

## *Decades of Manufacturing Decline and Outsourcing Left U.S. Supply Chains Vulnerable to Disruption*

The coronavirus pandemic and subsequent economic crisis have highlighted how reliant the U.S. economy is on the web of global supply chains for manufactured goods. The [decades-long decline of U.S. manufacturing](#) meant that disruptions to the global market for semiconductors and other critical industrial goods led to acute shortages and higher prices for American families.

- The decision by big corporations to offshore manufacturing production instead of investing in domestic manufacturing [contributed](#) to significant supply chain disruption during the coronavirus pandemic.
- The U.S. lost over a quarter of manufacturing jobs since 2000 and production of critical inputs like [semiconductors](#) has increasingly moved overseas
- The transformation of American manufacturing has reduced [economic opportunity](#) for working families, especially for workers without a college degree

Countering these damaging trends will require historic investments in American manufacturing, infrastructure and innovation.

### *Disinvestment in American-made products contributed to the severe supply chain disruptions during the coronavirus pandemic*

Current supply chain issues were caused by the coronavirus pandemic and the resulting economic fallout. However, these effects were magnified by the [long-running decline](#) in domestic manufacturing capacity that could have otherwise supplemented international production. For decades, big corporations have been using “just-in-time” supply chains to [maximize their profits](#) and ensure big payouts for their executives and shareholders, instead of investing in workers, resiliency and innovation. The rise of corporate concentration in recent years has also been tied to [decreased business investment](#) because companies in concentrated markets have fewer incentives to invest. The Trump administration’s attempt to spark business investment via the Tax Cuts and Jobs Act was unsuccessful both in terms of its effect on [overall](#) investment or its impact on [manufacturing](#) growth in particular.

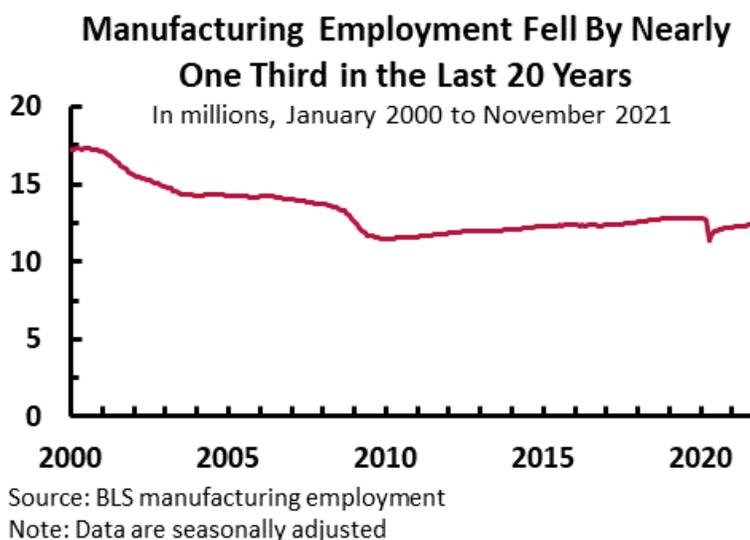
The combination of a short-term mindset paired with lagging business investment in the U.S. meant that manufacturing supply chains were [ill-prepared](#) to weather the large demand and supply shocks caused by the coronavirus pandemic. This crisis was particularly acute in the market for semiconductors, which have been increasingly manufactured overseas in recent years. Coronavirus outbreaks have led to factory shutdowns in countries like [Taiwan](#) and [Malaysia](#) that play an outsized role in this global industry. As of 2019, the U.S. accounted for only [12%](#) of global semiconductor manufacturing, down from 37% in the mid-1990s. This decline in production means that global disruptions significantly contribute to domestic shortages and

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higher costs. While the pandemic is a particularly extreme example of such a disruption, [one analysis](#) found that supply chain shocks lasting at least a month occur about once every 4 years.

### *The U.S. has witnessed a decades-long decline in manufacturing jobs*

Manufacturing has long been a core strength of the American economy, but increasing global competition has threatened many high-quality manufacturing jobs. Since January 2000, the United States has lost over a quarter of all domestic manufacturing jobs, a decline of over 4.7 million. In contrast, from 1965 through the end of the 1990s, manufacturing employment [remained relatively stable](#) at around 17 million jobs. This decline has many causes, including [import competition](#) from abroad, an increase in how much technology is involved in [production processes](#) and decisions by corporations to shift the burden of [retraining](#) to employees. For example, some estimates find [increased competition from China](#) led to approximately 985,000 American manufacturing jobs being lost between 1991 and 2011. Contrary to common media coverage, a [range of research](#) shows that automation has not significantly contributed to the last 20 years of manufacturing job losses.



### *The decline of manufacturing closed off economic opportunity for many non-college educated workers, while other issues have limited opportunities in manufacturing for women and people of color*

As the manufacturing sector has shrunk, so has access to economic security for many working-class families. Jobs that do not require a college degree have increasingly [shifted to the service industry](#), where the pay is lower, hours are more uncertain and collective bargaining is much weaker. This transition has most significantly impacted men without college degrees, as [more than two-thirds](#) of manufacturing jobs were and continue to be held by men. The loss of these high-quality jobs was a major driver in the median income of working-class men [falling](#) by 20% between 1990 and 2013. While the quality of service industry jobs must also be improved in order to provide a path to economic security, investing in domestic manufacturing jobs can preserve and create high-quality jobs for the next generations of workers.

Even before the pandemic, some manufacturing jobs were less attractive to many workers given a lack of workplace diversity and work schedules that made it difficult to balance care

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responsibilities. Recently, a full quarter of female manufacturing workers reported they are [considering](#) leaving the industry. Diversity, equity and inclusion (DEI) initiatives in manufacturing have traditionally focused on [gender](#), but the manufacturing workforce is also [largely white](#), potentially alienating many workers of color from the industry. Further progress is needed to ensure that qualified workers from underrepresented backgrounds are not locked out of the available high-quality manufacturing jobs. [One industry report](#) finds that, to diversify their workforces, manufacturers should go beyond existing DEI-oriented hiring and training programs to include scheduling changes, shifts in company culture and more proactive outreach.

***Automation has fundamentally changed manufacturing, leading to a significant training gap that could cost the industry \$1 trillion over the next decade***

While automation's role in manufacturing job losses is debated, it has significantly shifted the composition of those jobs. While new manufacturing workers could at one time expect to be trained on the job, many companies [now expect](#) most new employees to have experience in areas such as robotics, computer science or engineering. As a result, the share of manufacturing workers with an associate's or bachelor's degree grew from 22% in 1991 to 40% in 2019. While some of this shift reflects differences in required skills, it also reflects "[opportunistic upskilling](#)" where companies artificially increase posted job requirements to screen out certain workers and reduce required job training. In addition to limiting economic opportunity for workers without college degrees, this [training gap](#) presents a serious challenge for many manufacturing firms. By [one estimate](#), 2.1 million manufacturing jobs are expected to be unfilled by 2030, costing the United States as much as \$1 trillion over the next decade.

Existing workforce development programs have sought to narrow the training gap, but their efforts have largely been insufficient. Before 1980, many manufacturing companies would organize and pay for their employees' [training](#), with the expectation that those employees would stay with them for decades. However, decades of [significant economic pressure](#) from abroad and a [cultural shift](#) away from corporate social responsibility towards [shareholder primacy](#) starting under President Reagan led many companies to instead cut workforce development programs and [increase CEO salaries](#). Meanwhile, [weakened labor laws](#) and many employers' increased hostility towards unions decreased union membership rates significantly (the share of unionized manufacturing workers fell by over two-thirds to 8.5% from 1983 to 2020), removing key job protections and weakening union-sponsored apprenticeship and training programs. Federally funded workforce development such as the [Registered Apprenticeship Program](#) and training through [Manufacturing USA](#) have proven effective but [insufficient in scale](#) to replace the missing private-sector training programs.

***The U.S. has not done enough to protect and grow domestic innovation, which limits the expansion of domestic advanced manufacturing***

The United States had the [best innovation ecosystem](#) in the world during the post-war period, but has lost some of that footing in recent years. Competition from China and other countries has threatened American growth in this space and revealed the ecosystem's vulnerabilities. This is especially visible in advanced manufacturing, where other countries have built new manufacturing sectors based on American research discoveries. For example, though U.S. scientists [initially developed](#) photovoltaic technology for solar panels, subsidies from the Chinese government later enabled [Chinese manufacturers](#) to dominate solar panel production.

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One cause of this issue is the so-called “[valley of death](#)”. While universities and national labs produce cutting-edge research, and companies are extremely successful at commercializing proven technologies, the innovation process lacks a middle step focused on scaling and implementing new discoveries. In certain sectors, federal agencies such as the Defense Advanced Research Projects Agency [fill this gap](#) by funding prototypes of promising new breakthrough technologies and creating a community of researchers, companies and other key players that can implement and scale the new innovation. However, such agencies are limited in scope and receive [fewer resources](#) compared to other parts of the innovation ecosystem.

In contrast, many other countries provide subsidies and other supports for new industries, which can lead to booms in domestic manufacturing. Taiwan, home to the [world’s largest](#) semiconductor manufacturer, [created](#) a world-class industry through intentional government funding for new factories and companies. The Dutch company ASML Holding N.V., which is the world-leader in the advanced lithography technology necessary for the most-advanced chip manufacturing, was kept afloat by [government subsidies](#) before the technology was [commercially viable](#).

***Investments in infrastructure, domestic manufacturing of green technologies and innovation are needed to reinvigorate American manufacturing***

Targeted investments in domestic manufacturing and innovation would help American industries remain competitive, preserve high-quality jobs and spur economic growth. The bipartisan [U.S. Innovation and Competition Act](#) (USICA), which passed the Senate, and the [America COMPETES Act](#) currently in the House, both include funding and policy changes that would reduce American manufacturers’ dependence on fragile global supply chains. These bills can protect consumers from costly shortages of critical goods such as semiconductors by directly supporting both new domestic manufacturing facilities and efforts to improve supply-chain resiliency. Additionally, the bill would boost funding for proven programs that provide technical assistance to help small to mid-sized domestic manufacturers stay competitive.

The bipartisan [Infrastructure Investment and Jobs Act](#) improves American economic efficiency and competitiveness by investing in the physical infrastructure fundamental for American businesses to thrive, especially in key points along supply chains such as ports. By strengthening infrastructure across the country, the law enables trade to function more smoothly and reduces costs for businesses.

At the same time, the House-passed [Build Back Better Act](#) would invest in human infrastructure by expanding job training programs, including manufacturing apprenticeships. These programs create a pipeline to high-paying union jobs that do not require a college degree and help American manufacturing firms find the employees they need. Additionally, a range of Build Back Better [tax credits](#) would support domestic clean energy manufacturing. To support unionization and better quality jobs, parts of the [Protecting the Right to Organize Act](#) contained in the House version of Build Back Better would support better manufacturing job quality by [cracking down](#) on union busting.