

# The Rise of Job-Killing Automation? Not So Fast

By Thomas H. Davenport

You may have seen predictions in the media that your job will be replaced in your lifetime by a smart machine. Perhaps your occupation is among the 47% of U.S. [jobs deemed “highly automatable”](#) by researchers at none other than Oxford University’s Oxford Martin School. Or perhaps you have read [Gartner](#) Inc. research on automation, which suggests either that [“one in three jobs will be taken](#) by software or robots by 2025” or even [more ominously](#) that, by 2030, “as much as 90% of jobs are at risk of replacement.” Perhaps the only jobs left will be those held by Oxford researchers and Gartner analysts.

You may detect a note of skepticism from me about these percentages and proportions of jobs to be lost. Yes, there is reason for concern about automation and jobs. Yes, there will probably be some job losses. But no one really knows how many or when.



Humanoid robots work side by side with employees in the assembly line at a factory of Glory Ltd., a manufacturer of automatic change dispensers, in Kazo, north of Tokyo, Japan, in this July 1, 2015 photo. Japanese firms are spending on robotics and automation, responding to Premier Shinzo Abe’s efforts to stimulate the economy and end two decades of stagnation and deflation.

Reuters/Issei Kato

Gartner’s figure of 90% job replacement was put forth as part of a scenario planning exercise, says Tom Austin, research fellow, in an interview. And Carl Benedikt Frey, a co-author of the Oxford study, notes in an email, “We do not make any predictions about job losses, but examine the technological feasibility of a job being automated. Many of these

jobs will no doubt be automated, but it is difficult to assess the impact of new technologies on labor market outcomes.”

One key reason for the uncertainty is that as new technological capabilities develop, only certain aspects of jobs are replaced by technology. Substitution of smart machines for human labor works at the task level rather than at the job level. Technology takes over some things that humans do in a particular job, but not others.

Structured, codified, routine, predictable tasks move toward computers; other kinds of tasks that involve emotions, creativity and a human interface stay with humans.

Many jobs have some of both types of tasks. The result of automation may well be that fewer people are necessary to perform a particular job, but the entire job category won't disappear.

Because this is the way automation creeps in, it's virtually impossible to make accurate broad pronouncements about how many jobs will be replaced by technology over time. The “47%” study from Oxford's Mr. Frey and Michael A. Osborne is perhaps the most rigorous analysis of this topic, but it's still unlikely to be an accurate figure. Since it's quite rare for entire jobs to be replaced by machines, it's very difficult to know just how many jobs will be sufficiently chipped away at so as to disappear altogether. The authors of that Oxford study classified entire jobs (admittedly based on the tasks they perform) as “automatable” or “not automatable,” and I don't think it's that simple or binary.

Take, for example, the job of a lawyer (for what it's worth, classified as “low risk for automation” in the Oxford study). As I have written here [previously](#), significant chunks of the job, including document discovery, contract provision extraction, and the generation of standard wills and trusts, are being carved away by increasingly smart machines. However, the jobs of lawyers have hardly gone away. There are 1.3 million of them in the United States, and the number grows every year—albeit more slowly than in the past. Many of the tasks that lawyers perform—deciding what areas of the law to address in a case, reassuring clients, selling work—would be difficult to perform by computer. Even though new legal automation capabilities will undoubtedly emerge over the next few years, we'll see human lawyers doing many tasks in this profession for a long time. Some jobs will probably be lost and the profession will grow slowly if at all, but there will still be a lot of (perhaps too many) lawyers.

The same is true with doctors. Some medical specialties, such as radiology and pathology, already have some automatable tasks. Breast cancer screening in radiology and Pap smear analysis in pathology could be done by machines with high levels of accuracy. But even if these tasks are taken over by smart machines (a highly questionable assumption, since the machines that do them have been available for a while), radiologists and pathologists do many other things. Perhaps they will even do new things over time. And the specific capabilities of technology are very difficult to forecast. So hazarding a guess about how many radiologists or pathologists we will see in 2025 (or whenever) is a hazardous undertaking.

Financial advisors, accountants, marketers, asset managers, and many other types of jobs are in the same boat.

What does this mean for people in these jobs, or for that matter, anyone with a job today? Well, if you want to preserve your own source of employment, you might think about two alternative strategies.

One is to familiarize yourself with all the things that computers do in your line of work, so that you can become a close collaborator with them. The other approach is to focus on those tasks that are unlikely to be performed by computers anytime soon. If machines eat away part of your job, the part that's left will be the part you are particularly good at.

For example, if you're a financial advisor, you could become intimately familiar with how "robo-advisors" work, and become a developer, modifier, or implementer of such systems. Or you might focus a little less on coming up with the ideal financial portfolio for your clients—because computers can do that really well—and a little more on persuading your clients to act on good advice.

I am not saying that you should wear a T-shirt saying "Keep Calm and Forget Watson." Automation and cognitive technologies are real and will be very influential in the job market. But predictions of loss numbers for individual jobs in 2025 are about as accurate as predictions of individual stock prices in 2025. Be concerned and be prepared, but don't believe everything you read.