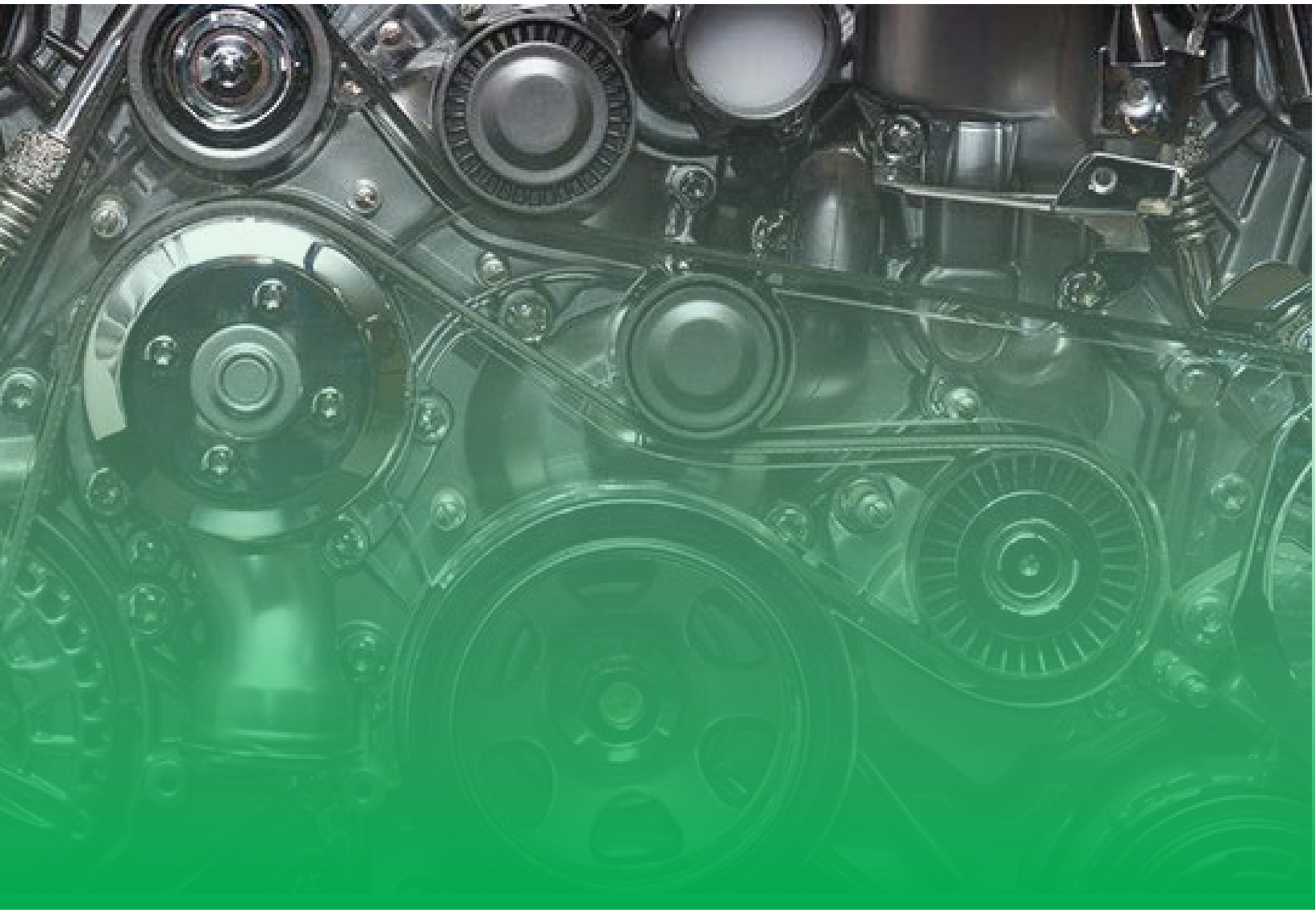
COVID-19 Automotive Manufacturing Disruption Index

IHS Markit | April 7, 2020

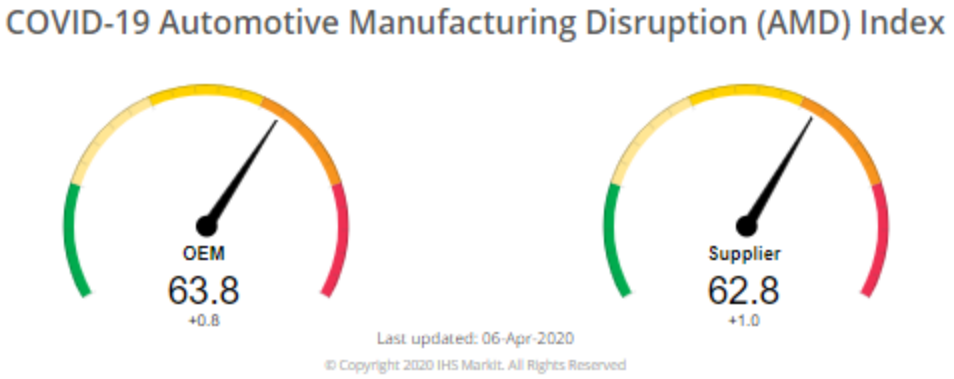


COVID-19 Automotive Manufacturing Disruption Index
IHS Markit providing an impact assessment of COVID-19 government measures on automotive plant activity at OEMs and suppliers on a global basis.

Background
Over the last few weeks governments around the world have been increasingly pursuing a suppression strategy over the COVID-19 outbreak, which focuses on increasing social distancing with a variety of measures in order to reverse the pandemic's growth and thus managing healthcare systems' resiliency. These measures have often resulted in stricter "lockdowns" that have had a severe impact on manufacturing operations in non-essential sectors, automotive being one of them. The deployment timeline of the governments' measures has been staggered with different degrees of stringency due to different level of exposure to the pandemic's infection as well as different sensitivities around contagion management.

Whilst the focus of several stakeholders of the automotive industry is on the return of vehicle demand, we expect that once vehicle sales resume in major markets OEMs and suppliers will be presented with a different path in their "return to normal" based on their manufacturing footprint, thus presenting potential competitive advantages or disadvantages for specific OEMs and suppliers as a function of their exposures to countries with more relaxed or stringent measures. We also expect to see fairly substantial time lags in the loosening of measures, in the same way we saw some countries quickly ramping up restrictions while others have lagged. In the context of an extended period in which governments attempt to "flatten the curve" we might face continued asymmetry in terms of supply/demand of parts and vehicles as some countries return to normality while other are still grappling with lockdowns. An example of this asymmetry has recently materialized when several Chinese OEMs and suppliers voiced concerns about their supply lines of auto parts being compromised by the measures enforced by governments around Europe. This is a reversal of fortunes compared to only a few weeks ago when European and US carmakers were dealing with supply chain disruption linked to the lockdowns in China's Hubei province between end of January and February.

COVID-19 Automotive Manufacturing Disruption (AMD) Index



The Automotive Supply Chain and Technology team at IHS Markit has developed an index to track the level of impact of government's COVID-19 containment measures on automotive manufacturing operations around the globe. The COVID-19 Automotive Manufacturing Disruption (AMD) index is weighted against the manufacturing footprint of OEMs and suppliers (production volumes for OEMs and supplier revenues for suppliers). The index also leverages groundwork research done by Oxford University to track measures in place in each country. This ground of research has been enhanced and made relevant to the automotive sector using IHS Markit proprietary data.

The AMD index takes into account 5 factors:

- **Workplace closures**: focuses on whether closures of workplaces particularly in the automotive sector are recommended or compulsory. We give additional weight in the calculation of this index for automotive specific measures, for example whether automotive plants are considered non-essential and therefore subject to forced closured in more stringent lockdowns scenarios.

- **Restrictions on internal movement:** depending on the severity of the measures, the government might recommend restriction of movement in targeted areas of the country or in the whole country. This is again another disruptive factor as it creates more friction for business, both goods and people. Some interesting examples of this disruption existed at the onset of the outbreak in Wuhan and Italy, where several suppliers could not access their sub-suppliers' parts inventory due to restrictions on internal movement. Internal movement limitations can be enforced at different local government level, for example they are enforced between municipalities in Italy, states in India or provinces in China (during the Wuhan outbreak).

- **School closures:** several suppliers participating in our regular surveys have mentioned that school closures have often resulted in labour shortages, due to parental commitments making it impossible for one of the parents to work. Suppliers we interviewed in China did not mention the closure of schools as a major problem due to the presence of extended families. On the other hand, school closures represented an issue in both Spain and Italy for local employers, particularly in the period between school closures were enforced and more stringent lockdown measures.

- **Limitations to public transport:** automotive manufacturing operations often rely on public transport for people and goods movement. For example, even as lockdown measures were lifted in Wuhan on March 13, several automotive suppliers had labour shortage issues due to local transport closures. This will have a more severe impact in countries that rely on public transport like China.

- **International travel controls:** whilst this factor is largely linked to an employee movement issue, but there is good correlation between travel restrictions on people and friction for goods transport, especially import and export activity. The two measures tend to go in tandem, even though clearly significantly less severe on goods than on people. Screening, quarantine or even ban on non-critical goods from areas where the contagion either originated or has grown exponentially are not unheard of.

In calculating the COVID-19 AMD index, we consider the severity of the measure (i.e. no restriction, recommended measure or compulsory measure) and the geographic scope of the measure (i.e. whether it focuses on a targeted area or the whole country). No differentiation is applied beyond country level measures (e.g. state level, province level).

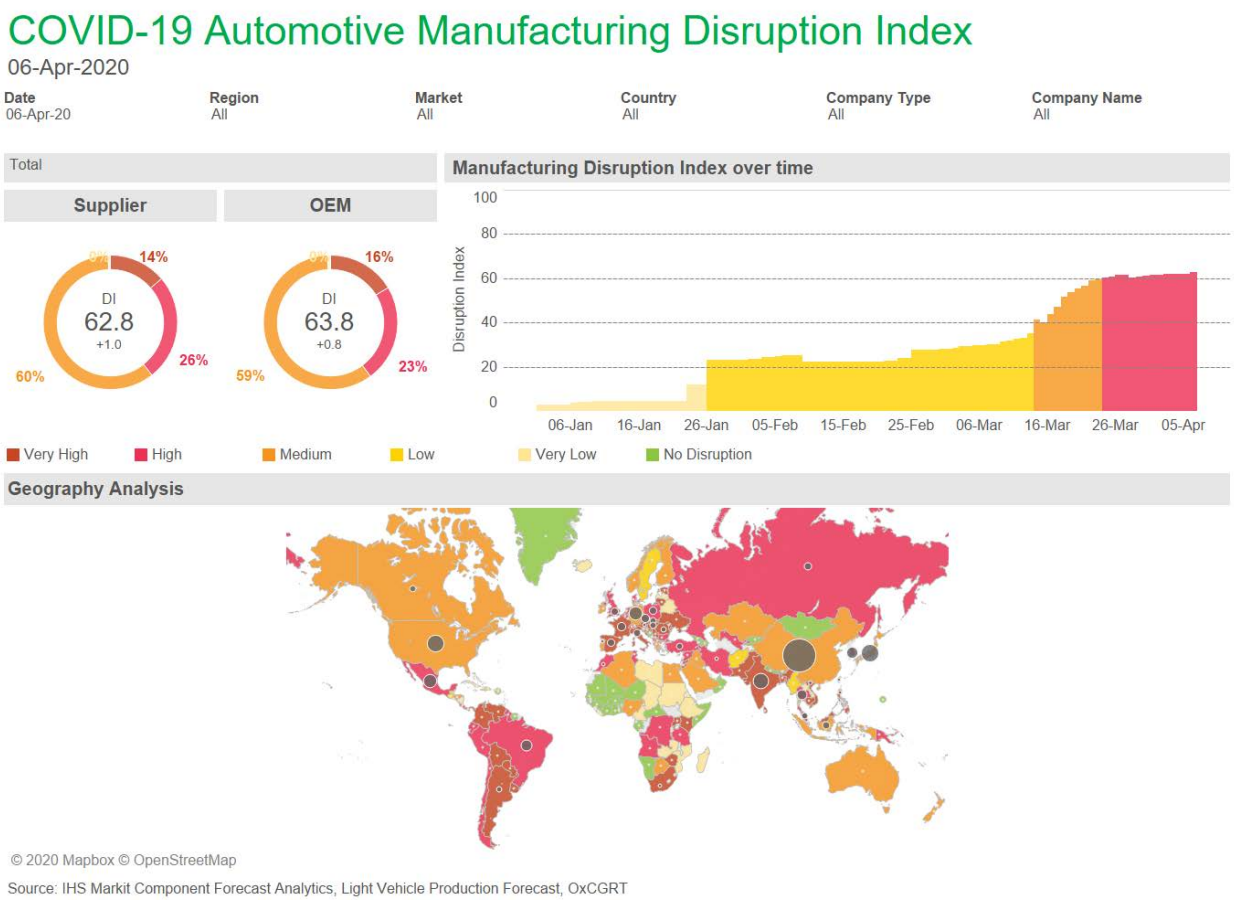
COVID-19 AMD Ratings

The index values range between 0 and 100, where 0 corresponds to no specific COVID-19 measures and 100 to a regime of complete lockdown. Values greater than 90 are typically associated with severe restrictions to automotive manufacturing.

0	20	40	60	80	100
No Disruption	**Very Low Disruption**	**Low Disruption**	**Medium Disruption**	**High Disruption**	**Very High Disruption**
No specific measures are in place	• Typically starting with **workplace screenings**, moving to quarantine from high risk regions then international travel bans	• **Localized school closures** are also common • **Workplace Closures** are **recommended** but not compulsory or can be compulsory but only in a targeted area	• **School closures** at national level are **common** • **Workplace closures are common**. • **Local transport** services are typically **being curtailed**	• **Workplace closures** at **country level** • Forms of **internal movement limitations begin**	• **Non-essential manufacturing forced to close (at AMD >90)** • **Severe limitations to internal movement** • **Public transport shutdown in localized areas**

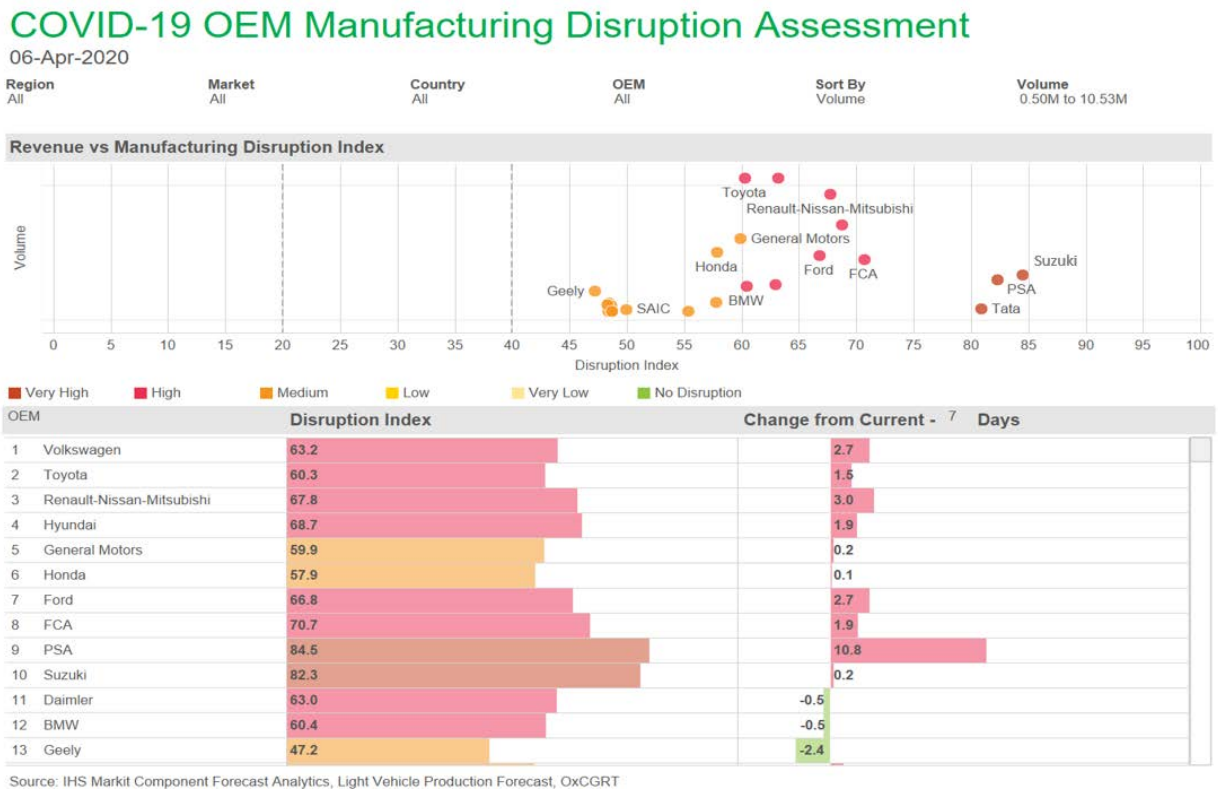
Figure 1: Ratings scale of COVID-19 Automotive Manufacturing Disruption (AMD) index

Main Findings (as of April 6th)

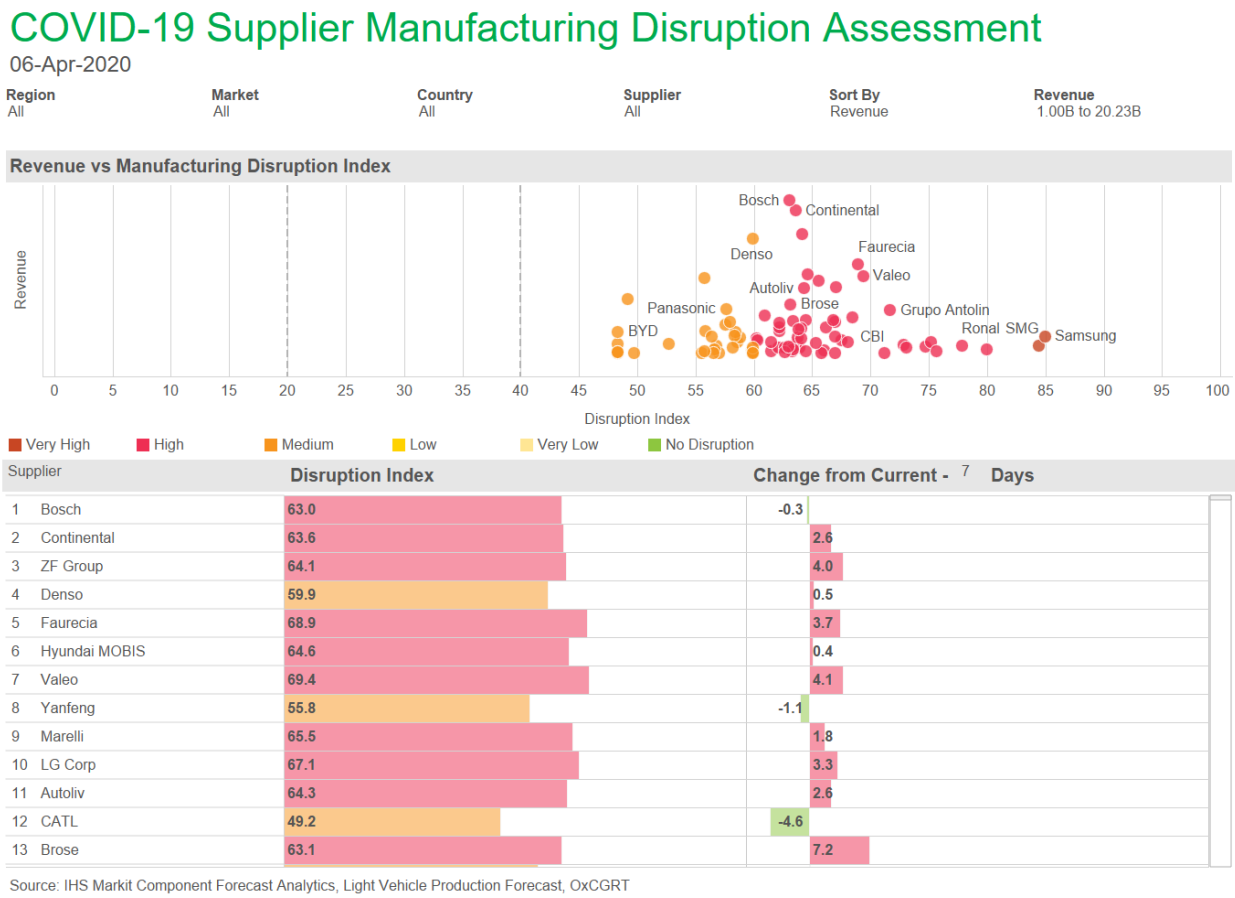


- The COVID-19 AMD index started moving into the medium disruption territory (AMD index over 40) following the imposition of lockdown measures in Italy, Spain and France in mid-March. the index rose through mid-March, up to the point where it surpassed 60 on March 24, with the imposition of a lockdown in India, a country that contributes 5.5% to the global automotive production tally.

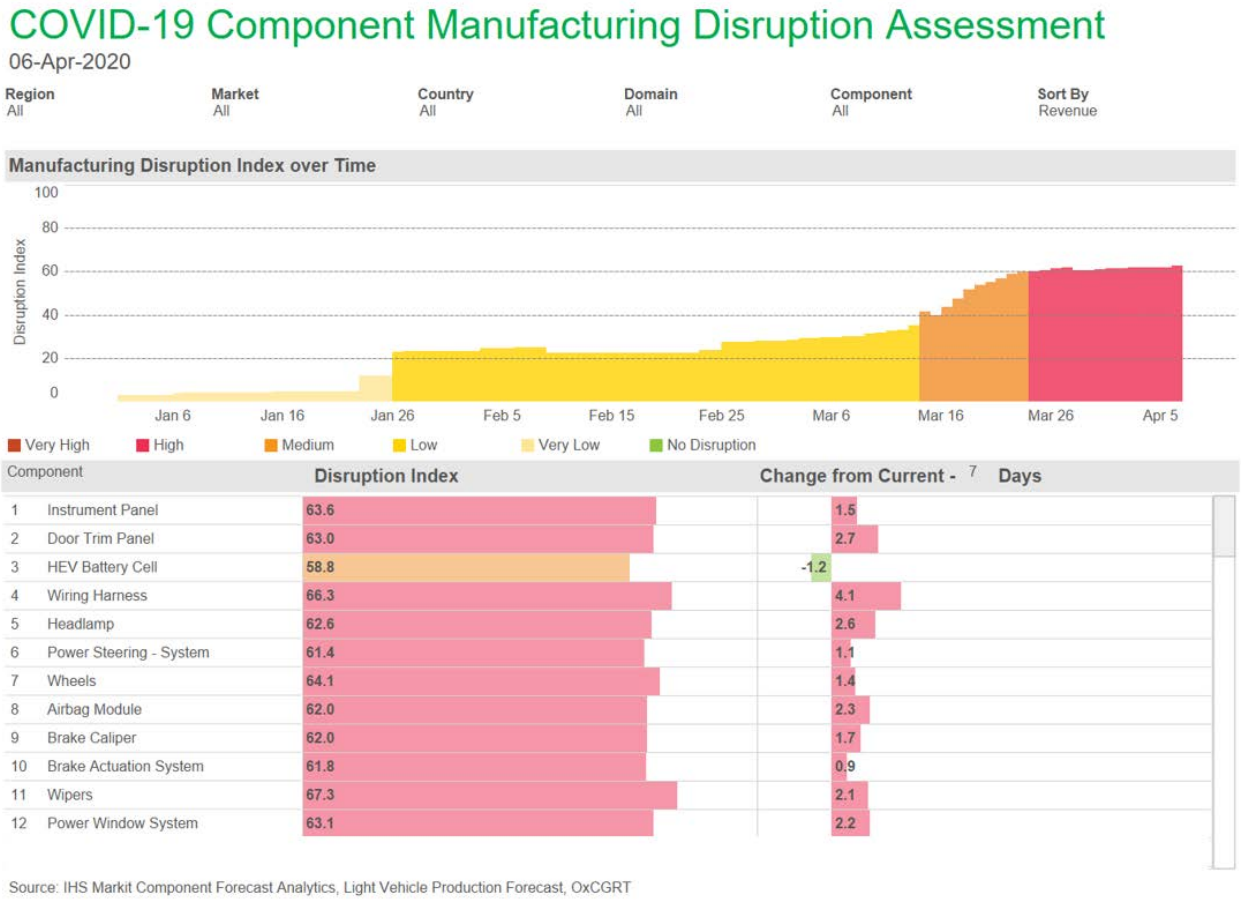
- **At an OEM level** Suzuki seems exposed to greater levels of disruption (higher COVID-19 AMD index), due to the Japanese automaker's footprint highly dependent on India and Japan (which contribute over 82% of the OEM's volumes). PSA emerges also among the more disrupted by government measures due to its high exposure to France, a country which as of April 6th was associated with a COVID-19 AMD index of 90.



- **At a supplier level**, Samsung is somewhat of an outlier due to its presence in countries like Austria and Hungary (with AMD of 85 and 87 respectively) as well as South Korea (65). SMG a supplier of a variety of exterior and interior trim components seems also equally exposed to higher disruption due to its presence in India, Spain and Hungary. Among the few suppliers that have recorded a drop of the COVID-19 AMD index is CATL, a Chinese battery manufacturer, which carries out most of its production in China, where restrictions on inter-provincial travel and even in Hubei have been lifted since mid-March, therefore resulting in a lower AMD index.



- **At a component level,** having a manufacturing footprint in East Asia (China, Japan and South Korea) currently comes with less disruption, hence it should be no surprise to see e-mobility related components (e.g. battery cells), semiconductors and electrical components benefit from a less disrupted environment. Rules on worker distancing are also less impactful for several of these components due to higher levels of automation. Battery cells are currently among the least disrupted components thanks to the heavy exposure to China, where some 46% of the global manufacturing (in revenue) originates. However, the exposure of a specific component to the changing stringency of government measures results in sudden changes of fortunes. For example up until a few days ago wiring harness production was among the least impacted commodities as a function of the fact that suppliers of such components tend to manufacture in more remote countries due to the constant search for labour cost competitive locations, in Central America, Asia as well as North Africa. Some of the countries in these regions have begun imposing more stringent measures. As of 2019 some 27% of global wiring harness was built in China, 15% in Mexico, Vietnam about 7%, followed by Morocco and Nicaragua with another 5% each. As Mexico, Vietnam and Morocco have implemented more stringent measures, wiring harness production now ranks with the 4th highest AMD index across 80+ components.



- **Will the AMD index reach 100?** Realistically not, as this would require a federal level lockdown being enforced in many countries with a federal system, for example the US where a federal lockdown could face various legal enforceability challenges, leaving room for dishomogenous policy implementation between the different states. There is however still significant scope for measures for tighter restrictions, particularly in the area of public transport restrictions and to a lesser extent in workplace restrictions or restrictions to internal movement. School closures and international travel restrictions are the most common measures across the countries with automotive manufacturing, both OEMs and suppliers. More than half of the countries surveyed have enforced measured to limit school and university activity or international travel.

Methodology

The Automotive Manufacturing Disruption (AMD) index leverages proprietary IHS Markit research and research from Oxford University (OxCGRT) on 180+ countries. A severity level and geo-scope assessment rating of the measures associated with each factor are assigned for the five main factors considered in the index. Each factor has a different weight in the Index to reflect their relative relevance to automotive manufacturing operations. The calculated index is then weighted against the Supplier revenue as measured by IHS Markit Automotive Component Forecasts (for suppliers) and Light Vehicle Production forecasts (for OEMs) on any given day from the 1st of January 2020. More information about the AMD index can be found at https://autotechinsight.ihsmarkit.com/covid-19.

For more information www.ihsmarkit.com

CUSTOMER CARE AMERICAS
T +1 800 447 2273
+1 303 858 6187 (Outside US/Canada)

CUSTOMER CARE EUROPE,
MIDDLE EAST, AFRICA
T +44 1344 328 300

CUSTOMER CARE ASIA PACIFIC
T +604 291 3600

E CustomerCare@ihsmarkit.com

About IHS Markit

IHS Markit (NYSE: INFO) is a world leader in critical information, analytics and expertise to forge solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 business and government customers, including 80 percent of the Fortune Global 500 and the world’s leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth