

Paths to Economic Opportunity

The United States has been plagued by growing economic inequality and declining social mobility for the past two decades. Both economic growth and democratic institutions are at risk. Education was once the foundation of American economic mobility, but barriers to access now threaten to make education an engine of inequality. These problems have added to the challenges faced by marginalized groups including people of color and women.

Employers and policymakers, fully aware of these disturbing trends, are investing in strategies to improve the economic mobility of low-skill and low-credential workers. These efforts require a thorough understanding of the school and workplace factors that can propel these workers onto an upward trajectory. Unfortunately, traditional research tools cannot help to fashion effective policies for either educational achievement or career paths.

We can help. Our *Paths to Economic Opportunity* (PEO) project is developing advanced data science tools to construct educational and career paths that provide useful new perspectives on important policy questions on economic opportunity and diversity.

PEO t has already generated insights into how employers should structure their hiring and their tuition plans to promote economic opportunity. We will be disseminating these insights to the employer community we've built up over the last seven years through Northwestern's *Talent Analytics Leadership Roundtable & Economic Opportunity Summit* (TALREOS).

1. DATA SCIENCE METHODS TO UNDERSTAND CAREER PATHS

Some entry level jobs are the first rung on the ladder of success while others lead nowhere. We understand little about job ladders because analytic tools currently used have very limited power. This is a real shame – many insights remain hidden in new sources of job history data from resumes and online profiles.

PEO uses advanced machine learning to make a major leap forward by using job history data to create the first ever rigorous analysis of job ladders. Our approach allows us to examine not just where individuals are working today but how they move from job to job over the course of their lives. The PEO job ladders, based on empirical analysis of millions of real resumes, allow us to see economy-wide patterns that were hidden in earlier studies of specific types of jobs. Previous works look at single jobs or at most the transition to single jobs. In contrast, *we can examine entire pathways*.

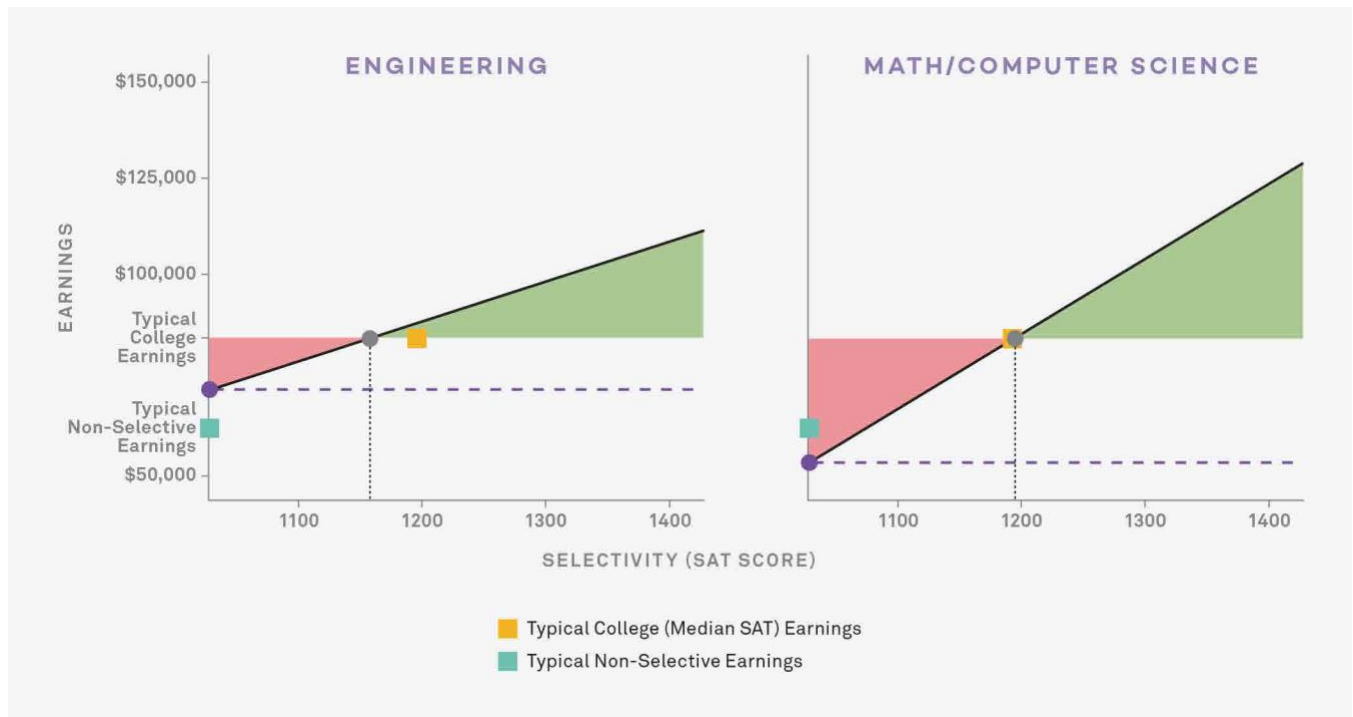
In addition, we are currently expanding the PEO job ladder tools to examine issues of diversity that are of crucial importance for the society-wide conversation on race, ethnicity, and class. This has not been

possible in earlier resume studies, since job histories don't contain demographic information. We have produced a new and innovative tool that allows us to combine job histories with other data to fill this gap.

2. LEARNING FROM CAREER PATH TOOLS

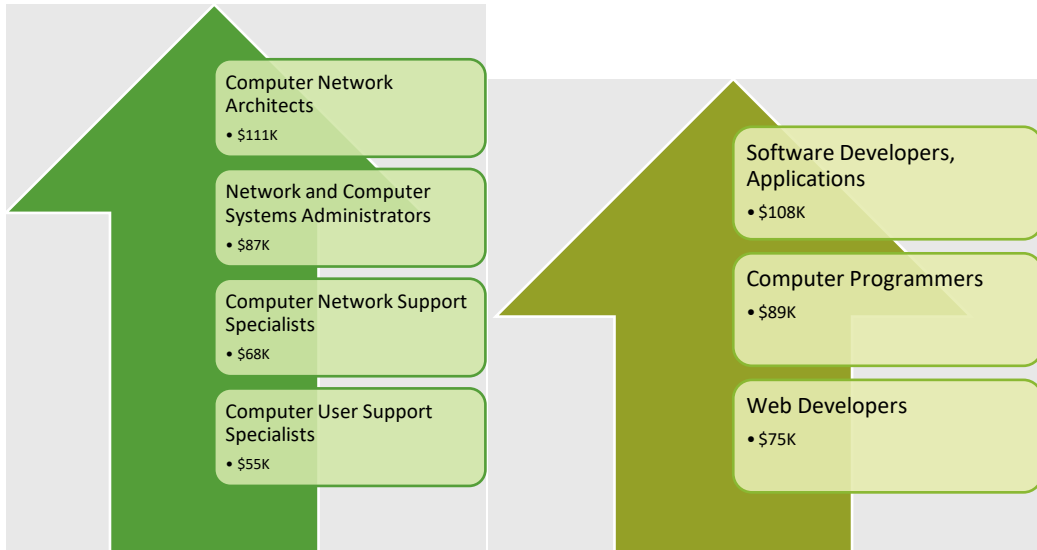
Job ladders and educational paths illuminate many high-impact questions about economic opportunity.

Elite Schools. Elite schools are generally thought to be exacerbating inequality because their graduates have high average lifetime earnings and are overwhelmingly drawn from affluent families. Our first project, funded in part by Microsoft, uses job ladders combined with educational paths to examine how choosing the right major can increase the value of a BA from a less selective school. Not surprisingly, earnings vary greatly by major and school selectivity, but in ways that are sometimes unexpected and that are different at less and more selective schools. Engineering and Computer Science majors seem like they would have similar earnings potential, but the study finds that at less selective schools the earnings of Engineering majors are much higher than average while the earnings of Computer Science majors are lower than average. As schools get more selective, the earnings of Computer Science majors increase at a higher rate than those of Engineering majors. At the most selective schools, graduates who majored in Computer Science earn more. (See diagram.) Thus, an Engineering major is much less risky than Computer Science for students who don't have the opportunity to attend a more selective school.



Tech Jobs. Another set of insights come from PEO's job ladders. It's widely understood that tech jobs are an outstanding path to upward mobility, and a number of initiatives seek to give workers the skills they need to enter these jobs. These programs typically take one of two approaches. Some train workers for a specific job. Others provide generalist training for a range of tech jobs. Our career ladders suggest

that there is an *intermediate approach that is more cost-effective* than either of these in providing mobility. We find that career trajectories in software and IT cluster in predictable ways, of which two are illustrated below.



Once people enter one ladder, our analysis shows they are unlikely to leave. A well-designed training program will prepare students for an entire ladder *but not more*. Training for just one job may leave students stuck in an entry level position. But training that is too broad and prepares students for jobs on both ladders is wasteful in both money and student time. Our job ladder insights show how efficiently to prepare students for success.

Opportunity Jobs. We’re expanding the scope of PEO’s job ladder model by examining which jobs do and don’t provide career advancement. We’ve already gotten some preliminary insights. For example, production and construction jobs show relatively high mobility: people often move from entry-level jobs like freight moving to supervisory roles. Steering workers to these jobs may improve their economic mobility. Entry-level service sector jobs like customer service representative show less upward mobility. These findings indicate areas where employers might work to design interventions to improve mobility, such as job rotation programs or soft skills training.

The career path tools have the potential to address a wide variety of troublesome questions surrounding economic mobility. We look forward to partnering with employers and policymakers to show how our approach can address the challenges they face in developing a strategy for promoting economic opportunity.

3. APPLYING THE CAREER PATH FINDINGS

PEO’s first stage Career Path findings provide much needed guidance to employers engaged in efforts to improve economic opportunity.

Opportunity-focused firms often offer tuition subsidy programs to their employees. By identifying which majors have higher returns overall and which ones benefit from selective schools, PEO's results can help employers design these programs to achieve economic mobility cost-effectively.

PEO's findings also suggest priorities for recruiting to promote opportunity. In Engineering and CompSci/IT, many employers seem to be doing a good job in finding talent at schools across the selectivity spectrum. Unfortunately, in other fields such as Business, employers seem to be placing much more weight on elite credentials. Employers need to think hard about why this is so. Are their own recruiters over-valuing selectivity, or should employers work with educational institutions to improve the curriculum in these fields? Are there alternative screening mechanisms that employers can devise?

We'll be socializing our results and engaging with employers on these issues at TALREOS, our annual meetings for the employer community. TALREOS focuses on topics at the more advanced end of the people analytics spectrum and attracts speakers and participants doing leading edge work in people analytics. TALREOS is held in partnership with Patagonia, and sponsors have included Walmart and the Annie E. Casey Foundation. In most years, TALREOS is an in-person [invitation-only two day conference](#). TALREOS 2020/21 was a series of webinars and invitation-only peer group meetings. We'll resume the in-person meetings in June 2022.

4. ABOUT US

PEO's research team consists of empirical researchers with expertise in labor economics and workforce issues. Deborah Weiss is Director of the Workforce Science Project at Northwestern University. Her research includes the first peer-reviewed evidence that firms can benefit from hiring individuals with a criminal record. She directs the Employment Quality Metrics Initiative, a collaborative effort with firms including Patagonia, Walmart, Salesforce and Caterpillar that is developing credible and transparent measures of economic opportunity. Professor Matthew L. Spitzer is a Professor of Law and the Director of the Center for Law, Business and Economics at the Northwestern Pritzker School of Law. Professor Spitzer co-founded the field of experimental law and economics and is currently engaged with Deborah Weiss in a variety of empirical projects on inequality including experimental work to better understand the mechanisms of employment discrimination.