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# We Need to Prepare for the 5G Jobs Apocalypse

*By Sascha Segan February 21, 2017 12:32PM EST February 21, 2017*

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5G will create millions of jobs but destroy millions more. We need a plan.

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My taxi driver in San Diego had a plan. He was moving to Laredo to get back into long-distance trucking. He'd work hard for 10 years, save a couple of hundred grand, and retire to Mexico. I did the math: that put him around 2028. He might just make it before all [the](#)

[trucking jobs go away.](#)



At Qualcomm last week, Cristiano Amon, president of Qualcomm CDMA Technologies, extolled the virtues of the upcoming "5G economy," painting a picture of autonomous vehicles, smart cities, and ubiquitous augmented and virtual reality.

"It's going to be as significant as the change caused by electricity and automobiles. There's a number of industries that can change: manufacturing first, information and communications second, and wholesale and retail is number three," he said.

Retail, for example, will be transformed by augmented and virtual reality, removing the need to try things on—or try them out—in person.

"There's always going to be a transformation of business models," Amon said. "It's difficult for us to predict every single business model that will be on top of 5G." But according to an IHS study, high-speed, low-latency ubiquitous networks will create \$12 trillion of related goods and services by 2035, he said.

## **5G the Job Killer**

All of those new business models, to me, signal old ones that are going away. Autonomous vehicles will eliminate truck and taxi drivers. The Bureau of Labor Statistics counts 1.8 million trucking jobs, at \$40,000 per year. Gone. Taxi drivers: 233,700 jobs at \$23,510 per year, gone. That's just from autonomous vehicles.

[Amazon's Go](#) grocery-store concept promises cashier-less stores. That's 3.4 million jobs gone, probably offset by a smaller increase in

security guards. And if we're shopping by augmented and virtual reality, we may not even need those guards, as storefronts go dark across the nation.

Bill Gates says warehouses are going to get a big hit from automation in the near future; that's up to 200,000 "freight, stock and material movers" out of work, according to BLS, and those folks probably don't have the education to become app developers.

Even before [5G](#) takes hold, we're going to see bots replace many of the 2.5 million customer service representatives in this country. Those jobs don't require much education, but more highly educated workforces will get hit, too.

Telemedicine and VR tele-education will allow insurance companies and educational firms to reap greater profits by cutting staff. We'll still need doctors and teachers, but we'll have fewer as new technology lets each worker serve more people. There are maybe 3 million teachers, 1.5 million college professors, and probably about a million doctors and physicians' assistants out there. These jobs can be replaced by lower-skilled, lower-paid machine handlers.

Automation-driven increases in productivity have already devastated manufacturing jobs. According to a report from Ball State University in Indiana, "Almost 88 percent of job losses in manufacturing in recent years can be attributable to productivity growth ... Had we kept 2000-levels of productivity and applied them to 2010-levels of production, we would have required 20.9 million manufacturing workers. Instead, we employed only 12.1 million," the study says.

So what does a society thrown out of work by robots look like? If you look at our [former steel towns](#), it's depressed, drug-addicted,

and begging for a return to the past. But greater efficiency means those past jobs will never return. According to the American [Iron and Steel Institute](#), it takes about a fifth of the manpower to produce a ton of steel now as compared to the early 1980s. Those kinds of automation-driven job cuts are now [hitting the oil patch](#).

Amon specifically called out Uber, Lyft, Postmates, and other gig-economy startups as major new job centers enabled by 4G. He's right, but those are cautionary tales as much as anything. Uber and Lyft opt out of the employer-funded healthcare system at a time when our society can't agree on how to replace the employer-funded health care system. Their drivers currently rely on [ACA-based marketplaces](#), which the current Congress has pledged to eradicate.

I'm reminded of several Uber drivers I've spoken to who have described long, hard days of work at \$9-12 an hour after expenses. ("After expenses" is key here.) That matches independent analyses of Uber drivers profiting about [\\$24,000 after expenses](#), which doesn't pay the rent in high-property-value metro areas. Drivers aren't flocking to Uber because it's great work. They're flocking to it because it's any work, which is better than no work.

The consumer-capitalist argument for technology-driven productivity is that it raises everyone's living standards by lowering the price of goods. (The same argument goes for low-wage immigration, or for low wages in general; you can pick your bogeyman.) But low-priced Roku boxes and [Chromebooks](#) don't help if the jobs available to many people pay so poorly that they can't afford the basic needs of food, housing, healthcare, and education. Or if jobs at their skill level aren't available at all.

That is, unless tech steps up.

## **Tech Needs to Create Not Just Jobs, But Workers**

5G will create jobs, of course. There will be millions of jobs building and maintaining the networks and thousands of jobs building and maintaining the machines. There will be occupations we've never thought of, creating content and applications we can't imagine.

Most will require skills, some of which haven't been invented yet.

To use an example from my own life, I'm working on a series of data-based stories about broadband use. The data-collection engines and reporting tools for this story didn't exist 10 years ago. Data scientists and journalists are a growing field, mixing storytelling, programming, and statistics.

Qualcomm's Ryan Gorostiza said the company expects that 5G will create 22 million jobs worldwide just in building and maintaining the networks. Many of those will be outside the US, so we should expect far fewer jobs than that, but there will be jobs. What's the tech industry doing to make sure that soon-to-be-former taxi drivers and retail cashiers know how to do those jobs when they don't have the time or money to go back to school?

"We've seen these technological revolutions many times, and they require a shift in the skills across the workforce," Gorostiza said.

"5G could make the reskilling easier, because it provides access."

Too much of tech's education energy goes into the pipeline. Girls Who Code can't help 40-Year-Old Women Who Were Laid Off And Need New Skills While Also Supporting Their Families. As a society, we're very, very bad at imparting new skills to existing workers. How can tech make sure that workers have the new skills

needed? Do companies need to start schools? Do they need to band together and offer blanket training for potential workers, not just for existing ones? How do they make sure those workers don't starve while they learn? The success of [German companies may show us some solutions](#) for re-skilling, if our firms are willing to invest in apprenticeships that include living expenses for the workers while they learn.

There's also the problem of the folks who just won't change. The CBC reported on how men in declining industries [don't want to take](#) "female-typed" jobs in growing industries, like healthcare. Step away from the gender politics here and you see that there's a certain class of men who really won't like it when there are no culturally dignified, mostly physical jobs on offer. Before you cast them off, remember that they vote, and they vote angry.

We're seeing one outcome of those angry voters right now. For about a decade, the tech industry has leaned on skilled immigration to make up for the US not producing the skills the industry needs. That's about to get cut off by those angry voters, who are saying, "if we don't get jobs, no one does." Unfortunately, their rage isn't quite coherent enough to demand not just jobs, but skills. But I'll be heartened if this shock wakes the tech world up to the fact that it needs to take a more active role in giving US workers the skills they need to succeed in the future.

Bill Gates is worried about this. In an interview with Quartz, he proposes a ["robot tax"](#) to fund re-skilling and improve the income of very low-income, human-centered industries like elderly home care, which are trapped in a cycle where there's just very little money to go around. Fellow billionaire [Mark Cuban](#) agrees. Relying on government to solve problems created by the tech industry is just

passing the buck, though. It's asking someone else to clean up your mess. That's not cool. Tech is creating these problems; tech needs to make a good-faith effort to solve them.

## Gibson vs. Star Trek

If we reach a new jobs equilibrium in an autonomous, 5G world, will it be well below full employment? Or will the jobs available primarily be so low wage that they can't pay for basic living expenses? In that case, the basic underpinning of our society—that you work a job for a wage to survive—becomes broken. Then the tech industry may need to push radical solutions like universal basic income, so Americans don't starve when most of the jobs are done by robots.

What kind of culture will 5G create, under-employed and over-connected? Will it be like the dystopias of Ernest Cline's *Ready Player One* and William Gibson's *The Peripheral*, where we retreat into shiny virtual worlds because our physical realm crumbles with neglect and depression? Will it be Nancy Kress's *Beggars in Spain*, divided into productive "donkeys" and a mass of thuggish "livers" fed bread and circuses for their votes? Or will it be the generally pleasant, post-scarcity world of the 2100s in *Star Trek*?

(Remember, though, that pleasant world was preceded by 50 years of chaos and war.)

The technology industry is creating the problem. It has the potential answers. It has the power to change the world. The clock is ticking. We have ten years.