

RESEARCH BRIEF • MAY 2023

# Measuring the Characteristics and Employment Dynamics of US Inventors

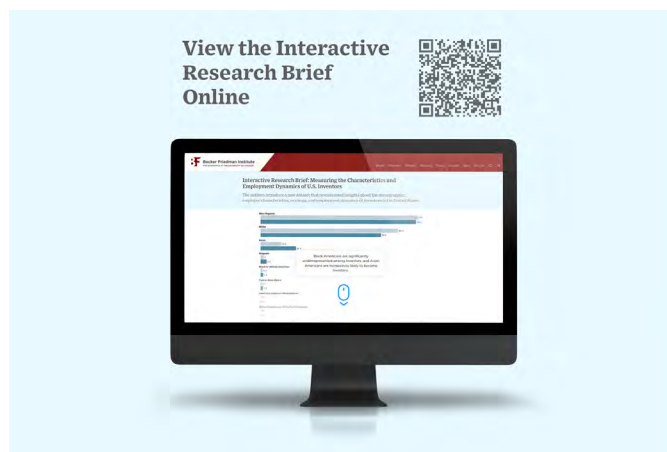
Based on BFI Working Paper 2023-49, "[Measuring the Characteristics and Employment Dynamics of US Inventors](#)," by Ufuk Akcigit, University of Chicago; and Nathan Goldschlag, US Census Bureau

*The authors introduce a new dataset that reveals novel insights about the demographics, employer characteristics, earnings, and employment dynamics of inventors in the United States.*

Innovation is a key driver of economic growth, and understanding the conditions that lead people to invent new technologies can help reduce inequality between groups as well as help spur growth overall. This paper aims to facilitate such efforts through the introduction of a new dataset that links data from the Census Bureau to information on inventors who received patents between 2000 and 2016. The end result is a dataset covering demographic characteristics and employment histories for over 760,000 inventors, from which the authors draw the following insights concerning inventors' demographics, employers, earnings, and employment trajectories.

## Demographics:

- Females are underrepresented among inventors, especially on a citation weighted basis. Females account for less than 12% of inventors, a share that is rising and tends to be higher among young inventors. The share of citations accounted for by female inventors lags behind their share of the inventor population.
- Over 30% of inventors are foreign born, and China and India account for an increasing share of foreign-born inventors, rising from 25% to 40% between 2000 and 2016.
- Inventors are getting older. The average age of inventors rose from 43 to 46 between 2000 and 2016. The share of young inventors fell through 2011, but began to rise thereafter.
- Black Americans are significantly underrepresented among inventors, accounting for less than 2%. Asian inventors are increasingly common, rising from 13% to 22% between 2000 and 2016.
- Representation of different demographic groups varies significantly by sector. Female inventors have greater representation in the Health Care and Social Assistance and Education sectors, and foreign-born inventors are more common in the Information, Education, and Professional/Scientific Services sectors. The share of young inventors is highest in the Information sector.



<sup>1</sup>Additional information about linkage process available in the working paper, "[Measuring the Characteristics and Employment Dynamics of US Inventors](#)," by Ufuk Akcigit and Nathan Goldschlag.

## Employers:

- Inventors tend to work at older, larger firms. Over 68% of inventors work in firms over 20 years old, and almost 63% work in large firms with at least 1000 employees. The share of inventors on patent grants with the largest assignees between 1980 and 2018 rose from about 34% to 47% percent.
- Inventors, especially the most productive, are much less likely to work at young firms. The share of inventors working at firms fewer than five years old fell by almost half between 2000 and 2016, from 15% to under 8%. This share fell the most among super star inventors, defined as those with the most impactful patents.
- Inventors at young and medium-size firms tend to have the highest impact patents, and inventors at older, smaller firms tend to have the lowest impact patents.

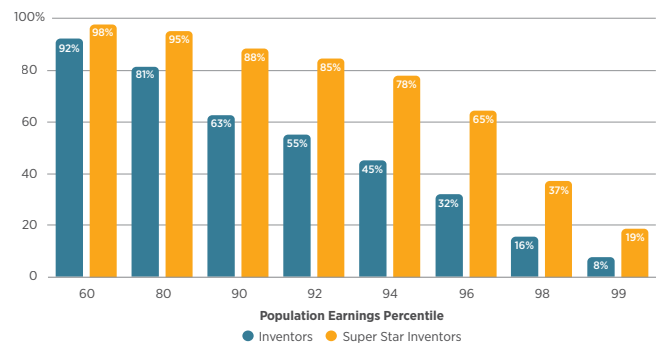
## Earnings:

- Inventor earnings are highly skewed, especially super star inventors. About 63% of all inventors (and 88% of super star inventors) are among the top 10% of earners. Almost 8% of inventors (and 19% of super star inventors) are in the top 1%.
- Inventor earnings are closely tied to inventive productivity. Inventors in the top 10% of the inventor earnings distribution tend to receive considerably more citations than inventors in the bottom 10%.

## Employment:

- Inventors are less likely to switch jobs over time. The hire and separation rates for inventors fell from about 6% and 7% respectively in 2000 to 4% in 2016.
- Inventors, especially super star inventors, are less likely to start a firm over time. The probability a that super star inventor becomes an entrepreneur fell by 57% between 2000 and 2016.
- Inventors are increasingly geographically concentrated and less likely to change employment across state lines. The share of inventors working in the 20 largest 4 counties by inventor count rose from 39% to over 47% between 2000 and 2016. The share of inventors switching employment across state lines fell from a peak of 4.6% in 2006 to 2.6% in 2016.

Figure 1 • Wage Distribution for Inventors and Super Star Inventors



Note: This figure shows the percent of inventors with earnings less than each percentile of earnings distribution for the population. Earnings percentiles and the share of inventors with earnings less than each percentile are calculated within each year-quarter from 2000q1 to 2016q3. This figure shows the mean shares across quarters. For more on the research please refer to the working paper. Source: Inventor Employment History.

The findings offer a glimpse at the types of insights made possible through the data introduced here. These data will be made available to approved researchers, drastically expanding the types of analyses possible regarding the role of individuals in the inventive process.

## READ THE WORKING PAPER

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### Measuring the Characteristics and Employment Dynamics of U.S. Inventors

[bfi.uchicago.edu/working-paper/2023-49](https://bfi.uchicago.edu/working-paper/2023-49)

## ABOUT OUR SCHOLAR



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