

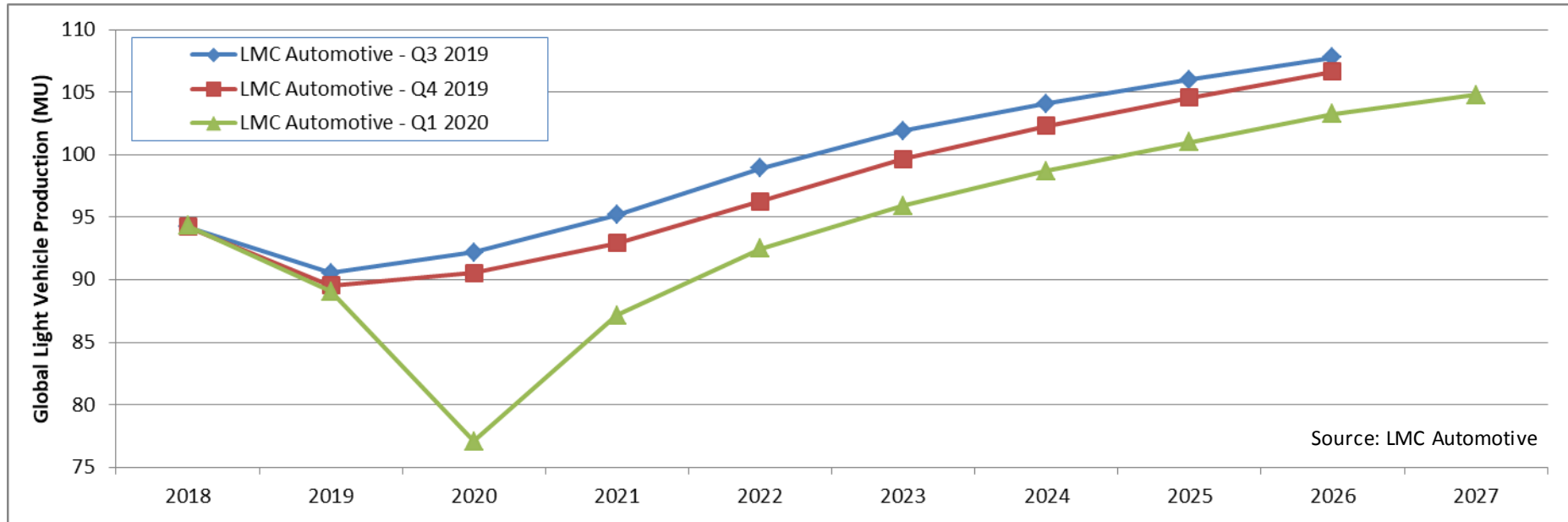


COVID-19 Impact & Recovery

Smart & Connected Mobility Summit – July 2020

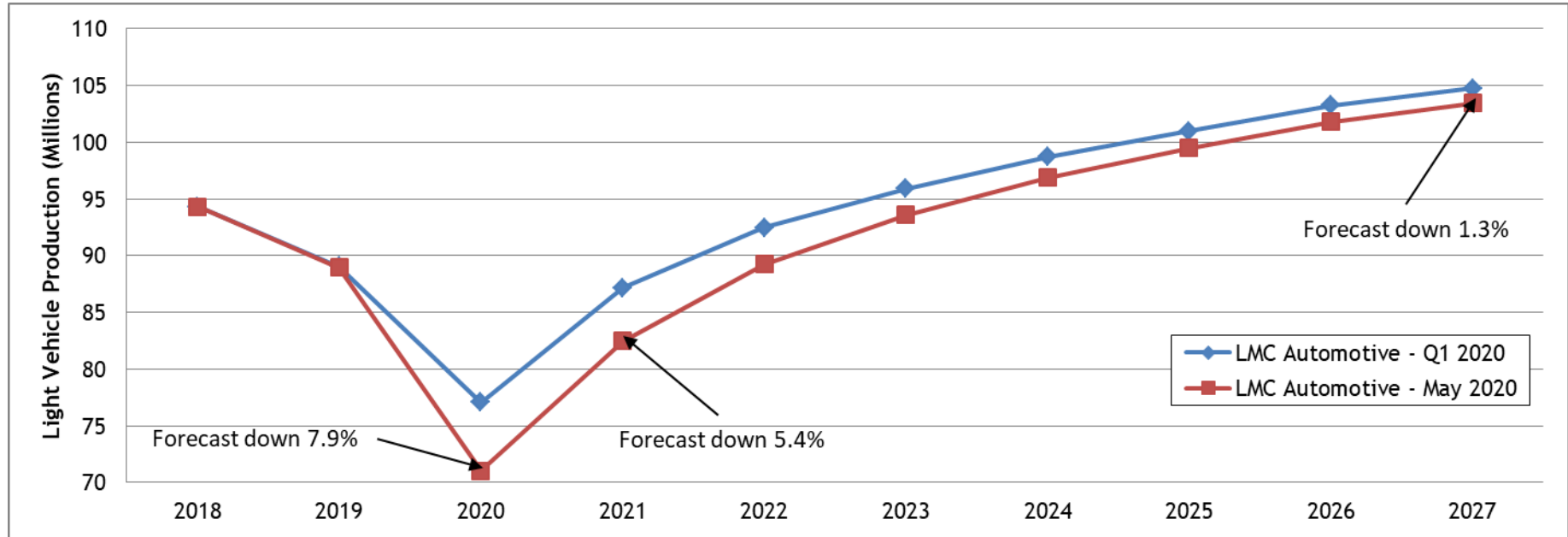
STRATEGY ANALYTICS

LATEST GLOBAL PRODUCTION FORECASTS REVISED DOWNWARDS ACROSS THE FORECAST TERM



- Overall expected light vehicle production output has been decreased across the whole forecast period, compared to where we expected things to be in Q4 2019. 2020 is now looking 13.4% down on 2019 levels, with further downward revisions expected

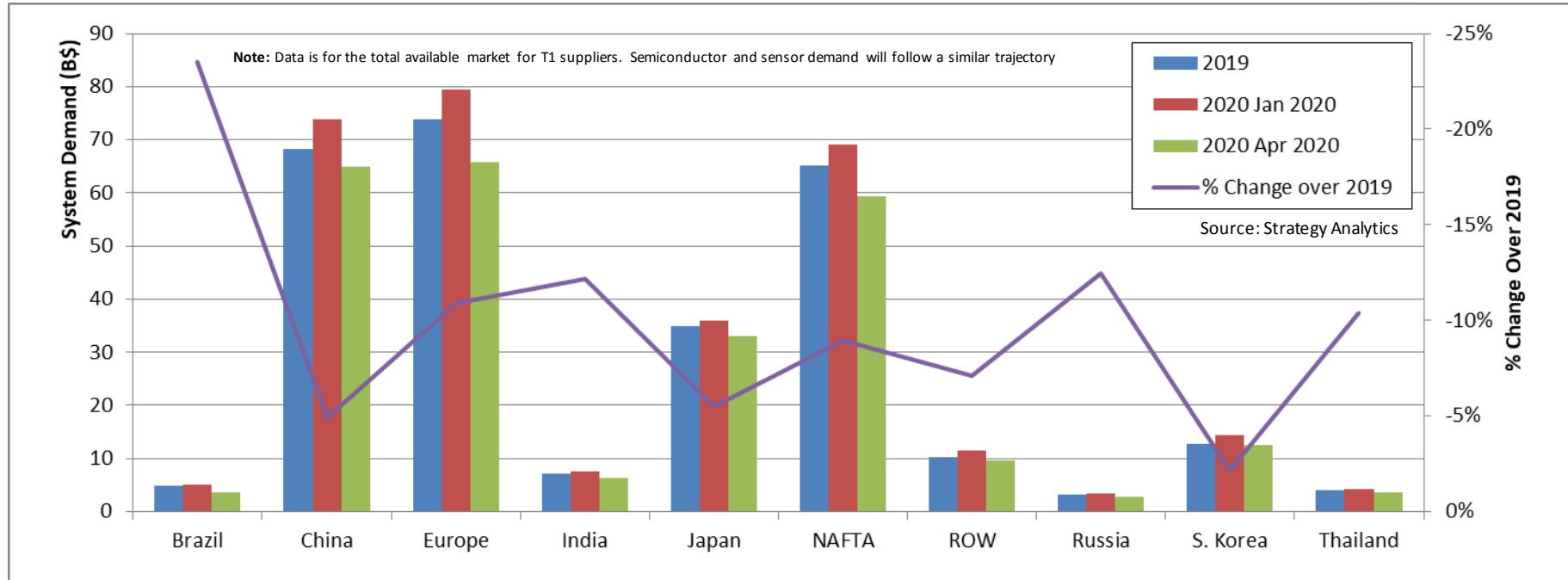
LATEST PRODUCTION FORECAST REVISED DOWNWARDS ACROSS THE FORECAST TERM



- The COVID-19 global pandemic is expected to have an even more dramatic impact on light vehicle production than was previously expected. 2020 output is now expected at only 71.0 MU – over 20% down on 2019, and 7.9% lower than previous estimates.
- The biggest short-term volume reductions to the forecast outlook have been in North America, Western Europe and India. The short-term outlook in China is actually marginally improved in this update.



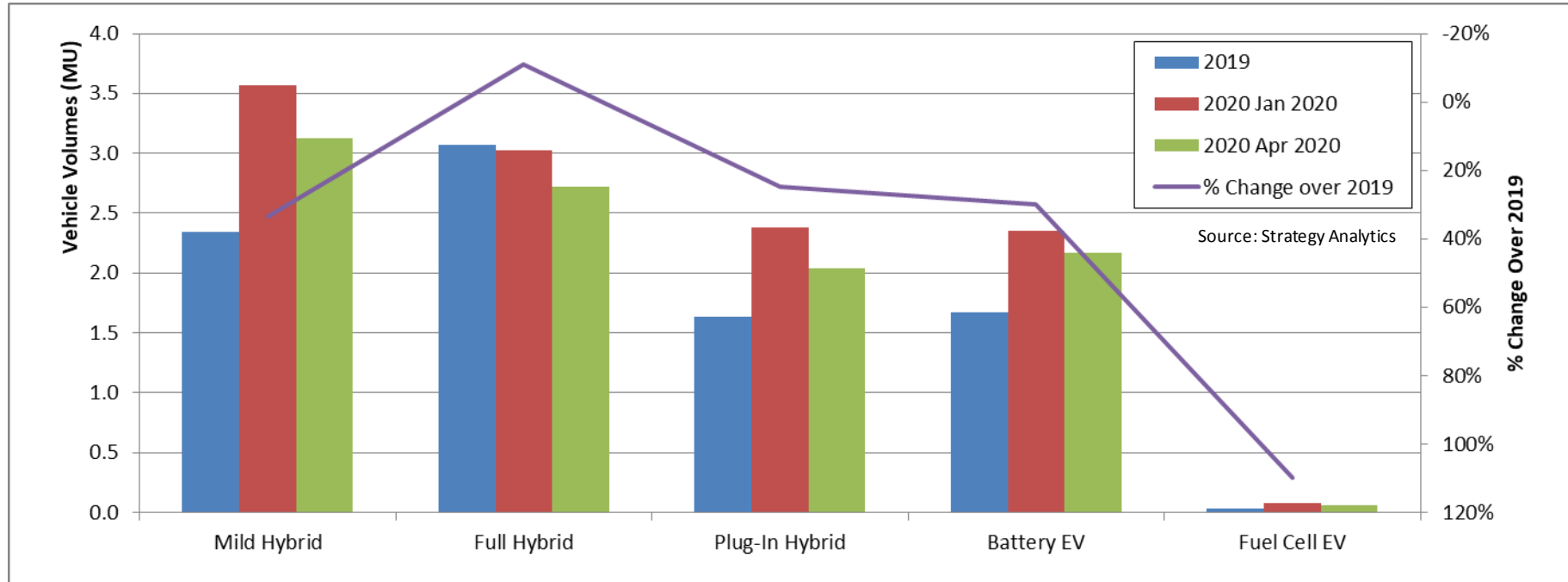
COVID-19 IMPACT BY REGION



- China, Japan, Korea currently expected to show lesser declines than most other parts of the world
- Brazil most impacted in percentage terms. Europe biggest loser in dollar terms



COVID-19 HEV/EV IMPACT

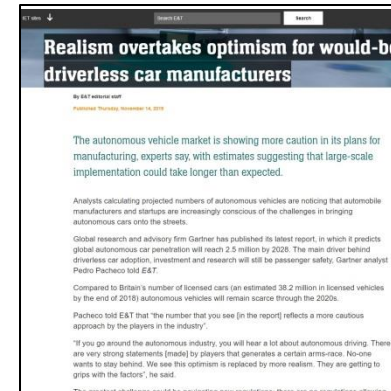
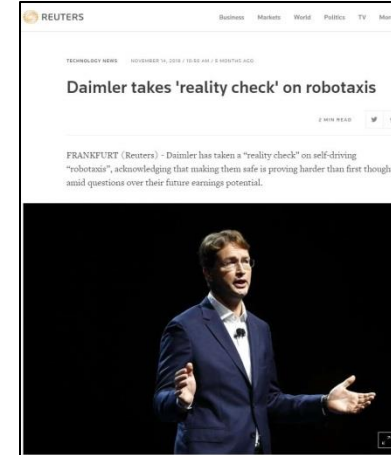
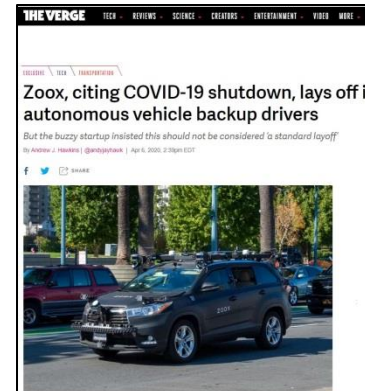
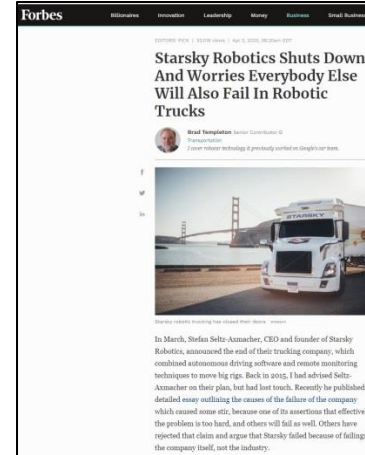


- All HEV/EV types except full hybrids will be up on 2019 volumes – but not up by as much as previously hoped
- BEV volumes will be “only” 8% lower in 2020 that previously expected for that year – against a 15% lower overall expected vehicle market



AV ECOSYSTEM

- Strong signs of **“reality”** breaking out at many companies; COVID-19 not helping...
- Expect **many more** JVs / mergers / acquisitions and re-focusing – especially when it comes to **monetizing AV development** for ADAS
 - E.g. Volvo / Zenuity / Veoneer
- A falling car market and static ADAS market will put **severe pressure on investment** levels in 2020 and beyond
- Big infrastructure investment (e.g. V2X) also now **even more problematic**





COVID-19 MOBILITY HALT

In the wake of COVID-19, many OEMs have been forced **to shutdown or restructure** some of their new and emerging mobility projects...



COVID-19 Triggers Closure Of GM's Car-Sharing Platform, Maven



'FREE NOW' taxi ride-hailing by Daimler and BMW announces restructuring



GM kills its electric bike project, Ariv



Penske Dash short-term rental program halted after less than a year



COVID-19 OEM RESPONSE

...while simultaneously assisting in the direct response to COVID-19.



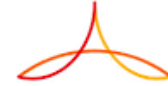
GM dispatches first batch of ventilators for COVID-19 patients

Ford is using airbag material to make reusable hospital gowns for Covid-19 responders

Ford Teams Up With 3M and Thermo Fisher to Make Health Equipment



PSA, Valeo help France ramp up ventilator production
Fiat builds key parts for Italian ventilator push



RENAULT NISSAN MITSUBISHI

France: Renault to lend Zoe electric cars to caregivers

Nissan joins face shield making in Japan to combat coronavirus



Toyota Teams Up With Nihon Kohden to Boost Ventilator Production

Honda Modifies Odyssey To Transport Detroit Residents For Covid Testing

Toyota Motor Philippines and Toyota Mobility Foundation launch Sanitized, Just-in-Time Shuttle



COVID-19—UPENDING TRADITION

And while the immediate effects are still unfolding, many OEMs and dealerships have recognized the need to **rethink traditional business models altogether.**



Tesla (and ironically FCA) lead massive EV shift in Europe in radical new market conditions

Chinese carmaker Geely will airdrop car keys by drone so people can buy new cars without having contact with others

Covid-19 fear: Carmakers change track to online sales, contactless delivery

Ford Vehicles Will Have Surfaces That 'Puncture' Viruses, According to CEO Jim Hackett

A large blue circle containing a white question mark. It is surrounded by several other circles: a smaller blue circle above and to the left, a grey circle to the left, an orange circle below and to the right, and a small orange outline circle to the left. There are also grey diagonal bars in the background.

?

**What does this mean for
automotive connected
mobility?**



- **Overall short-term market outlook for mobility services industry**

- The elephant of COVID-19
- Struggling tourism/transportation/mobility sector
- Layoffs, furloughs & shutdowns (Bird & Lime, Getaround, Maven & Penske Dash)
- A floundering gig economy (Uber & Lyft see large loss of demand for ride hailing services)
- Bankruptcy on the horizon for legacy rental car companies
- General economic uncertainty
- Lack of capital investment moving forward?



- **Push Toward a Multimodal Future**

- EV adoption & automation
- Connectivity and data as revenue drivers
- Mobility-as-a-Service
- Fleet Management-as-a-Service
- Consolidation and Expansion
- E-Delivery





COVID19 MOBILITY STRATEGIES

There is an **imminent** need for rethinking the mobility landscape and for developing COVID19 mitigation strategies, including:

- A robust and thorough testing regime
- New sanitation efforts
- Removable vehicle partitions & virus killing fabric
- Proactive temperature taking of drivers and users
- Development of new and alternative revenue streams
- Seat reconfigurability
- Conclusion of the employment status debate
- Partnering with cities to fill transportation gaps

 South China Morning Post

Didi Chuxing puts plastic dividers in cars to help stop the spread of coronavirus



How delivery services like Uber Eats could keep the 'most exposed' small businesses afloat



Beijing cab driver dons full hazmat suit to keep coronavirus away



A transit system in crisis, Miami-Dade buying Uber, Lyft rides on overnight bus routes

EXAMPLES

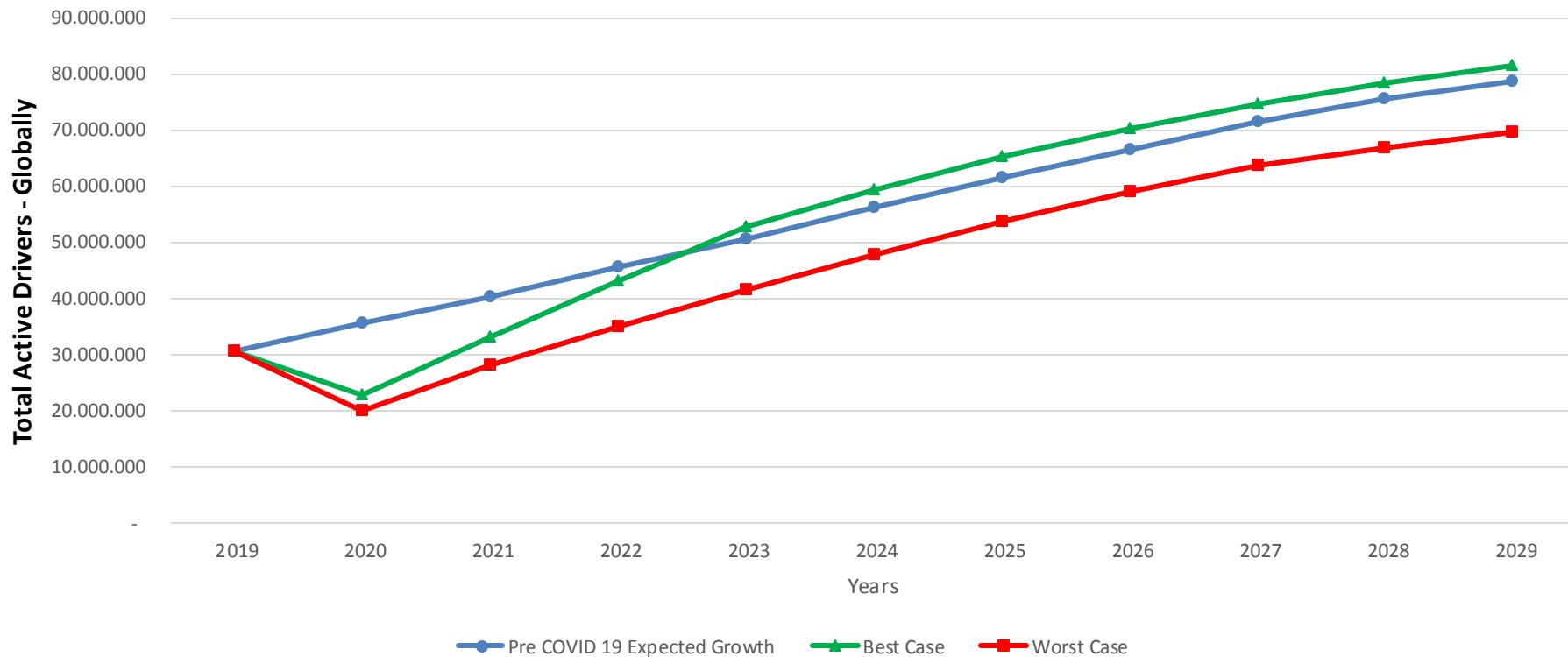




**What does this mean for
the ride hailing industry?**

COVID-19 POTENTIAL IMPACT

Ride Hailing Global Active Driver Count – 10 Year Expected Growth





TWO SCENARIOS—EXPLAINED

Best Case

- 3-year recovery to baseline
- Ride demand begins to improve at the tail end of 2020 and into 2021
- Driver growth rates rebound due to large increases in unemployment
- Growth accelerates past pre-COVID19 levels due to less demand for public transit

Worst Case

- Growth rates never return to baseline scenario
- Ride demand never fully recuperates
- Ride hailing drivers pivot to the more fragmented parcel/product/food delivery markets, where they stay over the long run
- Many commuters do not return to work, making ride hailing more dependent on a weakened tourism/travel industry

In either scenario, expect further consolidation of major operators, industry wide transitions toward delivery services and other B2B revenue streams, cost-cutting measures and balance sheet optimization, and a focus on long-term sanitation efforts.

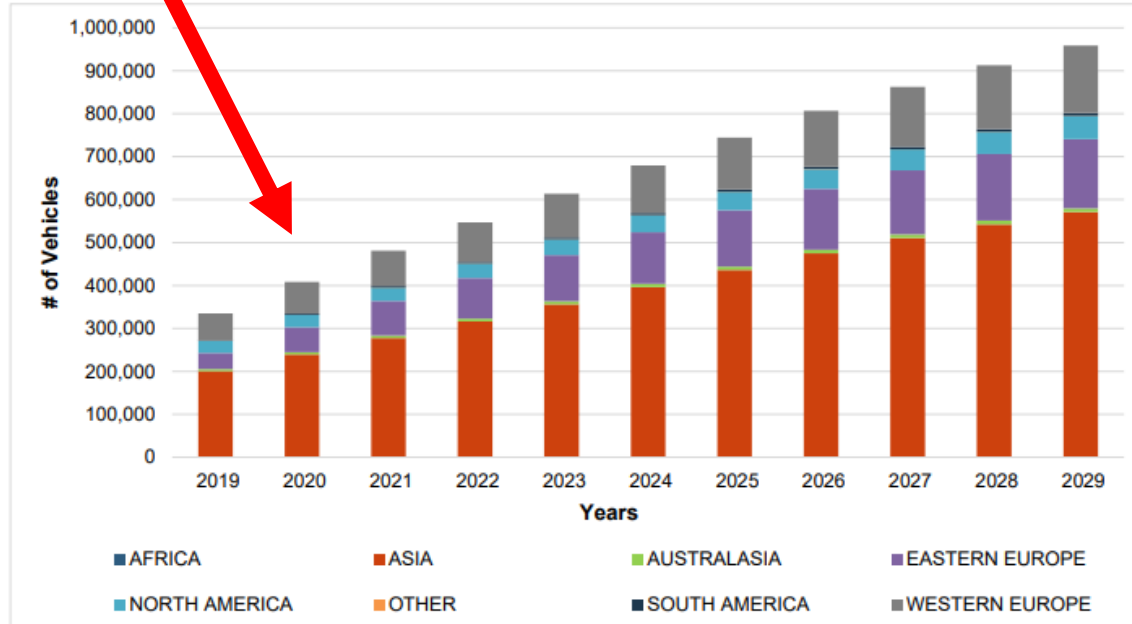


**What does this mean for
the car sharing market?**



CAR SHARING MARKET

2019 Global Fleet Size Growth Estimates by Region

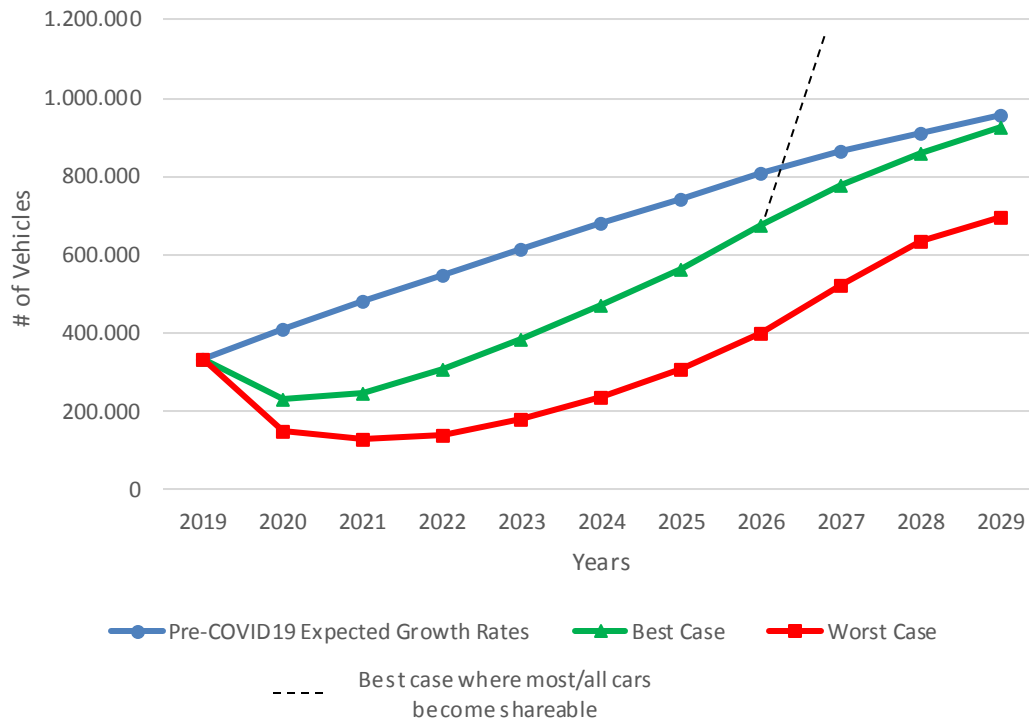


- **Positive trends in 2019 but...2020 and beyond may be a remarkably different story**
- **2020 to be marked by service suspensions & complete shutdowns**
- **Long term viability in question**

COVID-19 POTENTIAL IMPACT



Car Sharing Global Fleet Size, Total



- **Troubling market signals before COVID-19** (Share Now shutdowns, fleet management issues, low margins)
- **Service suspensions, operator failures, & bankruptcies are imminent** (Penske Dash, Maven & others)
- **Higher startup costs than ride hailing/micromobility make expected recovery slower and more gradual**
- **Long term viability of business model in question**
- **A future where all new cars are shareable**
- **Broader partnership with municipalities and integration into city planning projects**



**What will happen to
scooter companies?**



SIMILAR FATE FOR SCOOTER COMPANIES

- Service suspensions everywhere...even in successful markets
 - Lime is “pausing or winding down” in at least **FIFTEEN** different countries
 - Bird pulling scooters out of **ALL** European markets
- Credit card issuers have seen nearly 100% decrease in spending on scooter rentals
- Extremely low utilization, low margins and difficulty in fleet management and optimization make strategic acquisition unlikely and unwise
- Industry dependent on outside/VC funding, which is sure to dry up
- Small, cash-strapped scooter operators desperate for cash/acquisition; large operators desperate to shed scooter related assets
 - Uber / Lime \$170 million deal reflects this reality
- Expect more strategic coordination between scooter companies and forward-looking municipalities to incorporate scooters as complements to infrastructure and development projects and the overall transportation ecosystem



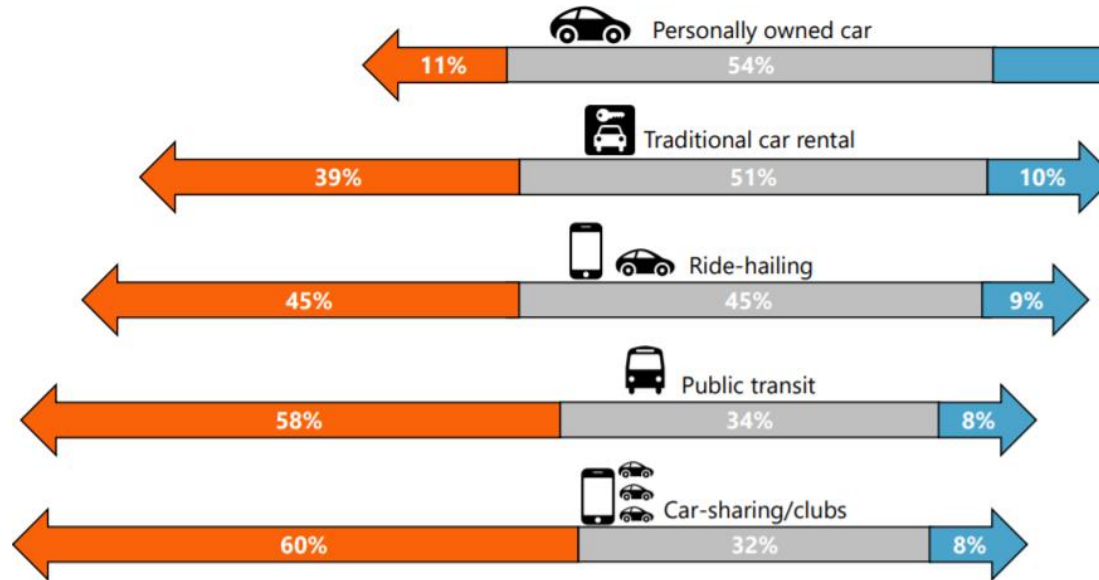
**What are consumers
saying about their
transportation decisions?**



Transport Usage After COVID-19

Owned car usage unchanged or up; All others mixed

Q. After COVID-19, to what extent do you expect to use this transport mode differently to before the pandemic?



After the pandemic, US consumers plan to use a privately owned car at least as often as before, while usage of all mobility services (traditional and new) will likely decrease.

Insight: In the US, COVID-19 has struck a significant blow to mobility service providers, and the “death of the owned car” advocates. Almost 90% of consumers plan to use their own car at least as often as before the pandemic, if not more often. Public transit, and what remains of car-sharing in the US, face the most significant challenge.

Base: US – 379

■ Slightly/Much less, or don't use and don't plan to use in future
 ■ About the same
 ■ Slightly/Much more



VOICE OF THE CONSUMER

Usage of all mobility services will likely fall in COVID-19 recovery. ☐ Owned car usage is likely to remain unchanged or increase.

- For ride-hailing UX, air/surface cleaning and plastic partitions are of modest importance to most riders.
- Driverless technology does not add great value to ride-hailing UX, even during a pandemic.
- With regard to car shopping, most but not all remote activities and features are of interest.
- Though remote inventory browsing and sales completion are broadly appealing, some advanced tech-driven walkthroughs are not of great interest.
- Smart or clean surfaces are of greater value than removable or customizable cockpit barriers.



CONCLUSIONS

Adjusting to a “new normal” for mobility operators depends on:

- Length of downturn and recovery
- Rolling unemployment rates and their impact on the gig economy
- Viability of remote working, learning, and praying over the long run
- Public transit recovery
- Rental car/taxi industry recovery
- Tension between doing without cars/needing cars



CONCLUSIONS – COVID-19

Full impact still far from certain– **PLANNING FOR OVERALL VEHICLE SALES/PRODUCTION TO BE IN THE ORDER OF ~20% BELOW 2019 LEVELS SEEMS PRUDENT**

Despite an expected 2021 recovery - **A CUMULATIVE \$127 BILLION OF SYSTEM DEMAND IS EXPECTED TO BE LOST OVER 2020-26, COMPARED TO THE PRE-COVID-19 FORECAST**

ADAS will be hit less than many other application areas, as it is still a growth market in penetration terms – **TOTAL ADAS DEMAND IN 2020 LIKELY TO BE SLIGHTLY BELOW 2019**

Only major application area likely to see significant growth in 2020 is HEV/EV – **POST COVID-19 INCENTIVES ARE EXPECTED TO STRONGLY FAVOUR THESE MODELS**

The key decision points for 2020 are:

DO I JUST NEED TO SURVIVE ? ...or...

CAN I TAKE ADVANTAGE OF OTHER'S WEAKNESS?

*Strategy Analytics believes that the overall balance of risk remains that **under-performance** relative to the “Standard” scenario is more likely, unfortunately, than over-performance. In addition to the vehicle production reduction, supply-chain effects (with a lot of stock in some channels) may mean that some suppliers see even worse conditions than those forecast here.*

Any Questions?



The Future of Mobility

Roger C. Lanctot, director, connected mobility

rlanctot@strategyanalytics.com

@rogermud