

INTERVIEW

“The key lever for increasing the productivity of our workforce is learning.”



Burning Glass Institute president Matt Sigelman shares his insights about the worth of a college degree, the future of work in an age of artificial intelligence, and revitalizing the American dream.

Illustration by Shonagh Rae

Matt Sigelman is president of the Burning Glass Institute, which is dedicated to unlocking new avenues for worker mobility and opportunity. After stints at McKinsey & Company and Capital One, he spent two decades developing the field of real-time labor market data as CEO and then chairman of a company now known as Lightcast. Five years ago, he founded Burning Glass to transform the way that policymakers, researchers, employers, education institutions, and workers understand, plan for, and connect with the world of work.

Sigelman is also senior advisor at Harvard University's Project on the Workforce and founder of the Main Line Classical Academy, an elementary school in Bryn Mawr, Pennsylvania.

In an interview with *Issues* editor Molly Galvin, Sigelman shares his insights about the "cosmic coincidence" of the US labor market, what the data—and history—tell us about likely impacts of artificial intelligence on jobs and the nature of work, and how employers, educators, and workers should prepare for an increasingly complex knowledge-based economy.

What got you interested in the labor market and measuring employment?

Sigelman: As an undergraduate, I was a student of public policy. I went into the private sector and worked on an array of projects around the connection between people and jobs, trying to understand how to match them more effectively and efficiently.

As long as you have a job market whose core motion is millions of individual random transactions, your key motor is essentially cosmic coincidence. Think about all the times you go into a restaurant and you see an employee who's fantastic and you think, "What is she doing there? There are so many places she could be." She happened to need a job and that restaurant happened to be hiring, and it was just this sort of cosmic coincidence that the restaurant got lucky enough to have that fantastic employee.

Initially, I was thinking that was a defect of one-to-one matching rather than a market-wide problem. So we developed a set of solutions to try to bring more efficiency to how individual candidates and individual employers connect. But I came to realize that what is needed is to be able to aggregate things up and see opportunity in the market. The biggest tragedy—but also the biggest opportunity—of the labor market is that often people and opportunities are just a few skills apart. There are great pools of talent that go under-leveraged because they're unseen. There are sets of opportunities that are a short training distance from where people are otherwise stalled out.

As important as great datasets are, at the end of the day, big transformations need to start with understanding what

the problem is. Where are the breakdowns happening in the intersection between work and learning? What are the problems that if you could solve them would unlock economic mobility, would lead to better outcomes for workers and learners?

Can you do that with regular jobs data?

Sigelman: Traditional labor market data are survey-based. They rely on extrapolations from surveys of relatively small sample sizes. Part of the reason for that is historical—these were instruments that were first developed in the twentieth century when it would have been inconceivable to have a comprehensive record of all hiring. But part of the reason is one of design. These data series are very valuable for being able to understand what's going on in the market broadly, but they don't lend themselves to policymaking because they lack not only timeliness, but granularity.

Today it is actually possible to look at each individual job posting that is out there because most of them are online. We can see the specific skills and credentials that employers are asking for and create, essentially, a language, a series of taxonomies for being able to define jobs with greater granularity in a more timely way.

So, for example, if I've got a program to train people, I can use this data to understand how many jobs that training would be relevant for and what skills are being sought. But we are also able to see what happens to workers over time. What kind of economic mobility do they achieve? Does a job give you a foot on the ladder and good chances of moving up? Or do most people in that job wind up on a low-wage treadmill? For a lot of jobs, there hasn't been that kind of transparency.

How are you able to track an individual throughout their career?

Sigelman: At the Burning Glass Institute, we've created a dataset comprising the career histories of around 65 million US workers—40% of the US workforce.

The US Department of Education provides data on the trajectories of individuals by tracking people for three years post-graduation. But if I have your resume, or if I have your LinkedIn profile, I can actually look back across the longitude of your career. I can look at where you worked and for how long. How did that shape your onward trajectory? We can look at people who took a job in a given occupation at one company versus people who took a job at comparable companies. Which of them moved up?

And the wonderful thing about it is you can also start to create a broader set of metrics than have historically been possible. We're doing a fascinating study looking at what happens to women who take a break in employment, often

for family care obligations. How does their onward trajectory compare with that of people who didn't have that gap?

Another example: Historically Black colleges and universities (HBCUs) struggle with the same challenges that affect higher education institutions of all stripes, including contending with post-completion outcomes that are sometimes disappointing. In our analysis, we found that the share of HBCU graduates who wind up in high social-impact fields is much greater than the US higher-education student body at large. It doesn't explain all the negative variance in wage, but certainly part of the reason why HBCU graduates may sometimes be earning less is because they've made purposeful choices to give back.

There have been a lot of dire forecasts recently about how the rise of artificial intelligence will affect jobs. What dynamics are showing up in your data so far?

Sigelman: So far, there is little evidence of big drops in employment. But we have seen changes in what happens inside jobs. We've seen big changes in the nature of the skills people are using, and we've seen very meaningful changes in the level of expertise that jobs require.

I don't want to be dismissive of the potential for significant displacement. But the history of general-purpose technologies—whether we're talking about electricity, automobiles, computers, or the internet—doesn't tend to suggest that those kinds of mass displacements are how things play out. What we see more often is that these technologies change the *way* we work much more often than *whether* we work.

Take the internet. Ninety percent of Americans work in an occupation which makes substantial use of the internet, whether you are a web developer, graphic designer, or barber who no longer needs to answer the phone because of an internet-based appointment system. Now, relatively few people lost their jobs because of the internet. In our analysis, we saw mostly that the internet changed the nature of the things that we could do. It changed workflows for how we do our jobs.

In that case, how should we be thinking about AI and the nature of work?

Sigelman: People have this mental model of winners and losers, that some jobs are going to be automated away while some jobs are going to gain AI superpowers. What we found instead is that the jobs that are experiencing the greatest levels of automation are the same jobs that are experiencing the greatest levels of augmentation. In other words, AI automates some tasks away, but the employee's time gets filled with additional tasks.

Of course, these kinds of changes could be just as disruptive. The jobs may not go away, but if the skills that are

required to do them change dramatically, how can we prepare students to launch into their careers? Workers who have been in a field for decades may find it very hard to compete for a new job because they don't have the skills now needed. These are really important effects for us to be able to track.

This also points to a defect in the thinking around automation. One of the reasons why there's been so much anxiety about the potential for automation-driven displacement is that people tend to have a very industrial-era view of automation. In that era, society sought to simplify jobs—to make it easier to train people, or commoditize labor; essentially to de-skill them. Jobs became stripped down to one or two tasks, and if you automate the task, you automate the job. But jobs in the twenty-first-century knowledge economy are complex. Think about all the different things that you do with your time. If you automate a task, you're not necessarily automating the job.

So you're saying some jobs may be affected by AI more than others?

Sigelman: We are tracking another potential disruption together with my colleague at Harvard University, management scholar Joe Fuller, which we call the expertise upheaval. Jobs have differently shaped learning curves. There are some jobs where knowledge has to be accrued up front. After that, productivity doesn't increase that much over time. Think about a bus driver. Whether she's been on the job for three weeks or for 30 years, her job doesn't change that much.

Now think about a data scientist. The difference in productivity between somebody who is just getting started in their career and somebody who is an expert data scientist—there's a huge difference in terms of capability. In jobs like that, the learning curve is long and slow.

I'm going to imagine that most people reading this are people whose careers followed that long and slow model. When you finished your education, you were hired most likely more for your capacity than for specific capabilities. You were given humble tasks, and when you developed some proficiency in them, you were given somewhat more complex tasks. Eventually you developed some intuition and expertise.

Now, in fields like this, the tasks that you do at the entry level are exactly the things that AI does really well. So it's super tempting for employers to say, "Why would I want to hire somebody at the entry level when somebody who's really good can unleash the power of AI?"

It presents two major sets of potential disruption. One is for employers: Where do I get experts if the way that people developed expertise historically is by starting at the bottom? It's also a big disruption for educators and for students, because students are going to need to learn how to start their career in the middle instead of at the beginning. How do you learn to do at 22 what you used to not need to know until you were 27?

That's not just a speculative finding. It's what we see empirically in the data across the knowledge economy. We're seeing many knowledge economy occupations shift significantly away from hiring at the entry level toward hiring more expert talent.

What does this mean for the value of a traditional college degree? Even before AI, there has been growing skepticism about whether a college degree is still worth it.

Sigelman: There has been no greater motor of economic mobility than the college degree, and that continues to be true. But people are right to be skeptical. It's not that the college degree isn't worth it, but that it's worth it for too few people.

Think about this math. Of every 100 high school graduates, 66 go on to college, and 42 or 43 of those will graduate from college. And of those who graduate, only about 23 will find a job they needed a college degree for. A year out of college, 52% of college graduates are working in a job they didn't need to go to college to get.

There are plenty of data showing that the average college-goer will earn an incremental \$1 million, \$1.5 million over the course of their career. That's not wrong, but the average masks

prioritizing and industries that you need to win, you need to make sure you have the talent to drive those industries—that is not always an obvious realization. This requires having an infrastructure for skill development.

My friend Mitchell Stevens, an organizational sociologist at Stanford University, talks about the imperative to move from being a “schooled” society to being a “learning” society. One of our society's great achievements is universal basic education. The underlying premise is that that the education you receive in your first two decades will serve you throughout a lengthening lifespan. But our analysis has found that, over the course of just five years, 37% of the skills of the average US job are replaced.

In order for a region's talent base to continue to be valuable, you need to make sure that you have an infrastructure for people to be able to acquire skills on the fly. You need to make sure that employers are training people for the future of their sectors, and that they are thinking long-term about human capital as an asset, as much as they are physical plant and machinery.

You founded the Burning Glass Institute to boost economic mobility. How optimistic are you that we can do that in the United States?

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a huge amount of dispersion. Lots of people are earning much more than they would have if they had eschewed college and just gotten a high school diploma. But there are also plenty of people who are barely doing any better.

I think the answer here is not, “OK, college isn't worth it.” Rather, we need to think about what we need to do to make college more consistently worthwhile. How do educators and decisionmakers make sure that they are developing the student supports and creating the accountability for outcomes that ensure that college is worth it for more students?

You've studied regional economic development, which has long had certain “winning regions,” especially in tech. What do they get right?

Sigelman: Winning regions recognize that an economic development strategy needs a talent strategy, and a talent strategy needs an education strategy. That may sound obvious, but it's not. Most places have an economic development plan. But the notion that if there are sectors that you're really

Sigelman: The key to whether the United States sees a revitalization of the American dream and increased economic mobility is whether this AI moment becomes a time to focus on making people's work worth more. Each job transition that a person makes is an opportunity to either move up or get stuck. And the way that you move up is by building new skills.

How do we recognize that the key lever for increasing the productivity of our workforce is learning? We tend to think about productivity as a way of reducing cost, as a ratio of the value of labor's output to the cost of its input. And the reason why many of us flinch when we think about productivity enhancement is that it's almost always discussed as how to make people's work cost less—by using less labor, or lower-cost labor, or automating labor away. We almost never think about the numerator, which is to say, how do we make people's work worth more?

It's about helping people acquire the skills that improve their productivity and create greater value, not only for their employers, but also for themselves.