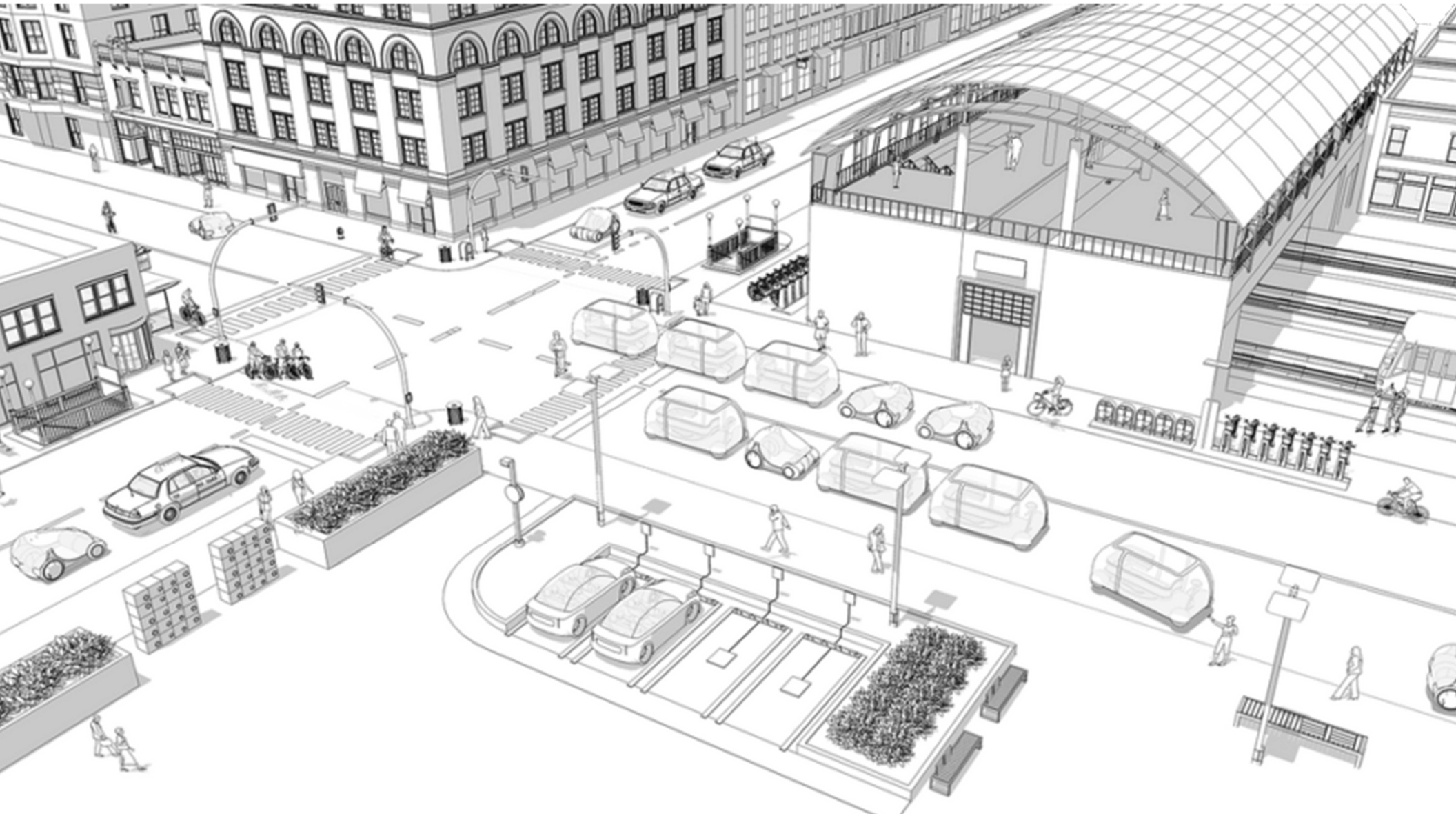
Can't manage purely as a crisis because this won't go away like a normal crisis…**new operating model**

Your budget is kaput and tough to write a new one: need a **dynamic, contingent response**

Three months is the new year—**4x speeding up** of the corporate calendar

Need a plan ahead team to get ahead and manage across **multiple horizons and scenarios**

You are probably solving for a **different end game** with new threats and new opportunities



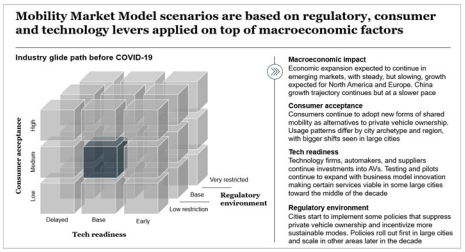
Mobility Market Model is the starting point to assess COVID-19 effects on mobility

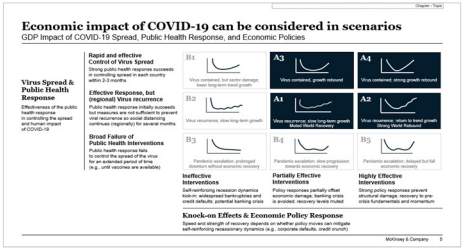
The Mobility Market Model is McKinsey's most granular and comprehensive model covering people mobility globally.

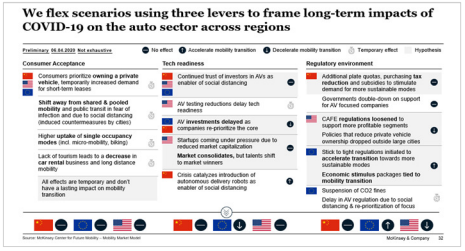
The model is grounded in data from 2,800+ cities around the world, and delivers market forecasts on vehicle miles, unit sales, revenue pools.

- The Mobility Market Model is combined with forecasts from the McKinsey Global Institute on the impact of COVID-19 on global economy.

- Based on market observations and the expertise of our global team of mobility experts, the most likely Post-COVID mobility scenario is determined for each region.







Autonomous

Connectivity

Electrification

Sharing

The mobility transition is accelerated by four main drivers which are used as modelling parameters in our model

Modelling parameters	Impact: Conventional car sales & parc	Impact: Mobility transition
Macroeconomic Impact GDP Population growth	↑ Rising GDP & growing population drive car sales in underdeveloped markets	↑ Higher GDP & growing population lead to an increase in miles travelled
Regulation Surcharges/taxes City center car bans	↓ City center bans and congestion charges disincentivize private vehicle ownership	↑ Shared and electric mobility benefit from regulation (e.g., emission, tax exemptions for shared vehicles)
Tech readiness EV cost competitiveness AV cost competitiveness	↓ Competitive shared & autonomous mobility offering replace private vehicles	↑ Early market maturity & cost competitiveness of autonomous driving tech boosts shared mobility
Consumer Acceptance Transport mode switch rate Car retention share	↓ With attractive shared, electric and autonomous options, Privately owned (ICE) vehicles become less appealing	↑ Large share of consumers make rational choice of switching to EVs and shared AVs at price parity

Source: McKinsey Center for Future Mobility – Mobility Market Model

Impact of COVID-19 on the ACES trends differ by trends and region – overall neutral to negative impact

Preliminary

↑ Trend intensified ↓ Trend slowed down → Trend comparable to pre-COVID

	Short-term	Mid-term
Autonomous	↓ Testing temporarily **suspended**; OEM investments expected to **slow down**	→ **Delay in development** ("months") **partial consolidation** to be expected, eventually increase in **cooperation,** however importance still high (e.g., contactless delivery)
Connectivity	→ **Limited impact** expected as many programs have already been decided and will not be halted	→ Consolidation in the startup and software tech space; "**buy" more likely than build"** for OEMs
Electrification	→ EV market share **slightly higher** than Pre-COVID fueled by new incentives (CN, EU) and OEMs fulfilling CO_2 targets (EU), with **regional slow-down** (esp. in parts of the US)	→ EV sales **back to pre-Covid projections** by 2022 in **EU and CN**; **Uncertainty in the US**, depending on future regulatory landscape & oil price development
Sharing	↓ **General slow down expected** (Demand drop expected to recover not before mid 2021, financial pressure on start-ups, regulations focused on social distancing), small modifications to reduce risk of infection (e.g., face masks, riders required to sit in back seat)	→ Consolidation expected by **M&A activities** (esp. in micromobility), while cities might not take back all **restrictions for private vehicles**

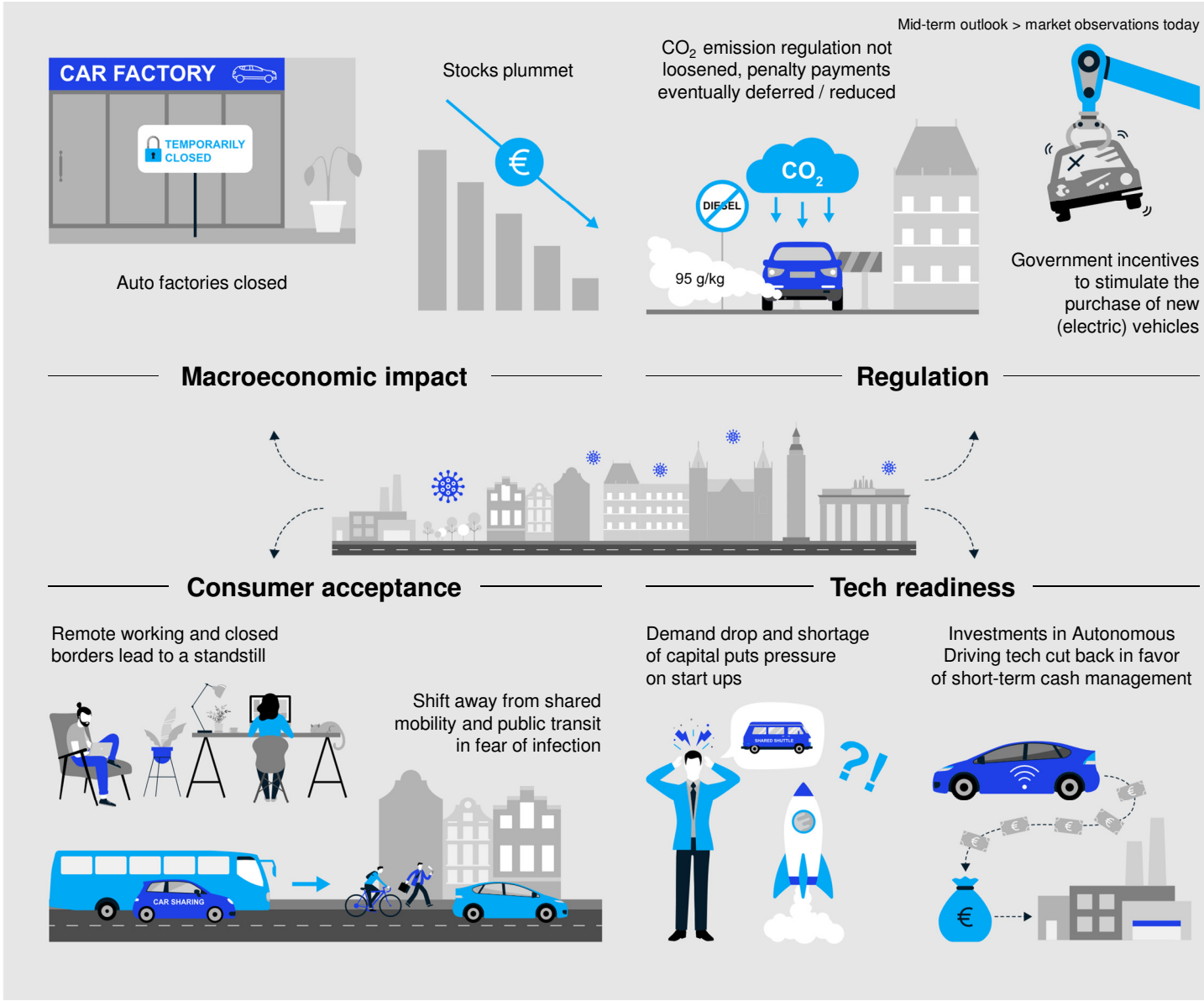
Source: McKinsey Center for Future Mobility

Preliminary **06.05.2020**

Europe

European mobility market hit hard by the crisis

Crisis years 2020/21



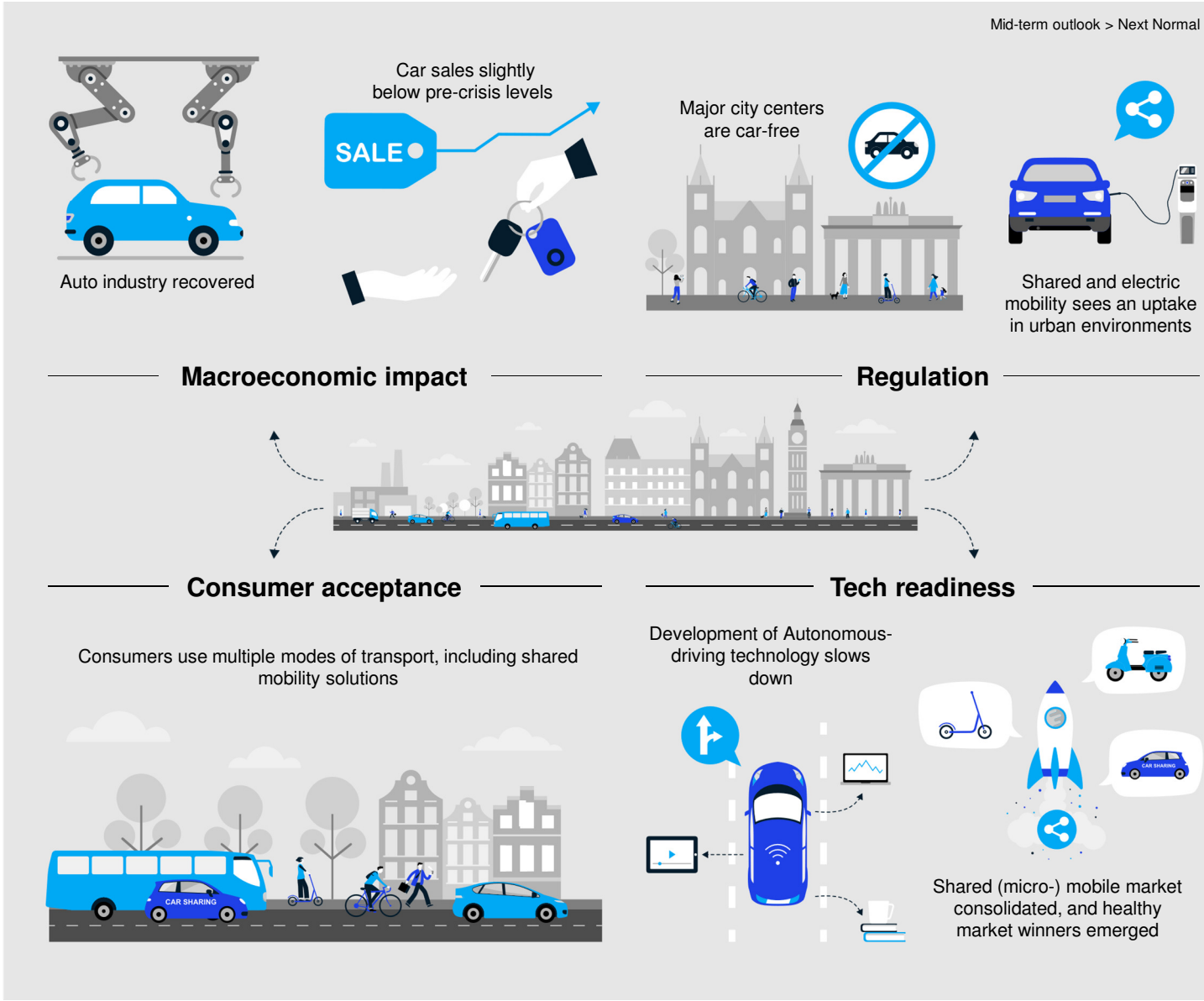
Source: McKinsey Center for Future Mobility

Preliminary 06.05.2020

Europe

In Europe, shared mobility and electric vehicles may see greater uptake post-crisis

One option for a “next normal” 2024

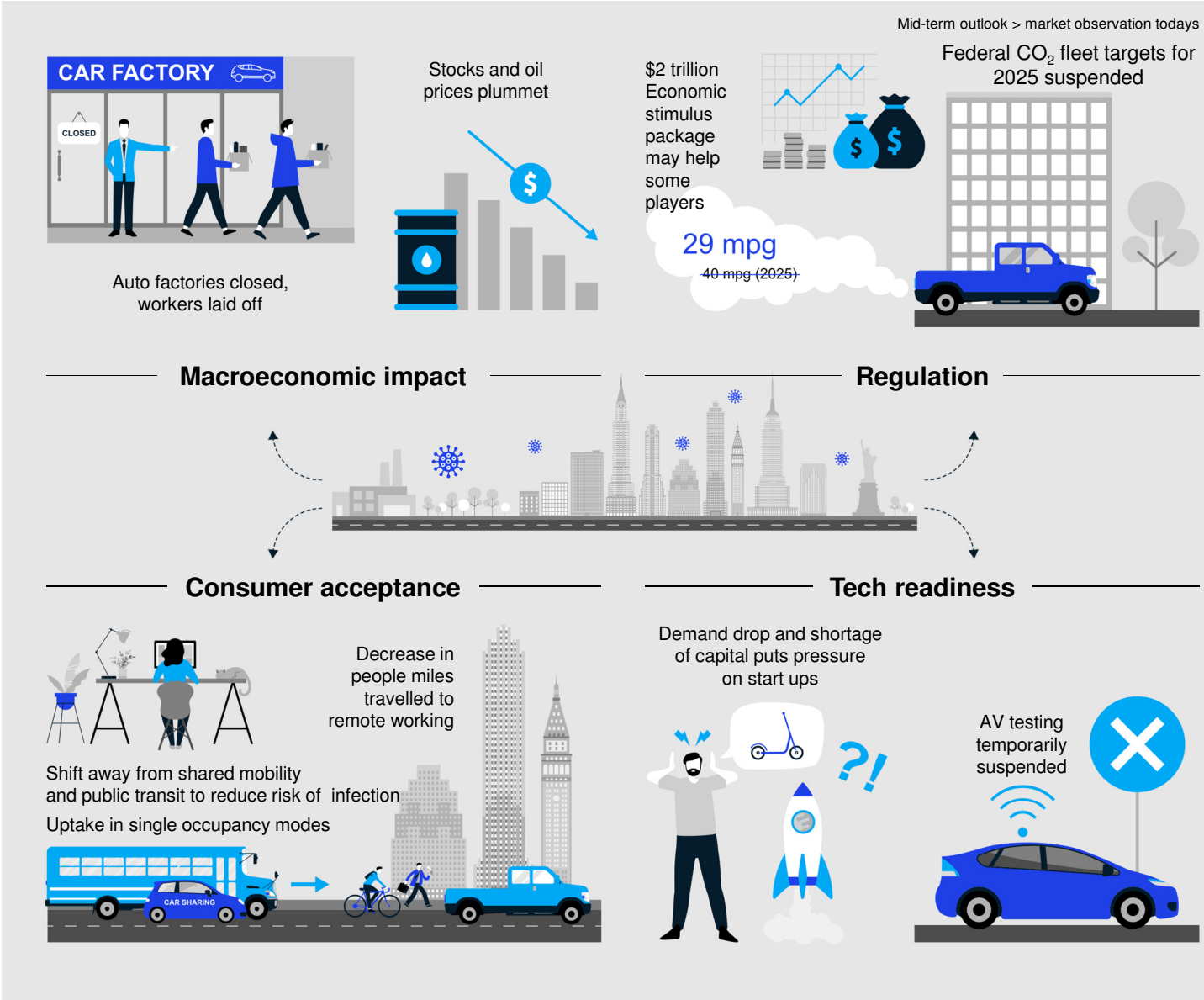


Preliminary **06.05.2020**

United States

COVID-19 is shaking up the U.S. mobility industry

Crisis years 2020/21

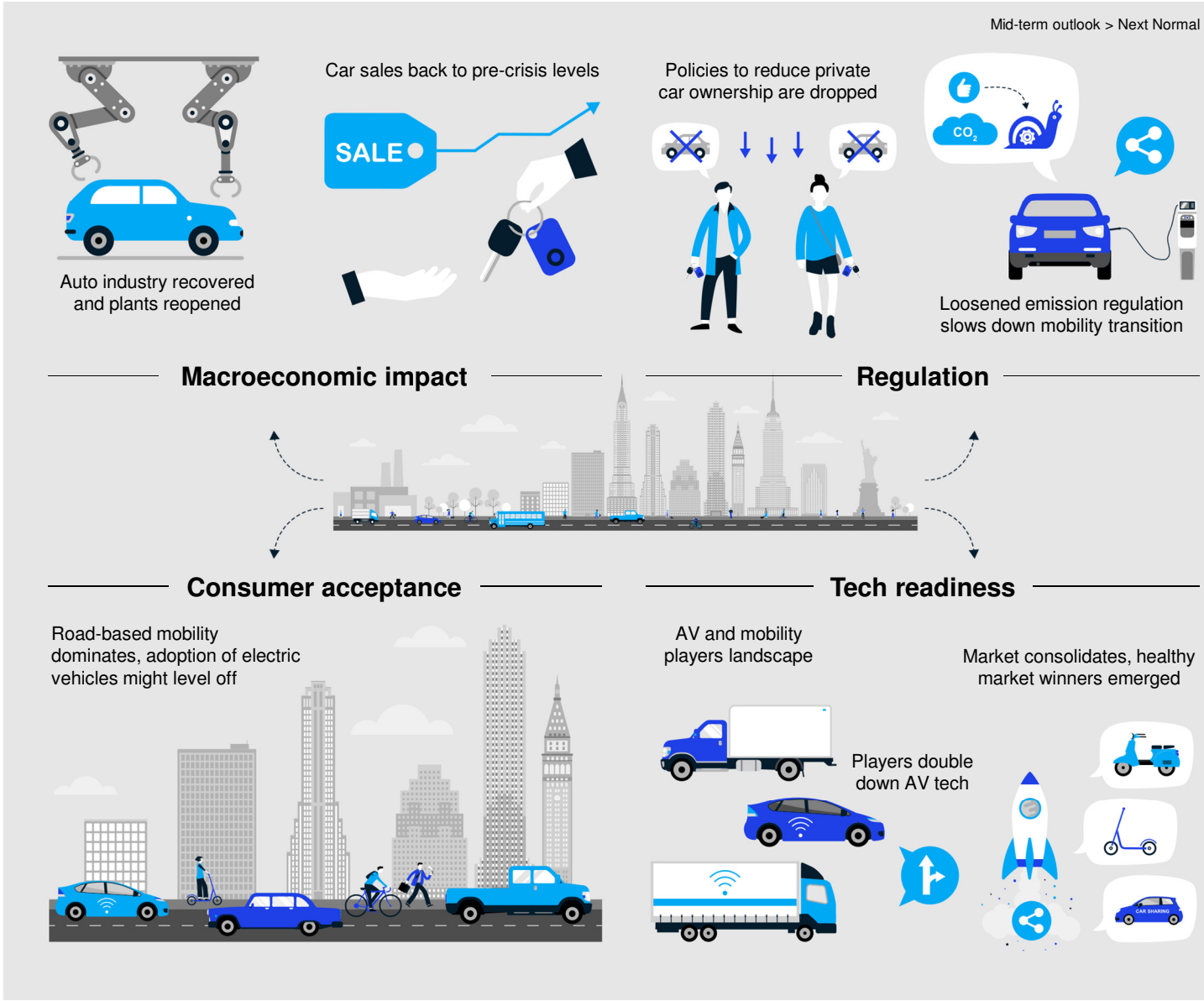


Preliminary 06.05.2020

United States

Trends in the U.S. may lead to the continued dominance of road travel and lower electric-vehicle uptake

One option for a “next normal” 2024

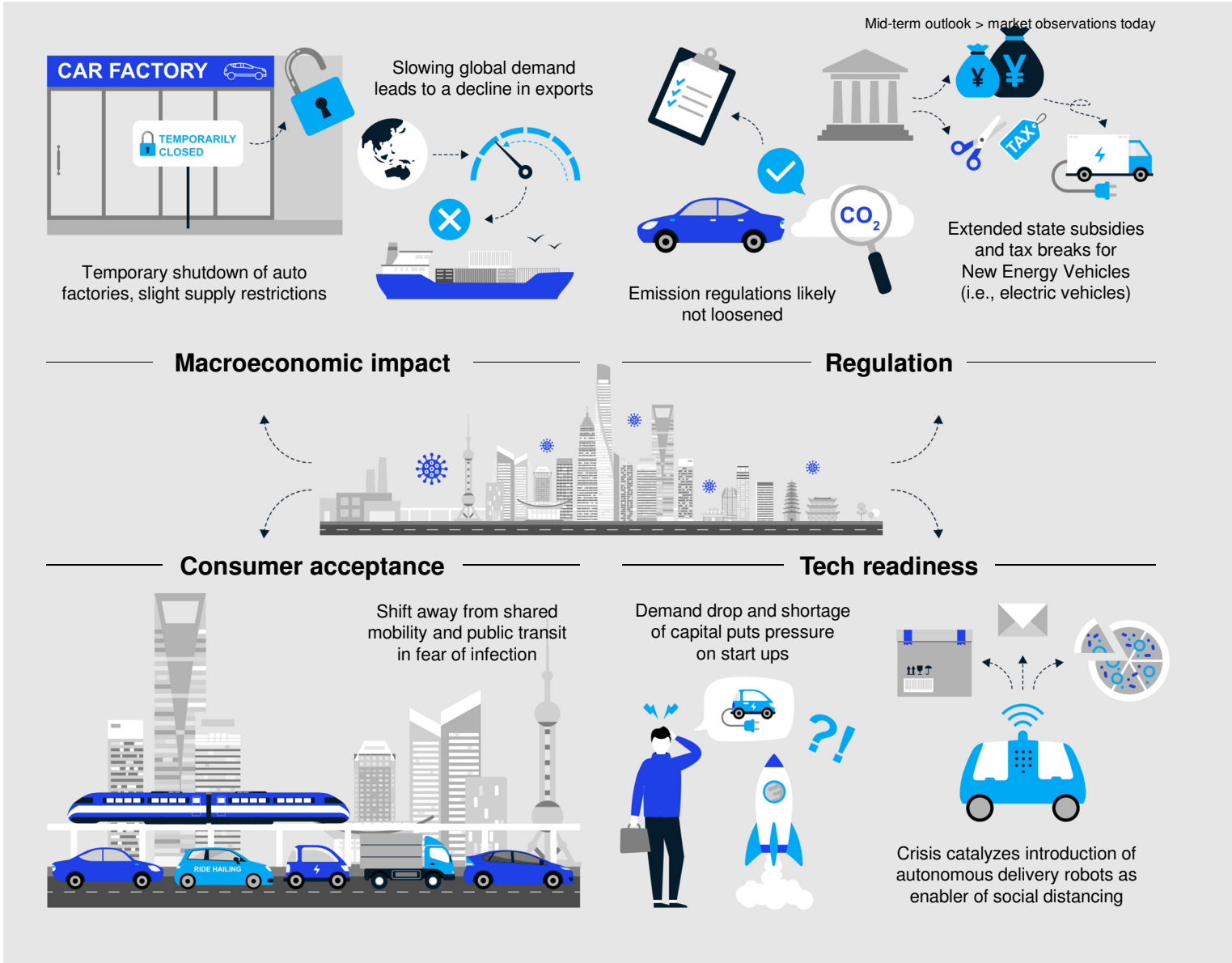


Preliminary **06.05.2020**

China

Chinese automotive market has already begun to recover

Crisis years 2020/21



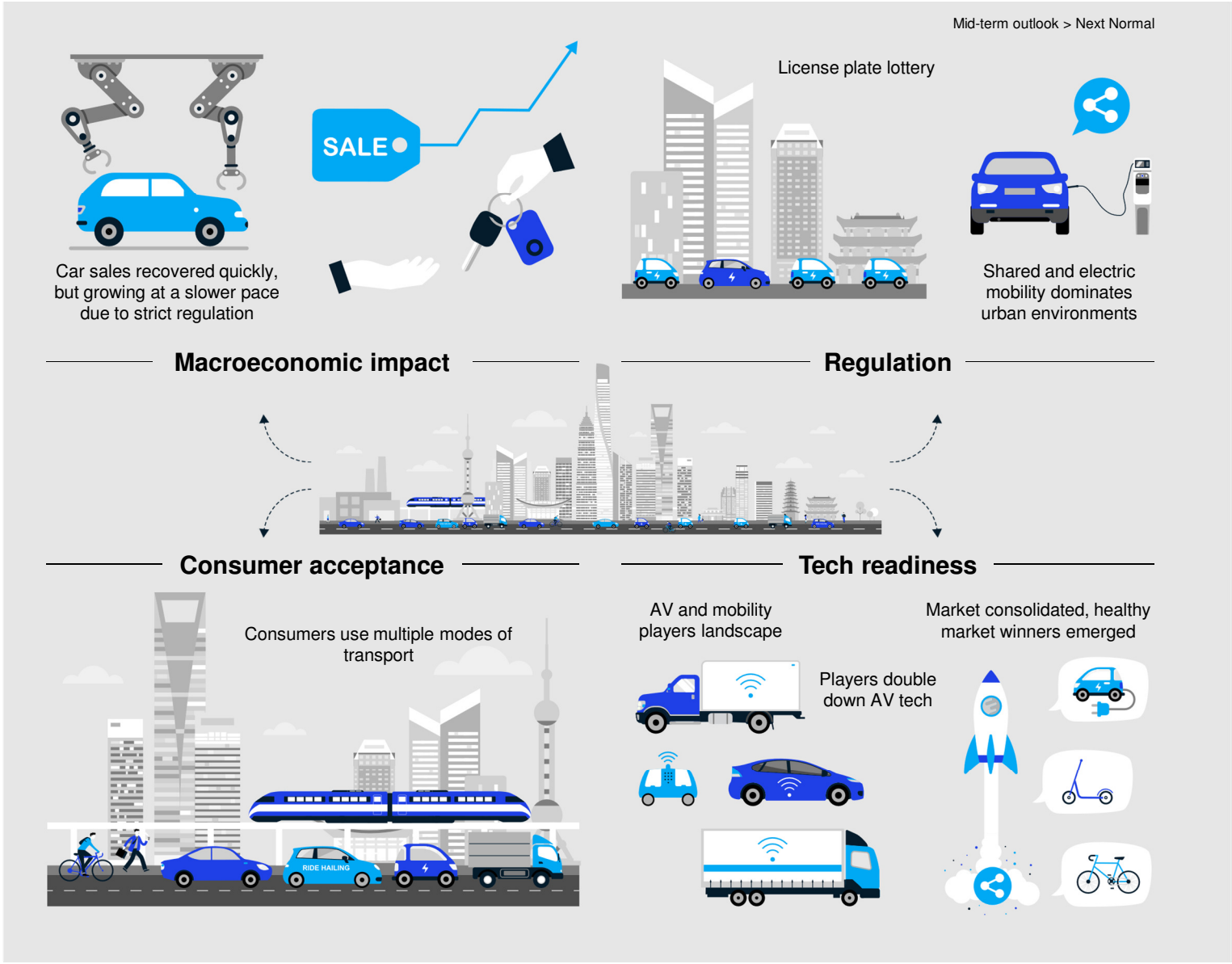
Source: McKinsey Center for Future Mobility

Preliminary **06.05.2020**

China

Electric mobility will hit the ground running

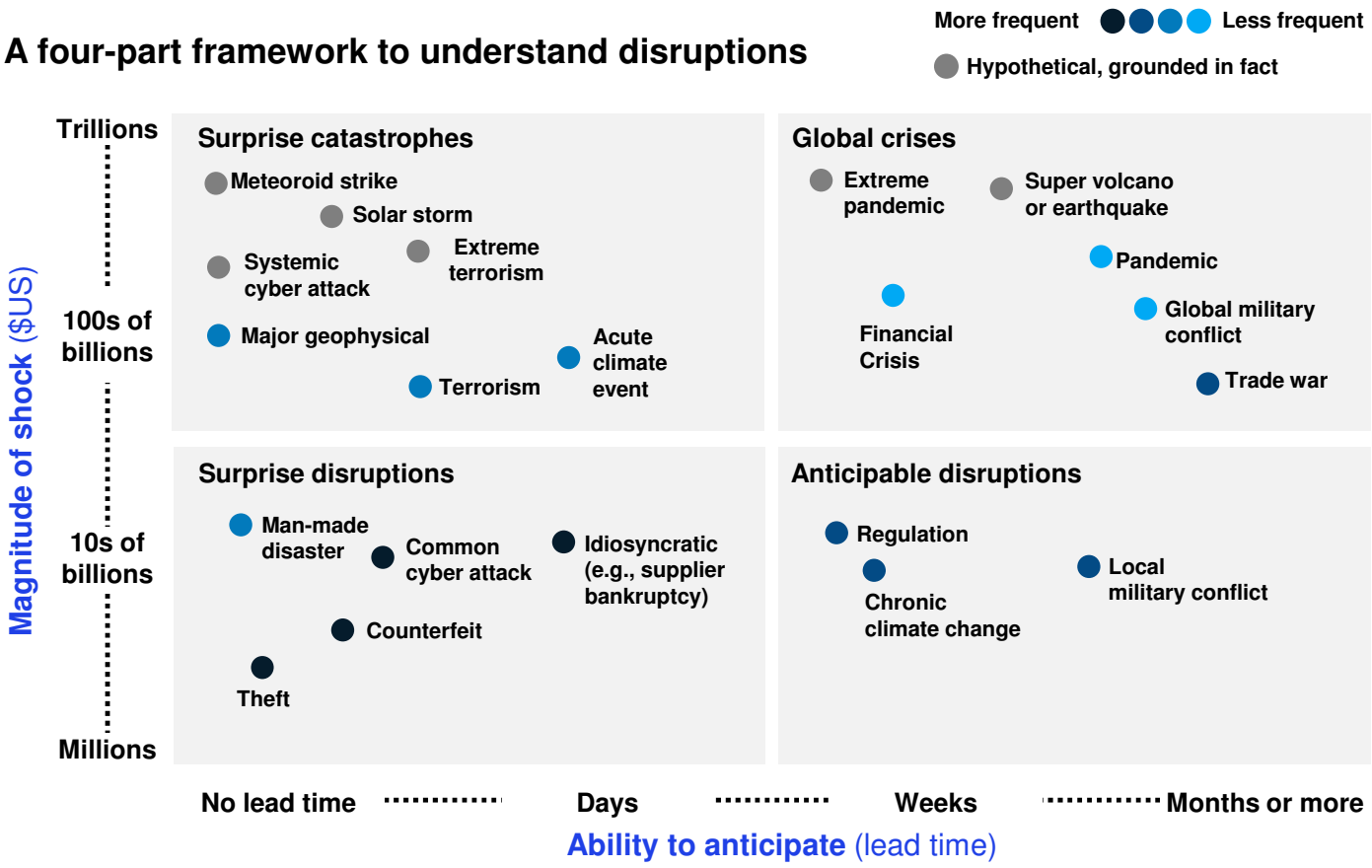
One option for a “next normal” 2024



Source: McKinsey Center for Future Mobility

Supply chain shocks are often impossible to predict, but happen with regularity

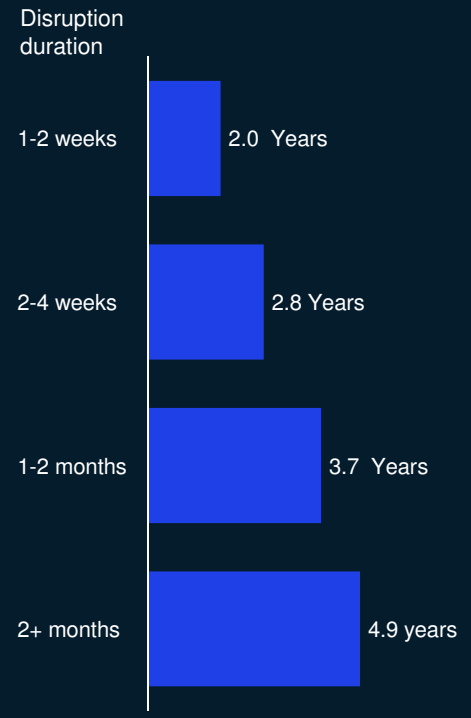
A four-part framework to understand disruptions



Source: Expert interviews, literature reviews, press search, McKinsey Global Institute analysis

Expected frequency of a disruption *(in years)* by duration

Based on expert interviews, n=35



What does strong supply chain resilience look like?

1

E2E visibility on risks across the value chain from tier N supplier to customers

2

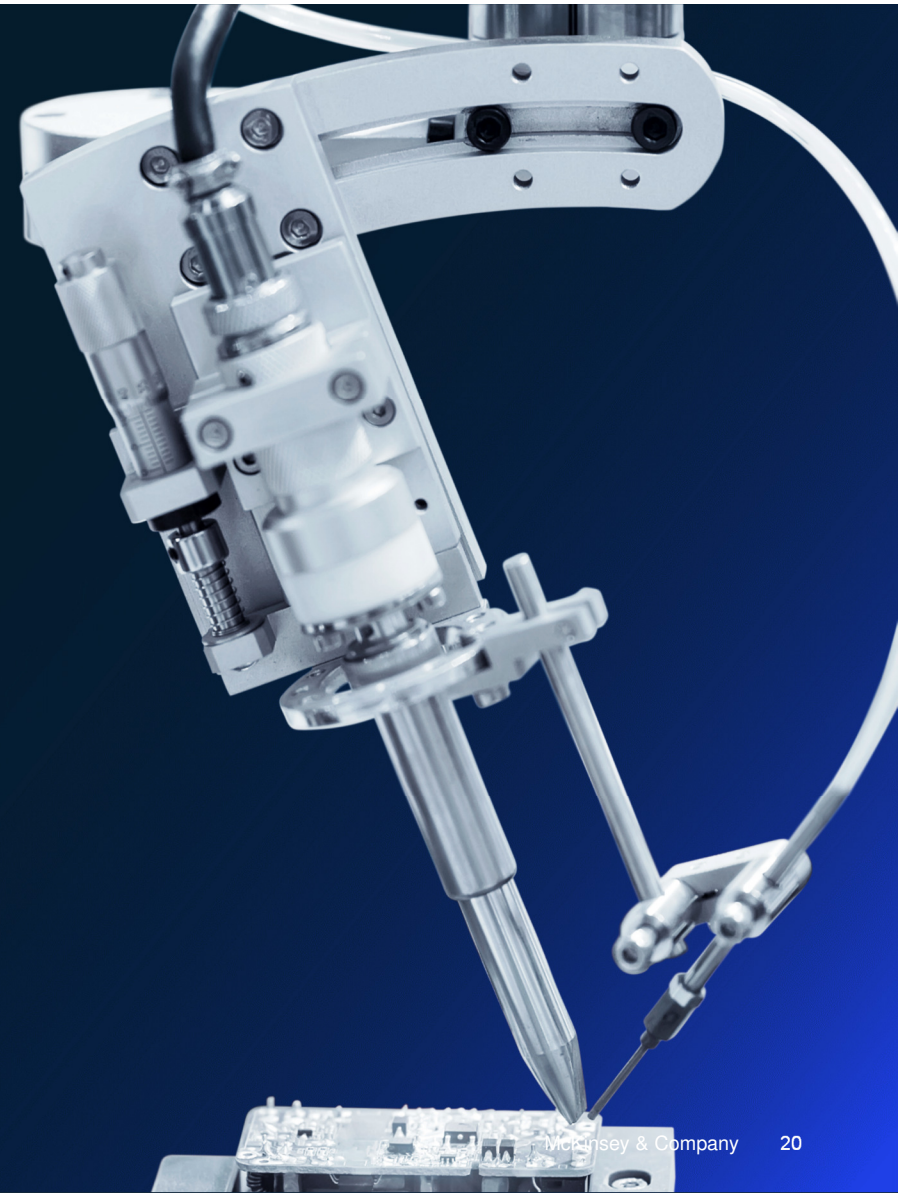
Regular stress-testing and reassessment

3

Targeted actions to reduce vulnerability and exposure to shocks

4

Supply chain resilience is on the CEO agenda



Supply chain risk has impact when unexpected events meet vulnerabilities in the supplier network or operations

Value chain risk

Unexpected value chain disruptions can cause operational and/or financial impact

=

Shock

Unexpected events that disrupt the value chain

- Force majeure
- Macropolitical
- Malicious actor
- Idiosyncratic

×

Vulnerability

Attributes and approaches that make a value chain more/less resilient

- Planning and supplier network
- Transportation and logistics
- Product complexity
- Financial resiliency
- Supply chain organizational effectiveness

Source: McKinsey Global Institute analysis

Value chains have different exposure to shocks based on their geographic footprint, factors of production, and other factors

Results for select value chains

Disruption risk Low High Better Worse X = Rank in exposure among 23 value chains

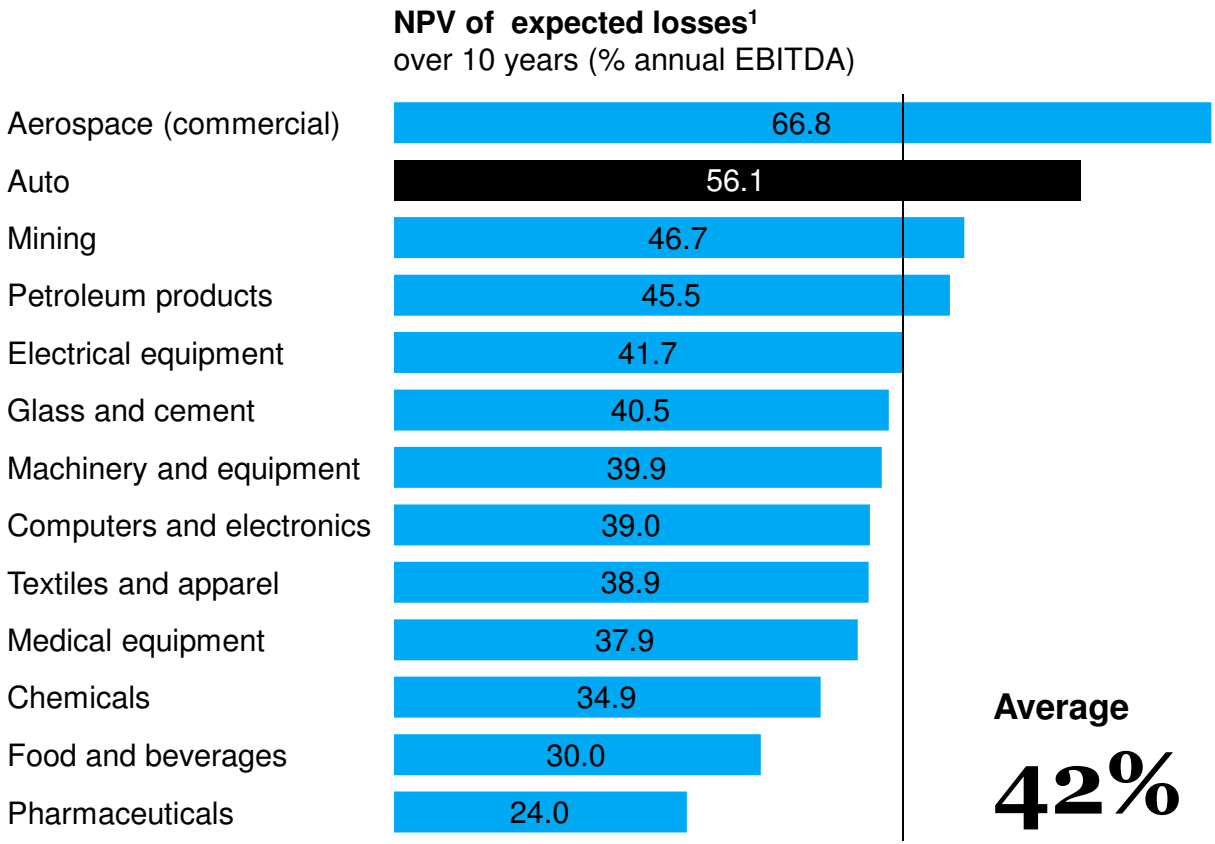
	Overall exposure to shocks*	Pandemic	Large-scale cyber-attack	Geophysical**	Climate heat shock	Climate flood shock	Trade dispute
Automotive	14	6	9	12	21	18	6
Communication equipment	1	13	3	2	16	7	2
Computer and electronics	6	15	5	4	14	14	9
Aerospace	8	2	1	18	20	21	5
Semiconductors	9	19	6	1	18	23	1
Machinery and equipment	18	9	10	20	17	20	7
Medical device	23	22	8	22	22	22	3

* Full analysis considered 23 value chains; ** e.g., earthquake, tsunami

Source: McKinsey Global Institute analysis

Auto has a ten-year expected value of shock worth 56% of one-years earnings

Net present value of expected losses over a 10 year period (% annual EBITDA)[1]

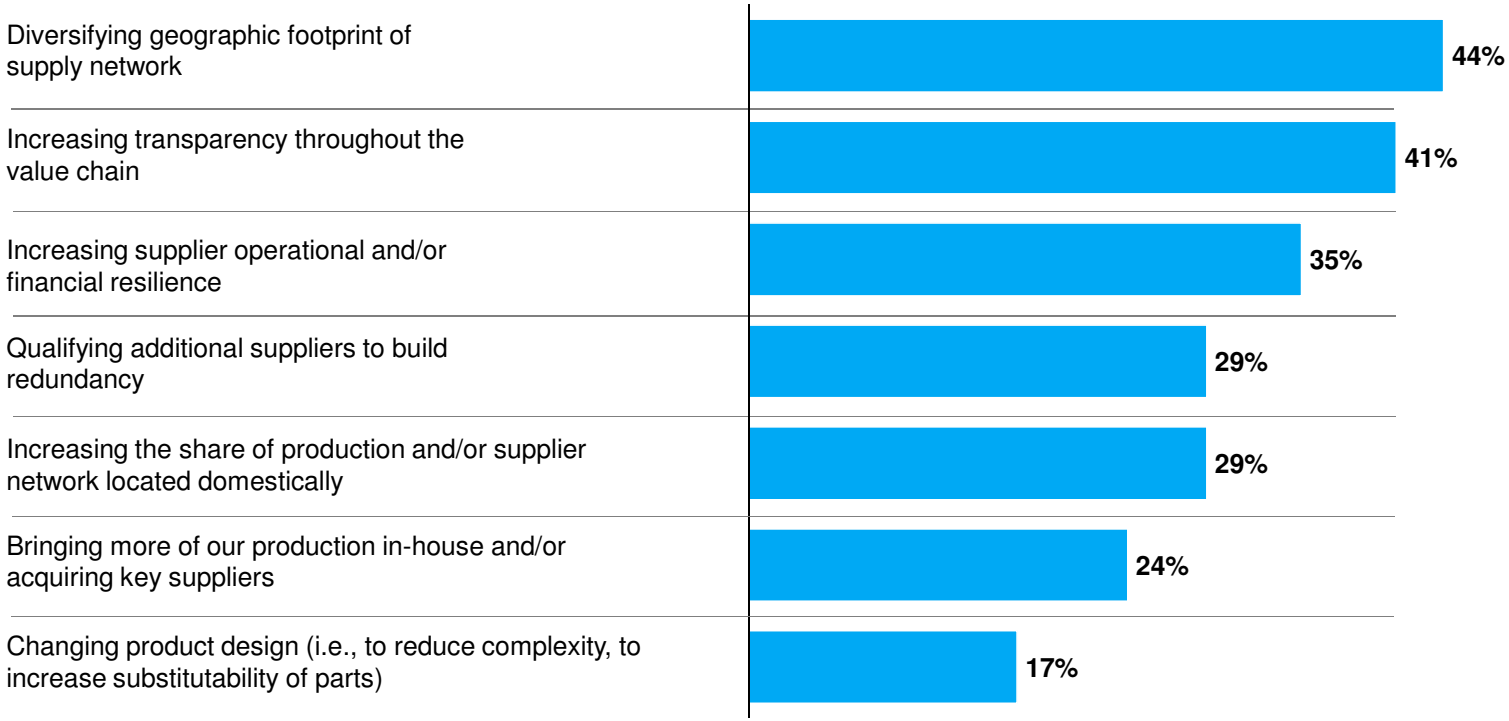


Source: McKinsey Global Institute analysis

Companies can invest significantly in resilience measures – and come out ahead financially

Geographic diversification and transparency are the major levers that executives identify to increase the resiliency

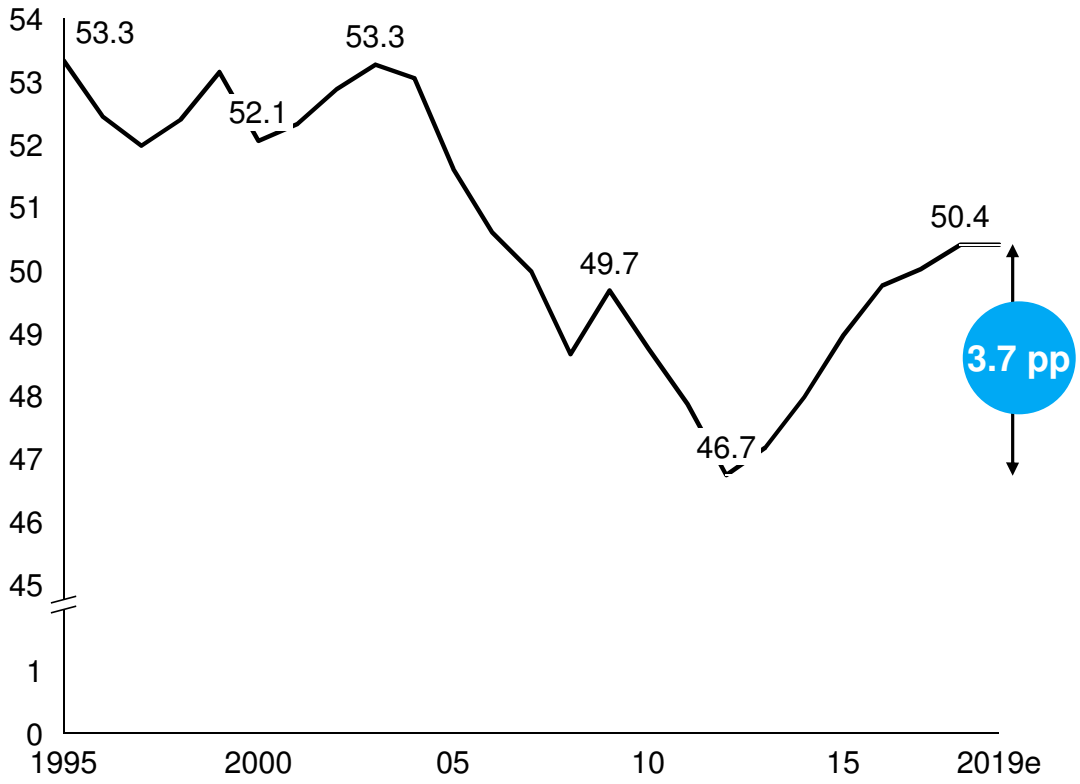
Main options to increase SC resilience – Automotive & assebly (n=173)



Source: McKinsey survey of global Supply Chain leaders (May 15 – 22, 2020)

Auto trade in EU and North America is more regionalized than APAC

Share of intraregional goods trade in total trade (exports + imports), (1995-2019)
Percent

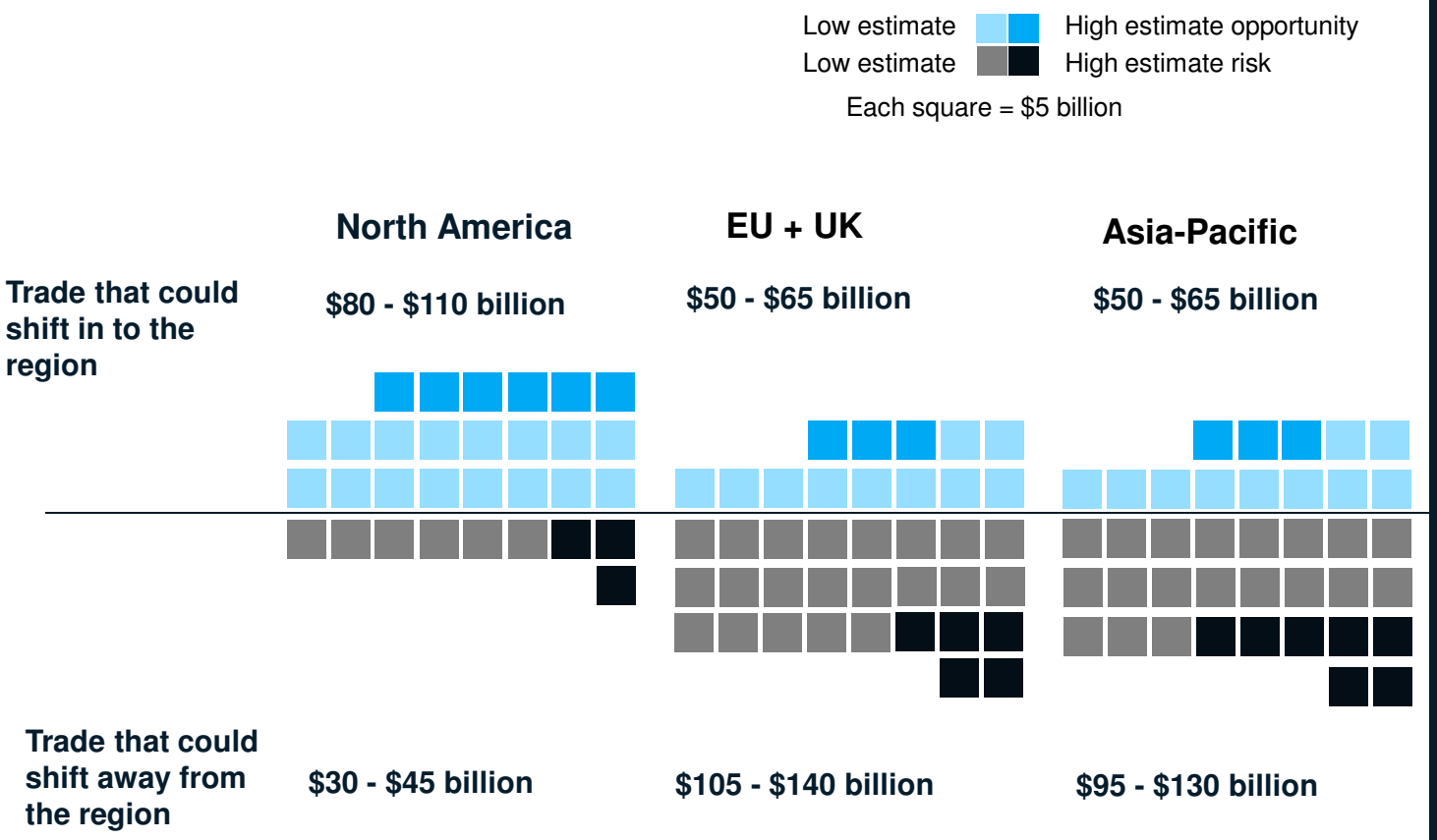


Source: UN Comtrade, McKinsey Global Institute analysis

Intra-regional auto trade by region, 2018

Shifting auto value chains could create opportunities and risks across regions

Value of auto value chain that could shift



Source: McKinsey Global Institute analysis

Methodology

We consider eight economic and three non-economic factors that could influence the propensity of a value chain to shift:

Economic

- Shifts already unfolding
- Capital intensity and economies of scale
- Knowledge intensity and specialized supplier ecosystems
- Access to natural resources
- Demand growth
- Product complexity and substitutability of inputs
- Regionalization of the value chain
- Trade intensity

Non-economic

- National security
- National competitiveness
- Self-sufficiency

Opportunity

Imports from outside the region adjusted for the feasibility to shift

Risk

Exports to outside the region adjusted for the feasibility to shift

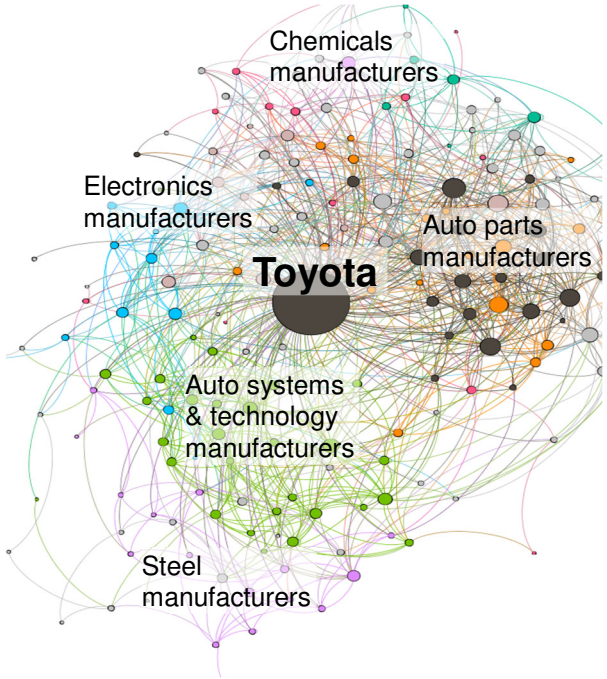
Automobile manufacturers have very similar supply chain structures – and significant overlap

Auto companies rely on complex, multi-tiered and interconnected networks

Toyota

Revenue: $278 billion (2019)

Toyota relies on a similarly sized but more clustered supplier network



Number of known Tier 1–2 suppliers[1]

Shared

1,474

Toyota only

2,427

Toyota's supplier ecosystem is more clustered[2], meaning it is potentially more exposed to bottlenecks

GM only

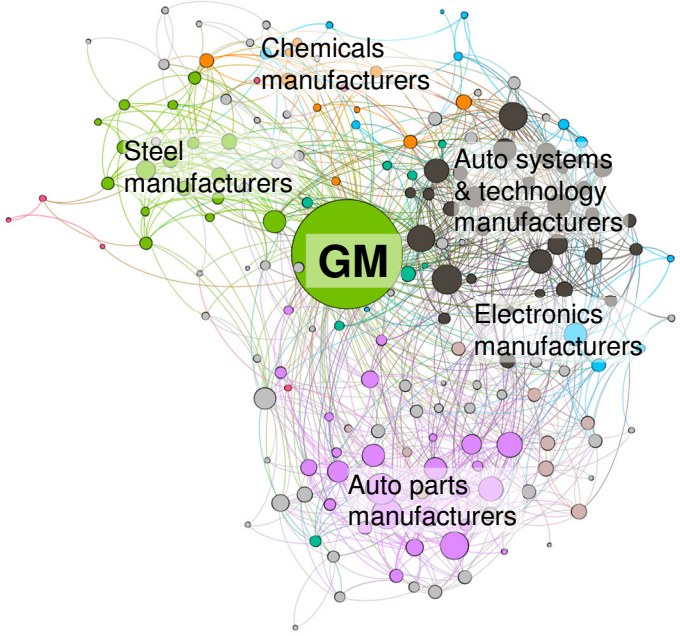
2,347

GM's supplier ecosystem is deeper[3], implying it has potentially less visibility across sub-tiers

General Motors

Revenue: $137 billion (2019)

GM relies on a similarly sized but more tiered supplier network



1. Based on regulatory and other public disclosures filings; excludes private companies; due to data limitations, some suppliers may be excluded. The results provide a relative overview of connectivity and network structure compared to other companies with similar data availability
2. Clustering is based on the clustering coefficient network, which measures the degree to which nodes cluster together and form interconnected sub-groups.
3. Depth is measured through the network diameter, which is a measure of network size that accounts for the overall structure by measuring the longest shortest path in the network.

Source: Bloomberg, McKinsey Global Institute analysis

What CEOs should ask themselves about supply chain resilience

1

Do we have visibility to the vulnerabilities that exist for the entire supply chain - from our suppliers to our customers and everything in between ?

2

Is my organization reimaging the way we evaluate and mitigate SC vulnerabilities – are we re-optimizing or pushing to re-imagine? Are we utilizing industry 4.0 levers?

3

Is SC Resilience a topic discussed at the highest levels in the organization and are you evaluating trade-offs to make informed decisions on the type and speed of mitigation plans?

4

When making strategic decisions for the organization (e.g., network footprint, sourcing strategy) do you proactively consider SC risks in addition to financial implications?

Thank you!

Read the report, Risk, resilience, and rebalancing in global value chains:

http://www.mckinsey.com/valuechainsreport

For a deeper dive, see our climate risk case study, *Could climate become the weak link in your supply chain?*

https://mck.co/climatesupplychain

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