

Rethink immigration policy for STEM doctorates

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A streamlined process for awarding green cards to international STEM doctoral students graduating from U.S. universities could benefit American innovation and competitiveness, including leveling the field for startups eager to attract such highly skilled workers, according to a

new study by researchers from Cornell University and the University of California, San Diego.

The new Biden administration backs policy reform aimed at achieving that end, which was part of bipartisan legislation proposed more than a decade ago. But progress has been stalled by broader concerns about visas—particularly the temporary H-1B, commonly used to hire entry-level guest IT workers—that critics say displace Americans with lower-paid foreign labor and should be scaled back.

The new study presents evidence that the same concerns shouldn't apply to foreign-born STEM doctorates from U.S. universities, said Michael Roach, assistant professor in the Charles H. Dyson School of Applied Economics and Management, in the Cornell SC Johnson College of Business.

"Given that these doctorates often possess highly specialized skills and training at the leading edge of research in areas like vaccines, artificial intelligence, robotics and space," Roach said, "blanket [visa](#) restrictions could significantly impact U.S. firms' ability to hire and retain the best and brightest scientists."

Roach is the co-author with John Skrentny, professor of sociology at UCSD, of "Rethinking Immigration Policies for STEM Doctorates," to be published Jan. 22 in the journal *Science*.

The scholars surveyed a cohort of nearly 1,600 American and foreign-born STEM doctorates from U.S. research universities about their first industry research and development jobs, including their qualifications, starting salaries, hours worked and visa paths, where applicable.

The researchers found a majority of the international doctorates followed a complex and inefficient path toward permanent residency

that involved multiple steps and visas. After their student visa, two-thirds were sponsored in their first job for an H-1B guest worker visa, which are offered annually by lottery, valid for three years and renewable for three more.

The percentages were highest among STEM doctorates from India and China—78% and 67%, respectively—who because of per-country quotas face waits for [green cards](#) of as long as five to 10 years.

Employers didn't use the temporary H-1B visas as a means to give employees extended trial periods, Roach and Skrentny found. Rather, they appeared to be used to buy time between graduation—and working on their student visa through the Optional Practical Training (OPT) program—and a green card, with employers transitioning within two or three years, on average, to sponsorships for permanent residency.

According to the researchers, doctorates pass through the H-1B on their way to a green card not because it is legally required, but rather because delays and uncertainties in the U.S. visa system necessitate this step as a bridge to working in the U.S. permanently.

Those delays and uncertainties have given Big Tech firms such as Amazon, Google and Microsoft a recruiting advantage over startups, for whom sponsoring foreign-born STEM doctorates may be too costly or burdensome. In addition, the study noted, leading U.S. firms have opened R&D centers in countries with immigration policies designed to attract highly skilled workers, such as Canada.

"Rather than rolling out a red carpet for these doctorates, the visa system necessitates a wait at a crowded front door, and multiple steps, with no guarantee they can get in," said Skrentny. "These individuals have rare and valuable skills, and they can get jobs in almost any country."

In previous research, Roach and Skrentny found that international STEM doctorates from U.S. universities were more interested than their American counterparts in working for startups, but less than half as likely to accept startup job offers, largely due to visa concerns.

A relatively simple solution, the researchers said—as proposed in the Stopping Trained in American Ph.D.s from Leaving the Economy (STAPLE) Act in 2009, and again now by the Biden administration—would be to give foreign-born STEM doctorates green cards upon graduation through existing employment-based visa categories while also exempting them from national caps.

Roach and Skrentny found a highly competitive market for STEM doctorates, who, according to data from the U.S. Bureau of Labor Statistics, had a pre-COVID 19 unemployment rate of roughly 1% and a median annual salary of \$100,000. The researchers found in their own survey data that American and foreign-born doctorates reported no significant differences in compensation or hours worked early in their industry R&D careers, suggesting that U.S. workers were not being negatively impacted and foreign workers weren't being exploited—two significant concerns relating to H-1B visas.

Such detailed data about the visa paths of U.S. university STEM doctorates hasn't previously been available to inform policymakers, the researchers said. They said the data suggests immigration policy should treat STEM doctorates from U.S. universities differently, given their relatively small numbers—roughly 3,000 to 5,000 per year—but disproportionate contributions to innovation.

"We provide new evidence that, we think, dispels many of the concerns that have hindered past efforts at visa reforms for high-[skilled workers](#)," Roach said. "We are optimistic that this study might provide much needed evidence in support of visa changes."

More information: M. Roach at Cornell University in Ithaca, NY et al., "Rethinking immigration policies for STEM doctorates," *Science* (2020). [science.sciencemag.org/cgi/doi ... 1126/science.abe7151](https://science.sciencemag.org/cgi/doi/10.1126/science.abe7151)

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