What's next for the global chip crisis?

Article

The perfect storm of pandemic-related consumer behavior trends, a new generation of chip-dependent 5G phones and network equipment, and companies stockpiling chips means the global semiconductor and component shortage may continue to get worse before it gets better.

Global chip problems are plaguing various industries a year into the chip shortage, with some delivery dates being pushed into 2024. The extended shortage, which we predicted, reveals that global supply chains are under duress from a number of fronts.

For chip producers, this means refocusing their efforts in 2022 to the most necessary industries, including **computers**, **smartphones**, and **cars**. For companies reliant on waning or depleted chip supplies, this means tightening production output as well as finding clever workarounds to satisfy consumer demand.

Reeling from the effects of an unprecedented scarcity

Global semiconductor chip shortages disrupted **production of everything from** iPhones **to** passenger cars **to** video game consoles. The chip shortage happened because of a perfect storm of surging demand for consumer electronics brought on by millions of people shifting to working and learning from home during the pandemic. This was exacerbated by poor planning as well as surging demand for new 5G handsets as global networks transitioned to the latest network technologies. The shortage took a heavy toll on the auto industry, which stood to lose $210 billion in revenue in 2021. Overall, the chip crunch sent entire industries into a spiral.

- Smartphone-makers were forced to delay releases and ship fewer models.
- The PC industry walked the tightrope between unprecedented demand and their chip stockpiles drying up.
- Some companies started stockpiling chips to offset their future production needs. This could lead to an inflated sense of demand and a chip glut once demand normalizes.

With no end in sight, the global chip shortage is testing companies' resilience and their ability to best meet existing product demand. In context, **the gap between ordering a chip and its delivery is at a record 22 weeks**, according to Susquehanna Financial Group. This has forced considerable scaling down of production in various industries, with some product cancellations or prioritizing more profitable products over others.

Gap Between Ordering a Chip and Delivery
(In weeks)
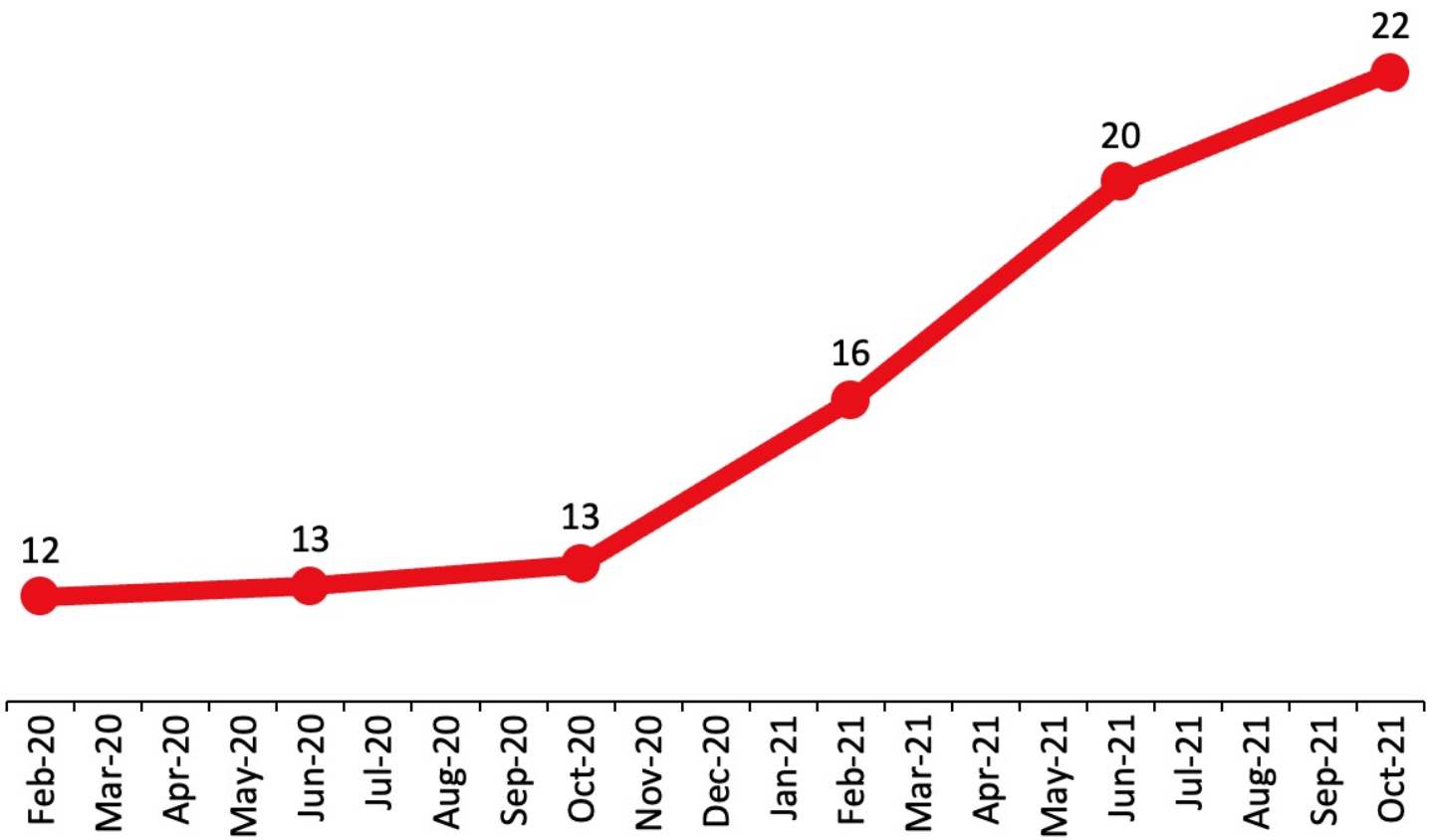
Source: Susquehanna Financial Group, 2021

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Not enough workers, not enough chips

COVID-19 surges in production hubs, storms, drought, as well as dwindling numbers of factory employees added to an already untenable situation in chip manufacturing.

A survey from IPC found that **80% of chipmakers are having a hard time finding employees** with the right training to handle the highly toxic compounds used to manufacture semiconductors, per Ars Technica. One-third of Asian chipmakers and two-thirds of both North American and European companies say it's difficult to find qualified workers.

Staffing issues are expected to continue. The "Great Resignation," or the trend of millions of workers leaving jobs during the COVID-19 pandemic, could intensify in 2022, especially given the uncertainty brought about by new coronavirus surges forcing people into prolonged lockdowns.

Semiconductor Shortage Impact: Smartphone Shipments Worldwide, 2018-2021

billions

2018	2019	2020	2021	
1.51	1.48	1.33	1.41	1.45

■ Current estimate   ■ Previous estimate
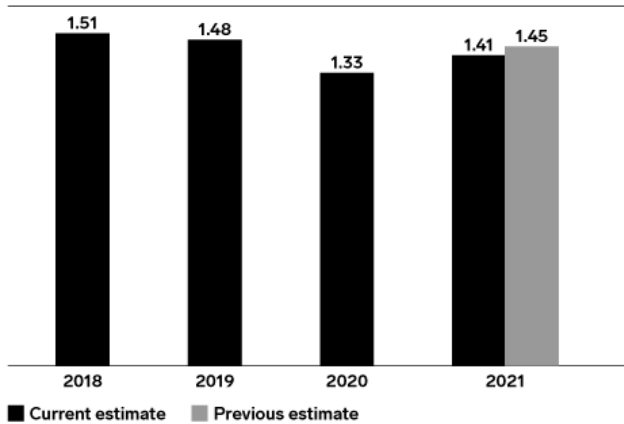
Source: Counterpoint Technology Market Research as cited in press release, Sep 30, 2021

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Innovating around the crisis

T**he automotive industry is already under duress in its efforts to** transition to EVs **in the very near future**, necessitating the need for more sophisticated chips. Now that supply of these chips is expected to be constrained for the foreseeable future, manufacturers will need to find other solutions.

Similar to how Tesla has rewritten its vehicle's software to run on older or easily accessible chips, **car manufacturers will need to go back to the drawing board and redesign vehicles so they are less reliant on high-tech components**, per Bloomberg. This may be harder than it sounds considering various car models are developed two or three years ahead of their shipping dates and designed around the available technology at the time.

Moving to a centralized design where one onboard computer can control a wider range of functions could cut the number of chips necessary to power vehicles, but this approach could end up being more expensive to produce and maintain.

Primary Focus Areas for Investment in the Next 1-2 Years According to US Auto Dealers, April 2021

% of respondents

Manufacturer-driven enhancements (including in service bays) to prepare for surge in EVs and hybrids
30%

IT/digital infrastructure, including areas like inventory management, sourcing, etc.
29%

Advertising and marketing expenses
27%

Expanding into omnichannel for new and used vehicle sales
14%

Source: J.P. Morgan, "Auto Annual Dealership Survey," April 6, 2021

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Wrap-up

The global chip and component crisis is expected to continue well into 2022 and possibly beyond. Some industries like smartphones and PCs have a diverse product range, which means that they can shift focus to more profitable segments, but this could result in fewer affordable options for price-sensitive consumers.

If inventory hoarding continues (which seems likely), it'll only intensify the imbalance between demand and supply—which could even result in overproduction. **When companies produce more than the market can take, this results in bloated inventory, increased storage costs, work stoppage, plant closings, and the loss of jobs.**

Innovation and supply chain management will be key as companies try to navigate the uncharted waters of a persistent and widespread chip shortage while new plants and chip fabs are breaking ground to support the insatiable demand for computer chips.