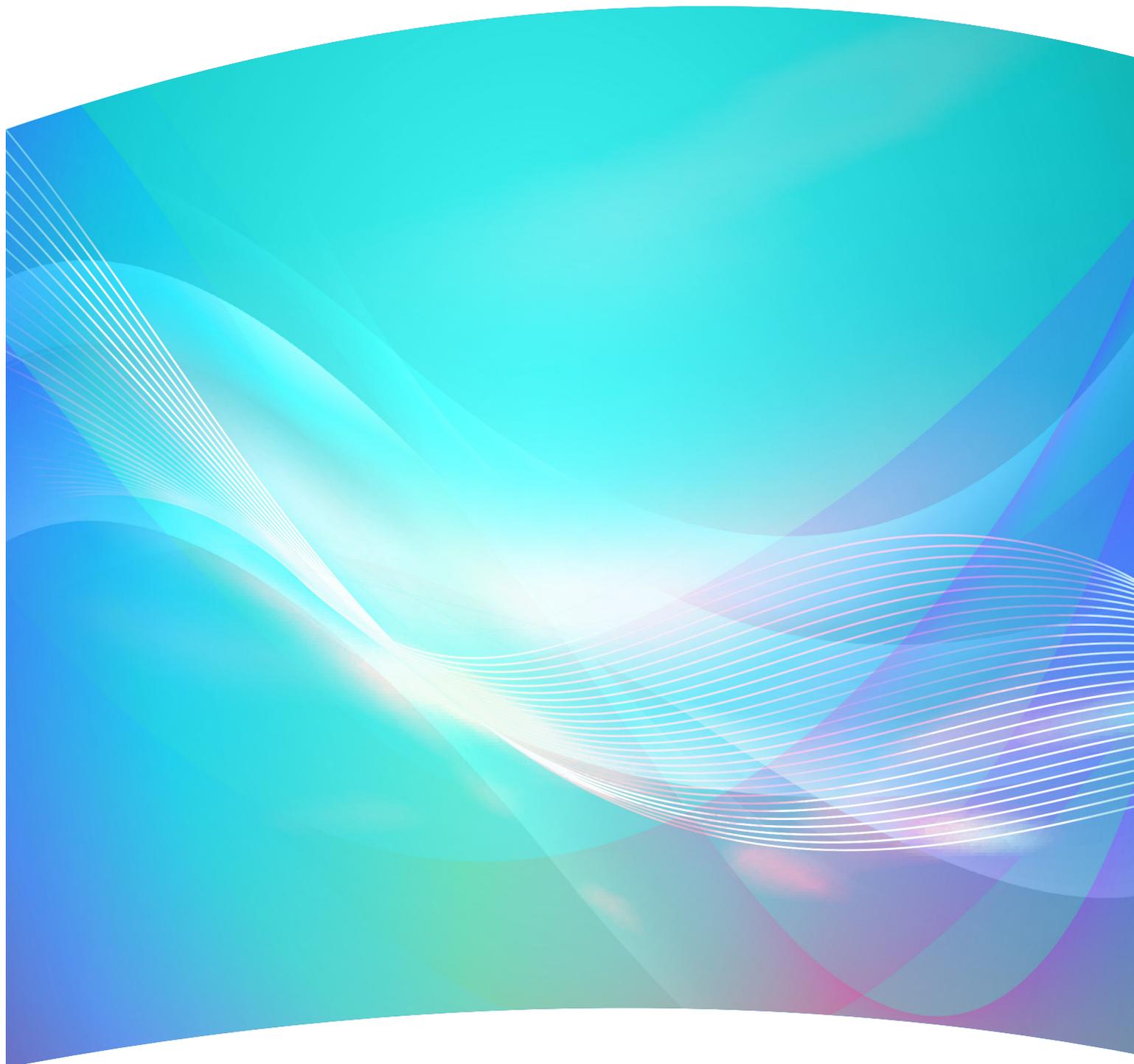


Center for Economic Studies and Research Data Centers Research Report: 2018

Research and Methodology Directorate

Issued June 2019



MISSION

The Center for Economic Studies partners with stakeholders within and outside the U.S. Census Bureau to improve measures of the economy and people of the United States through research and innovative data products.

HISTORY

The Center for Economic Studies (CES) was established in 1982. CES was designed to house new longitudinal business databases, develop them further, and make them available to qualified researchers. CES built on the foundation laid by a generation of visionaries, including Census Bureau executives and outside academic researchers.

Pioneering CES staff and academic researchers visiting the Census Bureau began fulfilling that vision. Using the new data, their analyses sparked a revolution of empirical work in the economics of industrial organization.

The Federal Statistical Research Data Center (RDC) program expands researcher access to these important new data while ensuring the secure access required by the Census Bureau and other providers of data made available to RDC researchers. The first RDC opened in Boston, Massachusetts, in 1994.

ACKNOWLEDGMENTS

Many individuals within and outside the Census Bureau contributed to this report. **Randy Becker** coordinated the production of this report and wrote, compiled, or edited its various parts. **Maggie Jones** and **Sonya Porter** authored Chapter 2. **Emin Dinlersoz** authored Chapter 3. Our RDC administrators and executive directors helped compile information found in Appendixes 2 and 6. Other CES staff and Research and Methodology Directorate staff contributed updates to the other appendixes.

Linda Chen and **Faye Brock** of the Public Information Office provided publication management, graphics design and composition, and editorial review for print and electronic media. The Census Bureau's Administrative and Customer Services Division provided printing management.

DISCLAIMER

Research summaries in this report have not undergone the review accorded Census Bureau publications, and no endorsement should be inferred. Any opinions and conclusions expressed herein are those of the author(s) and do not necessarily represent the views of the Census Bureau or other organizations. All results have been reviewed to ensure that no confidential information is disclosed.

Center for Economic Studies and Research Data Centers Research Report: 2018

Issued June 2019

Research and Methodology Directorate



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A MESSAGE FROM THE CHIEF ECONOMIST

Innovation is at the heart of the Center for Economic Studies (CES) and this was an especially impressive year as we launched three new data products: Business Formation Statistics, Opportunity Atlas, and Post-Secondary Employment Outcomes. All three products resulted from the research and development activities of CES staff, in collaboration with external partners, to improve the U.S. Census Bureau's measures of the U.S. economy and its people. In addition, CES staff continued to release a suite of other experimental measures of the U.S. economy, conduct research into improvements and enhancements to existing Census Bureau products, and disseminate the results of this research through peer-review journal articles, working papers, and presentations.

In 2018, as part of the broader reorganization within the Research and Methodology Directorate, CES strengthened its focus on research and development by expanding our staff and areas of expertise to include households and people, in addition to our long-time focus on businesses and the workforce. For most of 2018, CES continued to facilitate the research of others through the Federal Statistical Research Data Center (FSRDC) program and serve as the data repository for Census Bureau researchers and as the archivist for Census Bureau business data. Moving forward, these roles will be handled by other centers within the Research and Methodology Directorate. Given CES' commitment to leveraging outside expertise, we plan to continue to work closely with FSRDC researchers.

This year's annual report starts with an overview of activities at CES (Chapter 1). The two subsequent chapters discuss two of the

three new data products launched by CES in 2018. The Opportunity Atlas—a product by staff new to CES—is described in Chapter

2. In it, Maggie Jones and Sonya Porter describe their research on intergenerational mobility with Raj Chetty, John Friedman, and Nathaniel Hendren, and the innovative, online visualization tool that allows users to explore social mobility data for every census tract in the United States. Chapter 3 highlights our new Business Formation Statistics (BFS), which provide more timely insight into business startups at the national and state levels than had previously existed. The BFS is comprised of four quarterly series on new business applications and eight quarterly series on actual and projected business formations. As noted by Emin Dinlersoz, the lead Census Bureau researcher on this effort, the BFS were developed through joint research with economists at the Federal Reserve Board, the Federal Reserve Bank of Atlanta, University of Maryland, and the University of Notre Dame.

Over the coming year, we will continue research and development activities to improve our existing data products (including the Business Dynamics Statistics and Quarterly Workforce Indicators) and developing new information in the areas of technology adoption, uncertainty, and productivity distributions.



(Continued)

A MESSAGE FROM THE CHIEF ECONOMIST—Con.

Thank you to everyone who contributed to our annual report. Randy Becker compiled and edited all of the material. Editorial review was performed by Faye Brock and design

services and cover art production by Linda Chen, both of the Public Information Office. Other contributors are acknowledged on the inside cover.



Lucia S. Foster, Ph.D.
Chief Economist and
Chief of the Center for Economic Studies

Chapter 1. 2018 News

CES RENEWS FOCUS ON RESEARCH AND DEVELOPMENT

As part of a larger reorganization effort in the U.S. Census Bureau's Research and Methodology Directorate, the Center for Economic Studies (CES) is undergoing a transformation concentrating our focus on research and development activities. We welcome research staff previously in the Center for Administrative Records Research and Applications; their addition extends our existing innovative efforts with administrative data to include those involving individuals and households. We are excited about the opportunities for greater collaboration that this brings as well as the expansion of the expertise of CES staff. The new staff hit the ground running with a new CES product, the Opportunity Atlas (see Chapter 2), released on their first official day in CES.

In other changes, the Federal Statistical Research Data Center (FSRDC) network, which was founded in and fostered by CES (see Chapter 3 of our 2016 annual report), is now a part of the newly formed Center for Enterprise Dissemination. In addition, some of CES' research support functions have been moved to the new Center for Optimization and Data Science. These functions include the

gathering, processing, archiving, and delivering of microdata for research use by those inside the Census Bureau and at the FSRDCs. The organizational chart in Appendix 8 shows the new CES at the close of 2018.

This reorganization manifests the Census Bureau's enduring commitment to microdata research. Since this annual report covers all of 2018 and the reorganization commenced in October, this report includes some information about both areas that left CES and those that joined. The next sections discuss the expansion in the FSRDC network, highlight research output, detail new releases of public-use data, report on the FSRDC Annual Research Conference and CES' cohosted research workshops, and celebrate the achievements of CES staff.

THE FSRDC NETWORK

The FSRDC network continued to expand in 2018, with the opening of a new location at the Federal Reserve Bank of Dallas. In July, the National Science Foundation granted an award to establish the Wasatch Front Research Data Center at the University of Utah, supported by a consortium of institutions that also includes Utah State University, Brigham Young University, Huntsman Cancer Institute, departments within the Utah state government, and

the University of Utah Health Sciences Center. Together with planned Research Data Centers (RDCs) at the University of Illinois at Urbana-Champaign and the Board of Governors of the Federal Reserve System, the total number of RDCs will soon be 32. For more information and updates, visit <www.census.gov/fsrdc>.

At year's end, the RDCs hosted approximately 760 researchers working on about 315 different projects. In 2018, 140 new RDC projects began. Of those, 63 use Census Bureau microdata (see Appendix 3), 16 use data from the Agency for Healthcare Research and Quality, 59 use data from the National Center for Health Statistics, and 2 use data from the Bureau of Labor Statistics (BLS).

Meanwhile, RDC researchers using Census Bureau microdata continue to be tremendously prolific, with at least 82 publications and 71 working papers in 2018 (see Appendix 2). As the accompanying table shows, RDC-based research is being published in many of the top peer-reviewed journals. Recent and forthcoming articles appeared in 15 of the top 22 journals in economics, including several articles in the *American Economic Review*, *Econometrica*, *Journal of Political Economy*, *Quarterly Journal of Economics*,

Publications by RDC Researchers and CES Staff: 2018 and Forthcoming

Economics journals (by rank)	RDC researchers	CES staff	Total
AAA (1-5)	12	2	14
AA (6-20)	14	7	21
A (21-102)	22	15	37
B (103-258)	12	11	23
C (259-562)	5	6	11
D (563-1,202)	0	0	0
Journals outside of economics	14	11	25
Book chapters	3	11	14
TOTAL	82	63	145

Note: Based on known publications listed in Appendix 2. Ranking of journals in economics is taken from Combes and Linnemer (2010), with some imputation of journal ranking using RePEc.

and *The Review of Economic Studies*.

Many graduate students use the RDCs for their Ph.D. dissertation research. In recent years, at any given time, there have been several dozen such students from over 40 different universities using Census Bureau microdata. (This does not include the many graduate students who use the RDCs as research assistants to others.) Many of these doctoral candidates are eligible to apply to the CES Dissertation Mentorship Program. Program participants receive two principal benefits: mentoring by a CES staff economist, or other Census Bureau researcher, who advises the student on the use of Census Bureau microdata and a visit to the Census Bureau to meet with our research staff and present research in progress. In 2018,

CES accepted 5 new participants into the program and has had 44 since the program began in 2008.

The microdata available to researchers has also expanded, including the latest years of many business and household surveys. See Appendix 5 for more details.

RELEASES OF PUBLIC-USE DATA

CES continued to update and improve its public-use data products in 2018, including *Business Dynamics Statistics*, *Quarterly Workforce Indicators*, *OnTheMap*, *OnTheMap for Emergency Management*, and *Job-to-Job Flows*. In addition, 2018 saw the launch of three new, innovative products: *Business Formation Statistics*, *Post-Secondary Employment*

Outcomes, and the *Opportunity Atlas*.

In October, the Census Bureau released the 2016 *Business Dynamics Statistics* (BDS), which provides annual statistics from 1976 to 2016 on establishment openings and closings, firm start-ups and shutdowns, employment, job creation, and job destruction, by firm (or establishment) size, age, industrial sector, state, and metropolitan area. This year's temporary reduction in the number of tables allows the completion of work to modernize the BDS, including an expanded set of tables that incorporate long-planned enhancements, including a switching from the Standard Industrial Classification system to the North American Industry Classification System (NAICS). More information about the BDS can be found at <www.census.gov/ces/dataproducts/bds>.

In February, the Census Bureau unveiled a new, public-use data series on business startups. The *Business Formation Statistics* (BFS) provide timely, quarterly measures of new business applications and business formations. Business applications are indicated by applications for an Employer Identification Number (EIN), while business formations (actual and projected) originating from such business applications are based on the first recorded payroll tax liability for an EIN. Delays in business formation are measured by the average duration between business application and business formation. All BFS series are available for the United States and by

NOTABLE 2018 PUBLICATIONS BY CES STAFF

“Imputation in U.S. Manufacturing Data and Its Implications for Productivity Dispersion”

T. Kirk White, Jerome P. Reiter, and Amil Petrin
Review of Economics and Statistics
Volume 100(3), July 2018, pp. 502–509.

In the U.S. Census Bureau's 2002 and 2007 Censuses of Manufactures, 79% and 73% of observations, respectively, have imputed data for at least one variable used to compute total factor productivity (TFP). The bureau primarily imputes for missing values using mean-imputation methods, which can reduce the underlying variance of the imputed variables. For five variables entering TFP, we show that dispersion is significantly smaller in the Census mean-imputed versus the nonimputed data. We use classification and regression trees (CART) to produce multiple imputations with observed data for similar plants. For 90% of the 473 industries in 2002 and 84% of the 471 industries in 2007, we find that TFP dispersion increases as we move from Census mean-imputed data to nonimputed data to the CART-imputed data.

“Cyclical Job Ladders by Firm Size and Firm Wage”

John C. Haltiwanger, **Henry R. Hyatt**, Lisa B. Kahn, and **Erika McEntarfer**
American Economic Journal: Macroeconomics
Volume 10(2), April 2018, pp. 52–85.

We study whether workers progress up firm wage and size job ladders, and the cyclical nature of this movement. Search theory predicts that workers should flow toward larger, higher paying firms. However, we see little evidence of a firm size ladder, partly because small, young firms poach workers from all other businesses. In contrast, we find strong evidence of a firm wage ladder that is highly procyclical. During the Great Recession, this firm wage ladder collapsed, with net worker reallocation to higher wage firms falling to zero. The earnings consequences from this lack of upward progression are sizable.

state from the third quarter of 2004 through the third quarter of 2018 (at the end of 2018).

The current BFS is being released as a research product in beta form. A final version is in

the research and development phase.

For further details on the BFS and to access the data, visit www.census.gov/programs-surveys/bfs.html. Also see Chapter 3 of this annual report.

The BFS are a product of CES, developed in research collaboration with economists from the Board of Governors of the Federal Reserve System, Federal Reserve Bank of Atlanta, University of Maryland, and University of Notre Dame.

The **Quarterly Workforce Indicators** (QWI) is a set of economic indicators—including employment, job creation, earnings, worker turnover, and hires/separations—available by different levels of geography, industry, business characteristics (firm age and size), and worker demographics (age, sex, educational attainment, race, and ethnicity). In 2015, the Census Bureau first introduced the *National Quarterly Workforce Indicators*, which provide a consistent reference point for users of the state-level QWI. These data are available via the *LED Extraction Tool* at <https://ledextract.ces.census.gov>.

These data are also available through *QWI Explorer*, a Web-based analysis tool that enables comprehensive access to the full depth and breadth of the QWI data set. Through an easy-to-use dashboard interface, users can construct tables and charts to compare, rank, and aggregate indicators across time, geography, and/or firm and worker characteristics. Users can download their analyses to an Excel spreadsheet, a PNG/SVG chart image, or a PDF report, or they can share data tables and visualizations via URLs and through social media. To use *QWI Explorer*, visit <https://qwiexplorer.ces.census.gov>.

This year's releases update the base geography to TIGER 2017 and transition QWI to the 2017 NAICS. As with all QWI releases, the 2017 NAICS coding system is applied to the complete history of the data.

CES staff continue to maintain and improve **OnTheMap**. *OnTheMap* is an award-winning online mapping and reporting application that shows where people work and where workers live. The easy-to-use interface allows the creation, viewing, printing, and downloading of workforce-related maps, profiles, and underlying data. An interactive map viewer displays workplace and residential distributions by user-defined geographies at census block-level detail. The application also provides companion reports on worker characteristics and firm characteristics, employment and residential area comparisons, worker flows, and commuting patterns. In *OnTheMap*, statistics can be generated for specific segments of the workforce, including age, earnings, sex, race, ethnicity, educational attainment, or industry groupings. One can also find firm age and firm size, allowing analysis of the impacts of young/old firms or small/large firms in relation to commuting patterns and worker characteristics.

OnTheMap can be accessed at <<https://onthemap.ces.census.gov>>, and *OnTheMap Mobile* can be accessed at <<https://onthemap.ces.census.gov/m/>>.

OnTheMap for Emergency Management (OTM-EM) continues to provide the public with

critical information. First introduced in 2010, *OTM-EM* is an online data tool that provides unique, real-time information on the population and workforce for areas affected by hurricanes, floods, wildfires, and winter storms, and for federal disaster declaration areas. Through an intuitive interface, users can easily view the location and extent of current and forecasted emergency events on a map and retrieve detailed reports containing population and labor market characteristics for these areas. These reports provide the number of affected residents, by age, race, ethnicity, sex, and housing characteristics. The reports also provide the number and location of jobs, by industry, worker age, earnings, and other worker characteristics. To provide users with the latest information on rapidly changing events, *OTM-EM* automatically incorporates real-time data updates from the National Weather Service, Departments of Interior and Agriculture, and the Federal Emergency Management Agency. See Chapter 2 of our 2013 annual report for a more detailed overview of *OTM-EM*.

Upcoming releases will incorporate the very latest data from the American Community Survey. *OTM-EM* can be accessed at <<https://onthemap.ces.census.gov/em/>>.

Both *OnTheMap* and *OTM-EM* are supported by the state partners under the Local Employment Dynamics (LED) partnership with the Census Bureau, as well as the Employment and Training Administration of the U.S. Department of Labor.

In 2014, the Census Bureau began launching **Job-to-Job Flows** (J2J), a new set of statistics on the movements of workers between jobs, including information on the job-to-job transition rate, hires and separations from and to nonemployment, and characteristics of origin and destination jobs of workers changing jobs. These first *J2J* statistics show the reallocation of workers across different sectors of the economy at both the state and national levels. Rates and counts of transitions are tabulated by industry, state, firm age and size, and demographic characteristics such as age, sex, race, ethnicity, and education.

The 2017 *J2J* release included a number of new data and features. Users can now look at new earnings measures to analyze how worker reallocation affects compensation. This release also included data at the metro area level with counts and rates available by NAICS sector and worker demographic characteristics. Counts of flows between metro areas as well as between metro areas and a state or the nation are also available by origin NAICS sector, destination NAICS sector, and demographic characteristics.

At the state and national level, more detailed tabulations crossing NAICS sector with worker and firm characteristics have been released for counts and rates. Origin-destination counts are also provided by origin NAICS sector, destination NAICS sector, and worker demographics and origin and destination firm characteristics.

These beta *J2J* data files and documentation are available for download at <https://lehd.ces.census.gov/data/j2j_beta.html>.

Meanwhile, 2018 saw the release of the latest beta version of *Job-to-Job Flows Explorer*. This interactive, Web-based analysis and visualization tool allows users to construct tables, maps, and charts to compare, aggregate, and analyze *J2J* statistics by worker and firm characteristics. See Chapter 1 of our 2017 annual report for a further description of this new tool.

To use *J2J Explorer*, visit <<https://j2jexplorer.ces.census.gov>>. Documentation can be found at <https://lehd.ces.census.gov/applications/help/j2j_explorer.html>.

In 2018, the Census Bureau launched the experimental **Post-Secondary Employment Outcomes** (PSEO) statistics and visualization tool. These tabulations show earnings by institution, degree level, and degree field for 1, 5, and 10 years after graduation. Currently, *PSEO* includes only the University of Texas system and public institutions in Colorado. Future releases will include more postsecondary institutions. The accompanying text box describes this latest product to grow out of the Census Bureau's innovative Longitudinal Employer Household Dynamics (LEHD) program.

In October, in collaboration with researchers at Harvard University and Brown University, the Census Bureau launched the **Opportunity Atlas**, a new

interactive tool providing access to highly localized data on social mobility. Using anonymized data covering nearly the entire U.S. population, the *Opportunity Atlas* contains tract-level information on children's outcomes in adulthood including income and incarceration rates by parental income, race, and gender. Visitors to <<https://opportunityatlas.org>> can explore the data through the online visualization tool, overlay their own data of interest, and download the resulting measures into a data set for their own analyses. See Chapter 2 of this annual report for a more in-depth discussion of the *Opportunity Atlas* and its potential for policymakers and researchers interested in inter-generational mobility.

FSRDC ANNUAL RESEARCH CONFERENCE

The FSRDC Annual Research Conference brings together researchers from the FSRDCs and from partner agencies, including the Census Bureau, to showcase research using microdata and to share data expertise. This year, the conference was held on September 7 at Penn State University and featured 33 presentations in 11 sessions on themes that included firm and worker dynamics, labor force participation and demographics, international trade, demographics and neighborhood effects, firm investment, labor force dynamics, trade networks, aggregate effects of firm turnover, individual's health decisions, ownership structure and management practices, and new data. The keynote address by

Justin Pierce, principal economist at the Federal Reserve Board of Governors, discussed the decline in U.S. manufacturing employment. The annual FSRDC business meeting was held on the day before, bringing together representatives from participating statistical agencies, the executive directors of existing FSRDCs, institutions interested in joining the FSRDC program, and officials from other countries with similar systems. Discussions centered on the program's performance, challenges, and best practices. The next conference will be held at the University of Wisconsin-Madison on September 6, 2019.

STATISTICAL AGENCIES COLLABORATE ON RESEARCH WORKSHOPS

BLS-CENSUS Research Workshop

On May 22, BLS and the Census Bureau cohosted their eighth annual workshop featuring empirical research by economists from both agencies. These annual workshops are intended to encourage and nurture collaboration between researchers at BLS and the Census Bureau.

Lucy Eldridge, Associate Commissioner for Productivity and Technology of BLS and John Eltinge, Assistant Director for Research and Methodology at the Census Bureau provided welcoming remarks. This year's workshop consisted of three themed sessions with two papers each—one from each agency—with discussants from the other agency. In addition, a

NEW NATIONAL EARNINGS DATA FOR GRADUATES BY INSTITUTION AND MAJOR

Going to college is a major financial decision with long-term ramifications for prospective students and parents. Now, there is a new U.S. Census Bureau data tool to assess labor market outcomes based on the field of study and institution.

The Post-Secondary Employment Outcomes (PSEO) project tabulates earnings by institution, degree level, and degree field for 1, 5, and 10 years after graduation. PSEO does this by linking university transcript data to the Census Bureau's Longitudinal Employer Household Dynamics (LEHD) records, which list unemployment-insurance covered quarterly earnings.

Data from PSEO offer an important assessment tool to plan postsecondary education and address a major gap in education statistics by providing a much clearer picture of what happens when a graduate gets a job out of state.

"Up until now, individual states could only measure earnings and employment outcomes for persons who worked in the same state where they were educated," said John Abowd, chief scientist and associate director for research and methodology at the Census Bureau. "Thanks to this pilot, states, universities, and prospective students have the opportunity to see employment outcomes by program of study by region and industry."

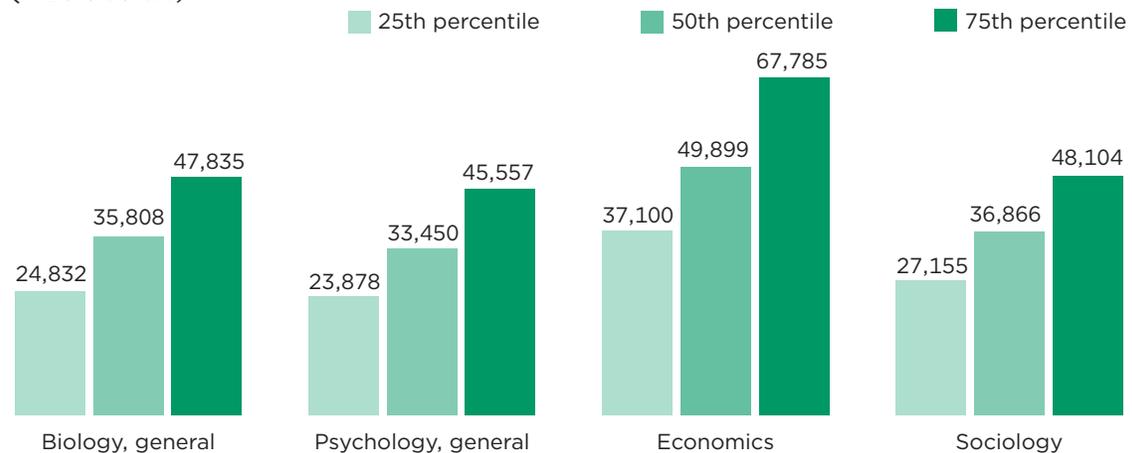
PSEO currently only includes the University of Texas system and public institutions in the state of Colorado. Future releases will include additional postsecondary institutions.

Analyses of tabulations show differences in outcomes based on field of study, even within an institution. For example, the accompanying graph shows the earnings 1 year after graduation for bachelor's recipients in four majors from the University of Texas Austin. The data show that economics is on average the highest-earning major of the four with a median of almost \$50,000. The earnings of biology and psychology majors perform relatively poorly in the first year after graduation with a median of around \$35,000.

Figure 1-1.

University of Texas at Austin First-Year Postgraduate Earnings for Bachelor's Graduates in Selected Majors

(In 2016 dollars)



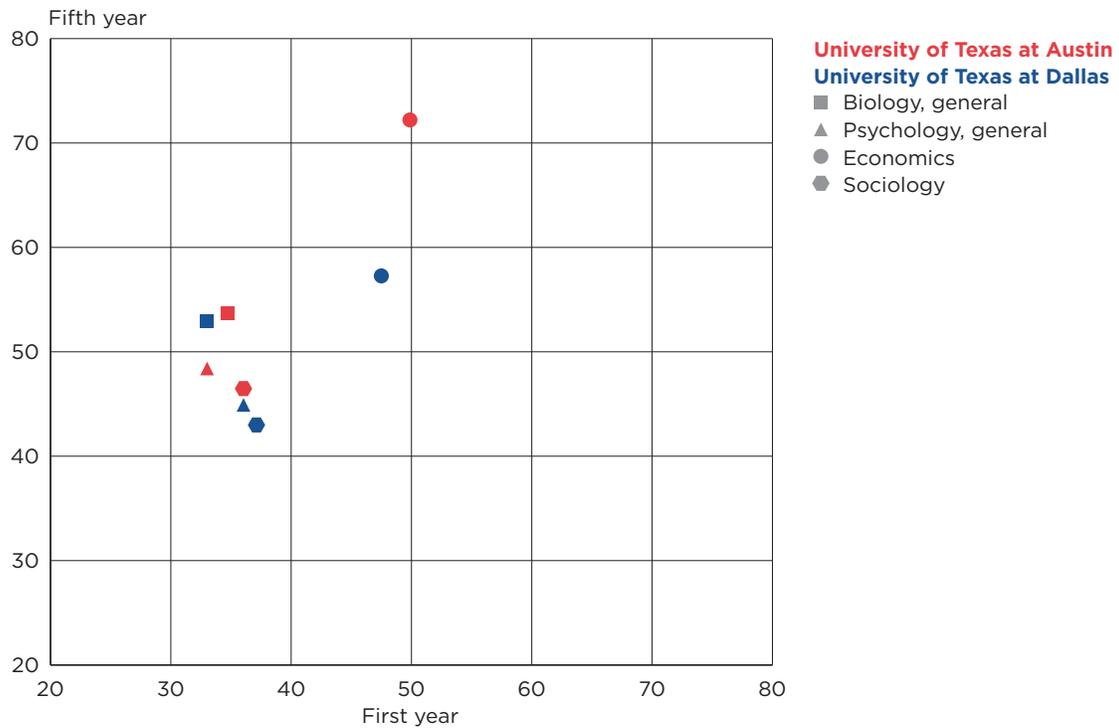
Source: U.S. Census Bureau, Post-Secondary Employment Outcomes data.

The PSEO data also show differing earnings trajectories over time, such as in the scatterplot in Figure 3, where the x-axis is the 1-year median earnings and the y-axis is the 5-year median earnings. Here, median earnings for all majors grow, although earnings growth is stronger for biology and economics. Interestingly, earnings still had robust growth even though the fifth year after graduation for this cohort was during the Great Recession.

Documentation and CSV files are available for download at <https://lehd.ces.census.gov/data/pseo_beta.html>. The PSEO visualization tool can be found at <https://lehd.ces.census.gov/data/pseo_beta_viz.html>.

Figure 1-2.
University of Texas at Austin and University of Texas at Dallas First- and Fifth-Year Postgraduate Earnings for Bachelor's Graduates in Selected Majors

(In thousands of 2016 dollars)



Source: U.S. Census Bureau, Post-Secondary Employment Outcomes data.

poster session of six papers was held. Workshop papers included:

- Firm Growth Through New Establishments
- Entrepreneurial Teams: Diversity in Experience and Firm Growth
- On Job Requirements, Skill, and Wages
- A Task-Based Approach to Constructing Occupational Categories With Implications for Empirical Research in Labor Economics
- Utilization of Health Insurance and Worker's Compensation Cost-Shifting
- How Is Employer-Sponsored Health Insurance Changing in Response to an Aging Workforce?
- The Challenge of Measuring Labor Productivity in the Gig Economy
- Controlling for Prices Before Estimating SPM Thresholds and the Impact on SPM Poverty Statistics
- Occupational Employment and Wage Differences Across Cohorts of Establishments
- The Effects of Disability Onset Timing and Severity on Earnings
- A Multidimensional Poverty Measure Using the American Community Survey
- Measuring a Dynamic Economy: New Content in the 2017 Economic Census

The workshop was a success thanks to the researchers from

both agencies who participated and especially to Martha Stinson (Census Bureau) and Sabrina Pabilonia (BLS) who organized the workshop. The ninth annual BLS-Census Research Workshop will be held on June 17, 2019, at the Census Bureau.

BEA-CENSUS Research Workshop

On October 3, the Bureau of Economic Analysis (BEA) and the Census Bureau cohosted their fifth annual research workshop. Recognizing that research economists at the two agencies often work on similar topics with similar data sets, these annual workshops provide a forum to discuss topics of common interest, promote collegiality, and provide an opportunity to learn about data from the other agency.

This year's workshop consisted of three themed sessions, with discussants, on topics related to trade, labor force, and health and wellness. Papers included:

- Recall and Response: Relationship Adjustments to Supply-Chain Shocks
- Measuring U.S. Manufacturing Services Trade Using U.S. Customs Records: A Proposed Methodology
- Fast Adjustment of Exchange Rate Shocks
- Management and Within-Firm Inequality: Evidence From Microdata
- Employment Discrimination Across the Business Cycle
- Including Illegal Activity in GDP

- How Is Employer-Sponsored Health Insurance Changing in Response to an Aging Workforce?
- The Effect of Keg Registration Policies on Underage Drinking and Vehicle Fatalities

The workshop was a success thanks to the researchers from both agencies who participated and especially to Melissa Chow (Census Bureau) and Marina Gindelsky (BEA) who organized the workshop. Planning for the sixth annual BEA-Census Research Workshop is currently underway.

CES STAFF RECEIVE RECOGNITION

In February, seven staff members from CES' LEHD program received a Bronze Medal Award for developing and implementing an innovative production and data management system that serves as the enabling infrastructure for new major national longitudinal public-use statistics. Developed with unprecedented documentation, curation, and replication capabilities, the work of team members Walter Kydd, Kuei Fen Ma, Erika McEntarfer, Kevin McKinney, Camille Norwood, Stephen Tibbets, and Lars Vilhuber notably advanced reproducible data science.



The LEHD Production and Data Management System Team developed an infrastructure that enables major new longitudinal public-use statistics with unprecedented documentation, curation, and replication capabilities.

At the same ceremony, Alice Zawacki and other team members received a Bronze Medal Award for developing and implementing expanded imputation

methods and processes for the Medical Expenditure Panel Survey-Insurance Component. This substantially increased the number of data items available

in the MEPS-IC for use by health care researchers and policy analysts.



The MEPS-IC Imputation Team developed methods and processes that increased the data available to health care researchers.

The Bronze Medal Award for Superior Federal Service is the highest honorary recognition given by the Census Bureau.

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Chapter 2.

Opportunity Atlas: New Data and Research on Intergenerational Mobility

Maggie R. Jones and Sonya R. Porter, Center for Economic Studies

It is perhaps unsurprising that where you grow up may affect your future, but providing empirical evidence requires detailed comprehensive data, which did not exist until recently. In collaboration with Raj Chetty and Nathaniel Hendren of Harvard University and John Friedman of Brown University, we use anonymized data covering nearly the entire U.S. population to construct a comprehensive census tract-level atlas of children's outcomes in adulthood. For each tract, we estimate children's adult outcomes for earnings distributions, incarceration rates, and other adulthood outcomes by parental income, race, and gender. These estimates—available through the online visualization tool *Opportunity Atlas* at <https://opportunityatlas.org>—allow policymakers and researchers to trace the roots of outcomes, such as poverty and incarceration, to the neighborhoods in which children grew up.

The *Opportunity Atlas*, described in Chetty et al. (2018a), was released in October 2018. With this public, online data visualization tool, users can view our data for every census tract in America, overlay their own data points of interest, and export the resulting measures into a data set for their own analysis.

For the *Opportunity Atlas* we built a de-identified data set from linked U.S. Census Bureau

and federal tax data, capturing information on income, parental characteristics, children's neighborhoods, and other variables. In our research, we focus on children born between 1978 and 1983, including both those born in the United States and authorized childhood immigrants. The data capture the characteristics of 20 million children, representing approximately 96 percent of all children born during the time-period.

For example, we find that the Black-White gap in upward mobility is driven primarily by environmental factors that can be changed; but the findings also highlight the challenges policymakers face in addressing these environmental disparities. Black and White males have very different outcomes even if they grow up in two-parent families with comparable incomes, education, and wealth; live on the same city block; and attend the same school. We find that this difference does not hold for females, indicating that Black males face unique societal challenges that inhibit upward economic mobility.

In this chapter, we describe the data and methodology for producing the *Opportunity Atlas*, the protections used for the data, provide some other examples of results, and discuss future work.

DATA AND METHODOLOGY

We combined three sources of data to construct the *Opportunity Atlas*: decennial census short forms from 2000 and 2010 containing the population universe; detailed information on the samples that received the 2000 decennial census long form and the analogous 2005 to 2015 American Community Survey (ACS); and federal income tax returns from 1989, 1994, 1995, and 1998 to 2015. We linked the data set across individuals through the Protected Identification Key. We then identified all children who were claimed as a child dependent on a 1040 tax form and linked these children to their parent(s). The outcomes of interest were captured for children when they reach adulthood.

This ability to link individuals in tax data to their survey and census responses allows us to measure outcomes by gender and by five racial and ethnic groups: people of Hispanic ethnicity and non-Hispanic Whites, Blacks, Asians, and American Indians. By analyzing rates of upward and downward mobility across generations for these groups, we quantified how their incomes change and predicted their future earnings trajectories.

To construct the measures found in the *Opportunity Atlas*, we first analyzed the relationship between child outcomes and the

parent household income rank at the national-race-gender level. Some of the outcomes examined include children's income (averaged over 2014 and 2015, when the population of children had reached the ages of 31 to 37), incarceration rates, and teen birth rates.

At the tract-race-gender level, we then regressed a child outcome (e.g., child income rank) on the predicted national value of the outcome for that child's specific parent income percentile, race, and gender. The model included all children of the race-gender subgroup who spent at least 1 year of childhood in that tract. To account for children who grew up in more than a single census tract, we assigned children weights in proportion to the fraction of their childhood spent in each tract.

Results from these regressions were then used to construct predicted outcomes for children who grew up in a specific tract in families at five different percentiles in the parent income distribution: the 1st, 25th, 50th, 75th, and 99th percentiles.

Until now, no data set—micro-level or aggregated—allowed for the examination of outcomes by race and gender at such a fine level of geography. When enough observations allow it,

data users can find detailed information at the tract level on outcomes by Hispanic origin and non-Hispanic White, Black, Asian, and American Indian. Text Box 2-1 considers the example of American Indian children.

In what follows we discuss the innovative privacy protections that we implemented to release the data to the public at the tract level. We also provide several breakout analyses from the *Opportunity Atlas* that focus on outcomes at the neighborhood level.

PRIVACY PROTECTIONS

An innovation of the *Opportunity Atlas* is the disclosure-avoidance methodology used to protect the data. For decades, tract-level data have been protected through traditional cell suppression (when they contain too few observations) or through manipulation of the microdata (swapping, top-coding). Differential privacy presents a better solution for protecting data; however, few differentially private methods exist for disclosing complex estimates, such as regression results, which comprise the bulk of the *Opportunity Atlas*.

Here, we developed and implemented a method of controlling privacy loss when disclosing

arbitrarily complex statistics in small cells. All results reported in the *Opportunity Atlas* are noise-perturbed using our “Maximum Observed Sensitivity Envelope” (MOSE) algorithm, which outperforms traditional disclosure-avoidance techniques in terms of both privacy loss and statistical accuracy.

While the MOSE method is not provably private, it reduces privacy risk to below a measurable parameter. Moreover, it is possible to illustrate noise-infusion yields significant advantages to statistical inference relative to traditional disclosure-avoidance methods like cell suppression, especially for statistics relying on sparse cells. The noise added to protect privacy in the *Opportunity Atlas* is similar to the inherent noise due to sampling error, leading to estimates that remain highly accurate compared with the non-perturbed data.

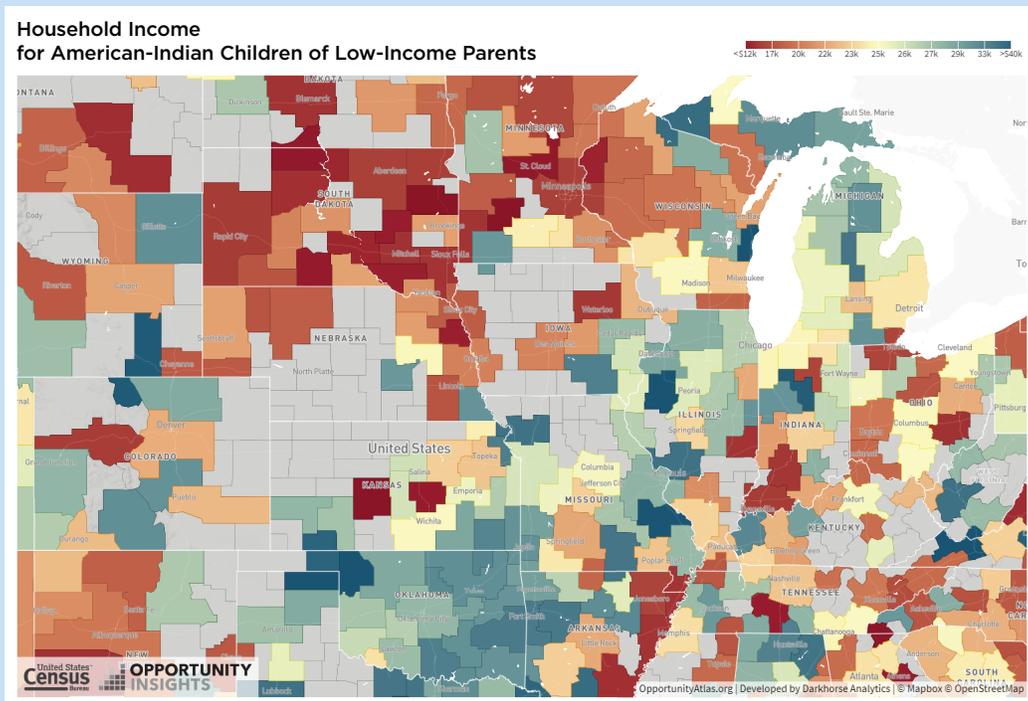
INCOME DIFFERENCES BY TRACT

Previous research has documented wide regional variation in intergenerational mobility based on the broad geography of where children grew up, such as across commuting zones (CZ). Our work finds significant variation even across census

TEXT BOX 2-1.

WHERE DO AMERICAN-INDIAN CHILDREN THRIVE?

The *Opportunity Atlas* allows the exploration of outcomes for many subgroups. The map below shows outcomes in the Midwest for children of American-Indian origin based on where they lived growing up. Outcomes are measured for these children when they are between the ages of 31 and 37. Here, the *Opportunity Atlas* is set to show predicted household income for children whose parents were low-income.



The green and blue areas show places with upward intergenerational income mobility for American-Indian children, with poor children earning between \$26,000 and \$39,000 (in 2015 dollars) per year as adults. On the other hand, the yellow and red areas show places where American-Indian children remained poor. The best outcomes (shown in dark green on the map) appear across the Creek, Cherokee, Choctaw, and Citizen Potawatomi Nation-Absentee Shawnee Oklahoma Tribal Statistical Areas, where, on average, low-income American-Indian children move into the middle class as adults.

An interesting contrast to Oklahoma is South Dakota. Although these states look similar in terms of the size of the American-Indian population (about 9 percent), the educational attainment of the general population, and the rate of poverty, American-Indian children who grew up in South Dakota were more likely than those in Oklahoma to remain poor. By comparing Oklahoma and South Dakota in greater detail, users may be able to learn how to improve opportunity for all American Indians in the future.

tracts within CZs. The standard deviation across CZs of average household income, conditional on having parents at the 25th percentile, is \$3,500. Figure 2-1 illustrates this variation for the Los Angeles area. Within the Los Angeles CZ, we find a standard deviation of about \$6,000, illustrating an especially wide variation across neighborhoods within Los Angeles.

In Chetty et al. (2018b), we document significant differences in outcomes across racial groups. The *Opportunity Atlas* further separates statistics by tract, race, and gender. For example, Figure 2-2 provides the estimates for Black male, individual income

in Los Angeles for those whose parents were at the bottom percentile of the parental income distribution. We again observe significant variation in individual incomes. For example, in Watts—the same tract as the Nickerson Garden Public Housing Project (Census tract #242600)—low-income Black males grew up to earn only \$7,700 as adults. In contrast, low-income Black men growing up in nearby West Compton (Census tract #541100) grew up to earn \$17,000 as adults.

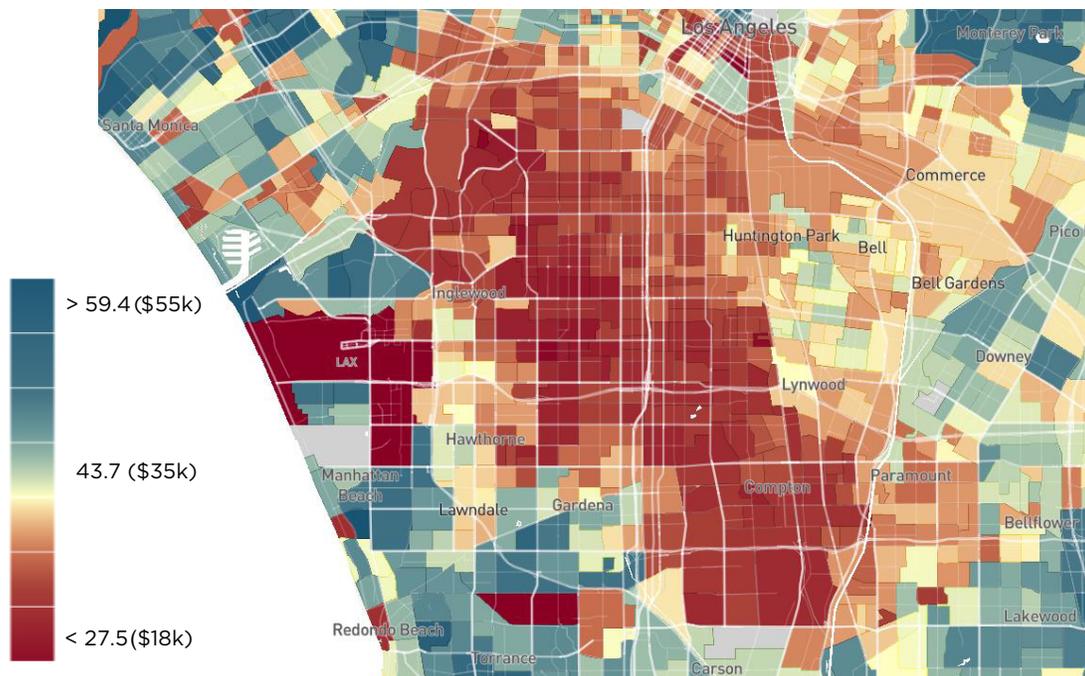
Interestingly, there is substantial heterogeneity across subgroups. The correlation in mean earnings for Whites, Blacks, and Hispanics

across tracts, conditional on having parents at the 25th percentile, is approximately 0.6. That is, places that have poor outcomes for one group do not always have poor outcomes for others.

INCARCERATION DIFFERENCES BY TRACT

The *Opportunity Atlas* has a variety of applications for local policymakers interested in reducing poverty and/or increasing mobility. Policies often either explicitly or implicitly target their intervention by geographic location, traditionally based on observed outcomes in an area such as poverty or crime rates. The *Opportunity Atlas* allows policies

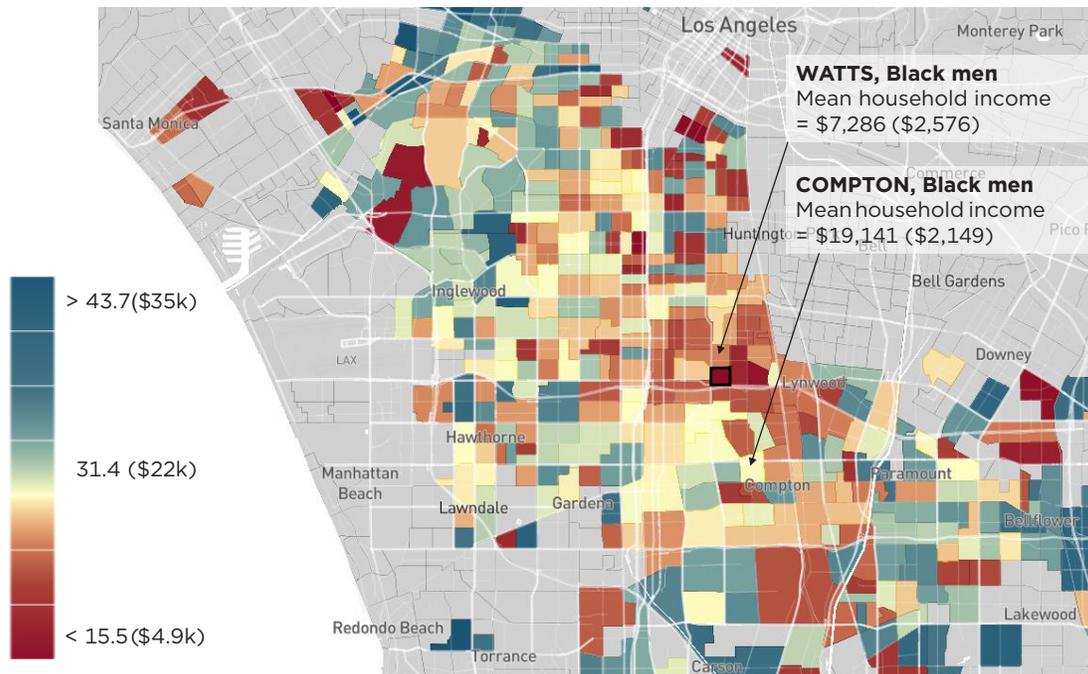
Figure 2-1.
Variation in Intergenerational Mobility In Los Angeles for Children Brought Up in Low-Income Households: 2014–2015



Source: The Opportunity Atlas, <www.OpportunityAtlas.org>.

Figure 2-2.

Variation in Income Across Tracts for Men From Low-Income Black Families: Watts Versus Compton



Source: The Opportunity Atlas, <www.OpportunityAtlas.org>.

to be targeted instead towards areas where children grow up to have low incomes or a high likelihood of being incarcerated. We find that our new measures are only moderately correlated with the traditional measures of neighborhood disadvantage such as poverty rates (in this case, a correlation of roughly 0.6 across tracts within CZs).

To illustrate, Figure 2-3 shows the geographic concentration of incarceration in the Los Angeles area. Over 40 percent of Black men growing up in low-income families in the Watts neighborhood were incarcerated the day of the 2010 Census. This

contrasts with neighboring Compton, for which only 8 percent were incarcerated. This variation at fine local levels suggests that precision policy targeting to the areas where these children are growing up could be effective for helping reduce incarceration and crime in adulthood.

IMPACTS OF NEIGHBORHOODS

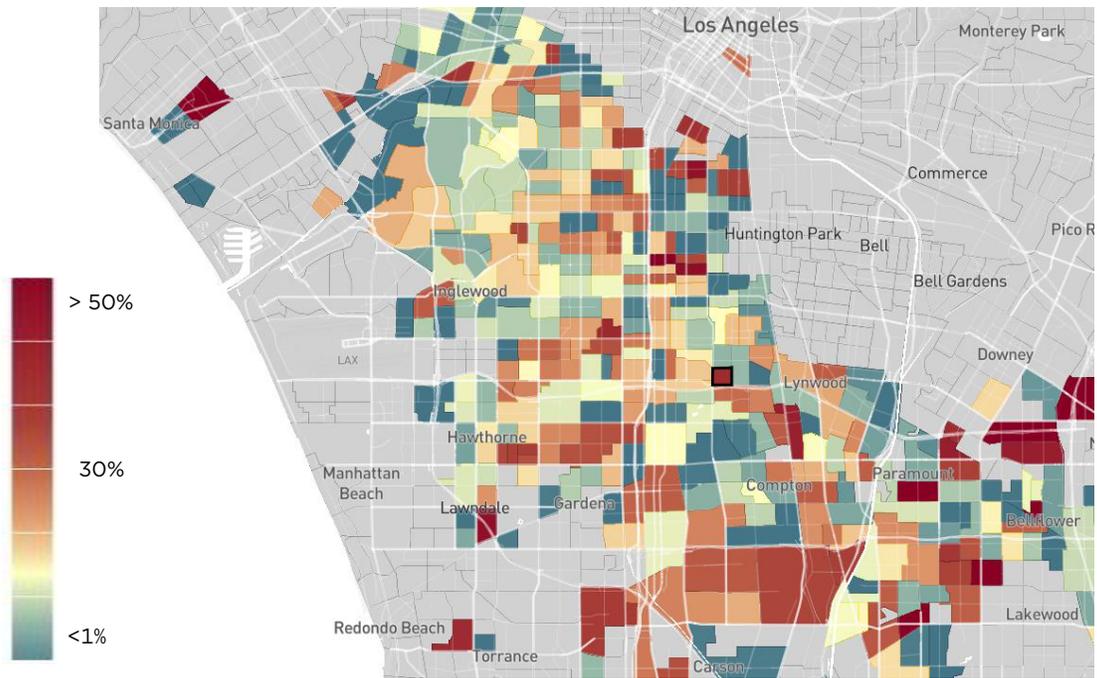
Another application is in identifying “opportunity bargains”: neighborhoods that improve children’s outcomes but do not have higher housing costs. This provides potentially useful information both for families seeking

neighborhoods with better outcomes for their children and for policymakers looking to design affordable housing policies.

To illustrate the presence of “opportunity bargains,” we first explored the potential extent to which the variation across neighborhoods in the *Opportunity Atlas* reflects a causal impact of these neighborhoods on adult outcomes. To do this, we studied the outcomes of children who moved across tracts during childhood. Previous research has established the methods and precise definition of the causal effect of moving from a low- to a high-opportunity neighborhood

Figure 2-3.

Variation in Incarceration Rates Across Tracts for Men From Low-Income Black Families



Source: The Opportunity Atlas, <www.OpportunityAtlas.org>.

at different ages (Chetty and Hendren 2018). Under the assumption that moves are exogenously determined in relation to the age of a child, the impact of a positive move can be identified by comparing “leavers” to “stayers.”

Using the *Opportunity Atlas* data, we document that for every year a child spends in a tract where they are exposed to residents with higher outcomes, *their own adult outcomes are higher*. For example, imagine a child who moves at the age of 5 to a tract where all children reach 1.0 percentage point

higher in income ranks as adults compared to children in the old tract. On average, such a child will have a 0.8 percentage point improvement in income rank as an adult. In contrast, those moving at later ages, on average, have lower incomes. This suggests that the longer a child spends in a neighborhood with better outcomes, the higher his or her outcomes are in adulthood. Text Box 2-2 discusses the implication of these results in the context of an actual policy experiment.

Meanwhile, neighborhoods that produce higher incomes for

children are not always more expensive. Figure 2-4 shows the relationship between median rents, based on the 2015 ACS 1-year estimates, and children’s household income at the age of 34 who grew up in those tracts.

Despite the positive correlation of 0.47, there is considerable variation conditional on rents. This suggests there are many “opportunity bargains” that generate high outcomes for children but do not have higher cost of living. This evidence on opportunity bargains, in turn, can guide local policymakers on which policy-driven

TEXT BOX 2-2.

EXPLORING GAINS FROM MOVING

The *Opportunity Atlas* can be used to inform the development of randomized control trials, such as the Moving to Opportunity (MTO) housing-voucher experiment, conducted by the Department of Housing and Urban Development in several cities in the 1990s. This experiment provided housing vouchers that required recipients to move their families to neighborhoods with a lower poverty rate. The intensity of treatment differed depending on whether a family was in the Section 8 group or the experimental group, with both groups receiving vouchers but the latter group also receiving counseling on neighborhood choice.

Now, comparisons can be made between the neighborhoods considered “better” in the MTO study and those defined as “better” according to the data in the *Opportunity Atlas*. Using these new data, Chetty et al. (2018b) identified areas that they termed “opportunity bargains” in each city that was involved in the MTO study. Here, “opportunity bargains” are defined by the official requirement that the poverty rate be less than 10 percent in the 1990 Census. We then identified the highest-ranking tracts in terms of upward mobility for children in the tract; lower rents than the areas to which the MTO voucher holders moved; and shorter commute times using public transport to the tract where the control group residents lived.

Once these tracts were identified, we calculated average individual earnings in adulthood across the relevant census tracts using observational estimates, conditional on having parents in the 10th percentile of the income distribution. We were interested in estimating what the earnings of the children in the MTO experiment would have been had they moved to these “opportunity bargain” tracts rather than the better MTO tracts.

The associated graph shows the outcomes for the control group (solid circles), the Section 8 group (open triangles), and the experimental group (solid diamonds) from the MTO study along with the predicted outcomes (open circles) from the *Opportunity Atlas*. On average, across the five MTO sites (Baltimore, Boston, Chicago, Los Angeles, and New York City), children’s individual earnings would have been \$3,800 higher had they moved to “opportunity bargain” areas instead of experimental areas.

The graph demonstrates how useful the *Opportunity Atlas* data are, and will continue to be, to policymakers who want to develop local interventions to help reduce poverty and increase mobility.

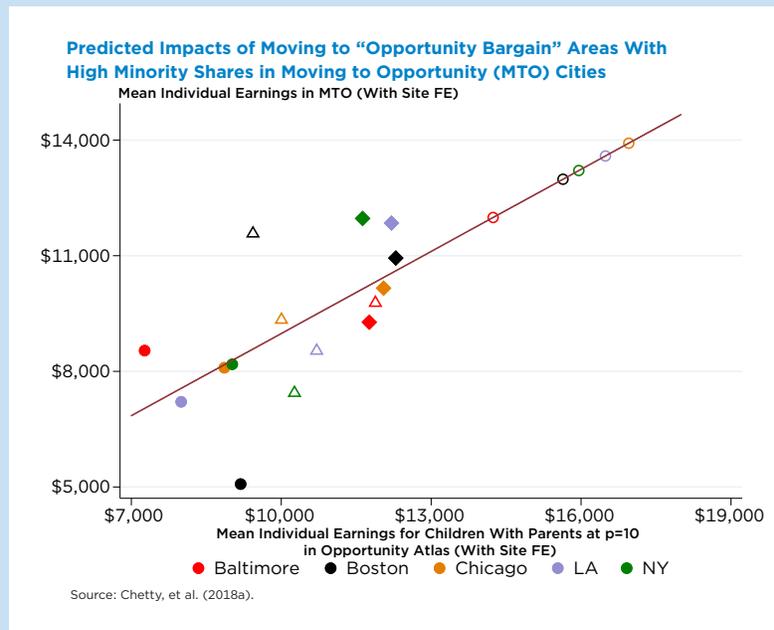
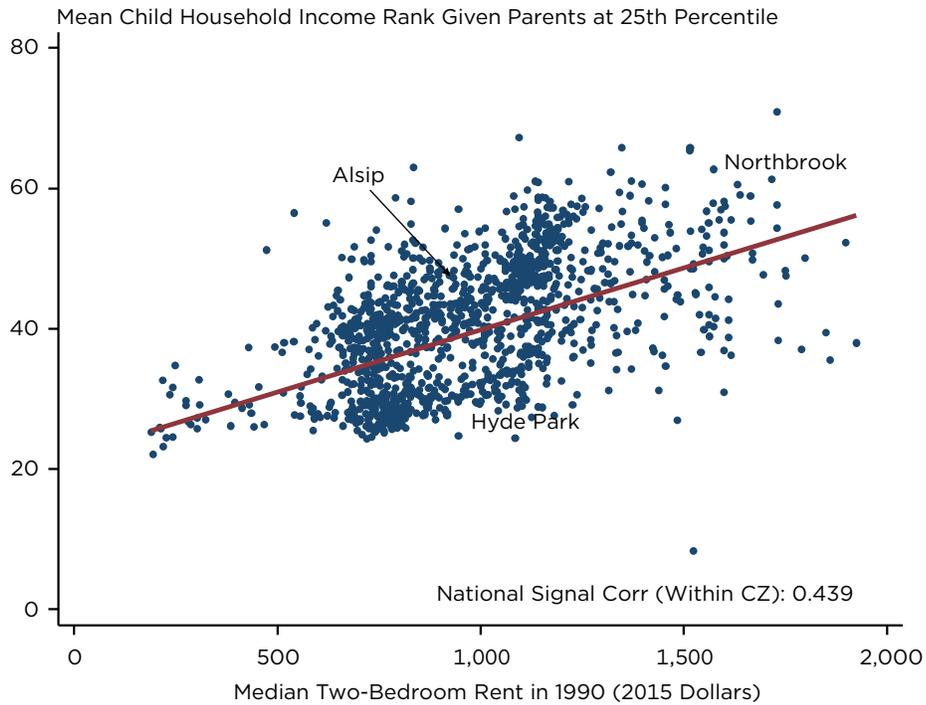


Figure 2-4.

Identifying “Opportunity Bargains”: Correlation Between Neighborhood Quality and Cost



Source: Chetty, et al. (2018a).

characteristics of neighborhoods appear to succeed in improving outcomes.

CONCLUSION

This *Opportunity Atlas* is an exciting new public data source useful for researchers, policymakers, and families. We have seen that where children grow up can have wide variations in their adult incomes and other measures, even across neighborhoods within commuting zones. These new data provide policymakers with useful evidence to target place-based interventions with precision and to guide parents in identifying

neighborhoods where children are more likely to experience good outcomes. More generally, we hope these maps are useful for understanding the childhood roots of economic success in adulthood.

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Chapter 3.

New Timely Measures of Early-Stage Business Formation: Business Formation Statistics

Emin Dinlersoz, Center for Economic Studies

Employer business startups (new firms with employees) contribute significantly to job creation and productivity growth in the U.S. economy (Haltiwanger et al., 2013). While most startups either fail or remain small, some grow to become large and successful firms, transforming industries and the economy in the process. Young firms also appear to be particularly sensitive to business cycles (Fort et al., 2013). For example, there was a major reduction in the number of business startups in the early phases of the Great Recession—a fact that was not immediately apparent due to a lack of timely data on business formation. Business formations also respond to local economic conditions. For instance, Adelino et al. (2015) and Fort et al. (2013) show that self-employment and young firm formation are affected by regional housing cycles.

Data at an annual frequency, available from the U.S. Census Bureau's Business Dynamics Statistics (BDS), indicates that startup activity has been persistently declining over the last couple of decades (Decker et al., 2016). This long-run trend in business dynamism notwithstanding, our knowledge about short-run movements in startup activity has been limited due to a lack of high-frequency, up-to-date data on business formation in the economy. Available

administrative data on various aspects of U.S. startup activity typically comes with a substantial lag between the collection of the information, the processing of the records, and the release of estimates by statistical agencies. The BDS has a lag of 2 years, the Census Bureau's Quarterly Workforce Indicators provide information on job destruction and creation by firm age with a lag of 1 year, while Business Employment Dynamics from the Bureau of Labor Statistics is more current, with a lag of just 7 months.

As a result of these lags, we know little about the current state of startup activity, and how new business formation reacts when economic conditions improve or worsen in the short run. In addition, changes in new business formation may be an early indicator of changes in the economy, as forward-looking entrepreneurs may reassess their business plans in response to the early signs of impending shifts in national and local economic conditions. Timely, accurate, and comprehensive information on recent business startups can enhance the ability of researchers, policymakers, and the business community to assess recent national and local trends in business formation, to anticipate shifts in economic conditions, and develop responses to them.

It is with this backdrop that the Business Formation Statistics

(BFS), a new public-use data product of the Census Bureau, was developed by the Center for Economic Studies in research collaboration with economists from the Board of Governors of the Federal Reserve System, Federal Reserve Bank of Atlanta, University of Maryland, and University of Notre Dame.¹

A NEW PICTURE OF U.S. BUSINESS STARTUPS

The BFS was launched in February 2018 as a research (beta) series, offering a new picture of U.S. startup activity. The BFS contains timely and high-frequency measures of both new business *applications* and employer business *formations* that originate from those applications. The BFS consists of four time series on business applications and eight time series on business formations. The data series are available at the national level and by state starting from the third quarter of 2004. The initial release contained data through the third quarter of 2017. The series are updated quarterly using information on new business application activity since the last quarter, and annually using information on new business formations for the most recent year available. Further details on the BFS and access to the data are

¹ This chapter borrows heavily from Bayard et al. (2018), as well as Dinlersoz (2018).

available at <www.census.gov/programs-surveys/bfs.html>. A fuller discussion regarding the construction of the BFS is available in Bayard et al. (2018).

At the heart of the BFS is administrative data on applications for Employer Identification Numbers (EINs) from IRS Form SS-4. EIN applications are precursors to the potential formation of new employer businesses in the near future since businesses that hire employees need an EIN for payroll tax purposes. The BFS utilizes this information in EIN applications to track applications made mainly for business purposes over time at a quarterly frequency.

Other data on these potential new businesses are also collected on these EIN applications, including the reason for application, legal form of organization, industry, geography, business start date, trade name, indication of planned wage payments, and existence of a previous EIN application by the applicant. (Bayard et al., 2018, provides a full list of characteristics used in the analyses.) These characteristics contain valuable information on the likelihood an application will ultimately become an employer business—a job creator. Based on this information, the BFS computes forward-looking measures of actual and projected number of employer business formations that originate from quarterly applications within a given time window (four or eight quarters) from the time of application.

To do so, the BFS utilizes information on employer business

formations obtained from the Census Bureau’s Business Register (BR), which is its main sampling frame for business censuses and surveys, and its Longitudinal Business Database (LBD), which links the BR longitudinally over time and allows the tracking of businesses from birth to death. The information on new employer births in the LBD in conjunction with the quarterly payroll observations in the Business Register are used to determine the quarterly birth of businesses. Business applications are then linked with these business births to identify which of the applications become employer births and when.

In the next sections, the nature of the business application series is explored in more detail, followed by an examination of the business formation series.

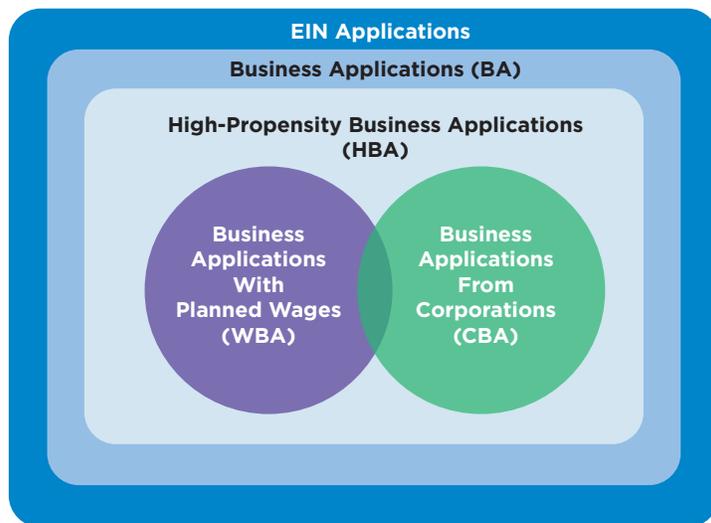
A LOOK AT BUSINESS APPLICATIONS

The four business applications series offered by the BFS are differentiated by the characteristics of the applicants. Figure 3-1 shows how these four sets relate to each other.

The outermost group in Figure 3-1 is the set of all EIN applications that are used to generate the various business applications series. The core applications series in the BFS is Business Applications (BA). BA are a subset of EIN applications that are deemed, based on the information in the application, to be primarily intended for business purposes (as opposed to applications mainly made, for example, to create trusts and estates, or tax liens). Next are High-Propensity Business Applications (HBA) that track applicants that have a much higher likelihood of

Figure 3-1.

The Relationship Between the Business Applications Series in the Business Formation Statistics



becoming employer businesses than the typical business application. Specifically, HBA include applications (1) for a corporate entity (versus other legal forms of organization), (2) that indicate they are hiring employees, purchasing a business, or changing organizational type, (3) that provide a first wages-paid date (planned wages), and/or (4) that have a Northern American Industry Classification System (NAICS) industry code in manufacturing (31-33), retail (44), health care (62), or restaurants/food service (72). Business Applications with Planned Wages (WBA), a subset of HBA,

contains those applications that indicate an intent to pay wages in the form of a first wages-paid date. Business Applications from Corporations (CBA), another subset of HBA, are applications filed by corporations (versus other legal forms of organization). Note that WBA and CBA are not mutually exclusive as some applications satisfy the criteria for both groups. Both of these application types exhibit relatively high rates of turning into employer businesses, as described in Bayard et al. (2018).

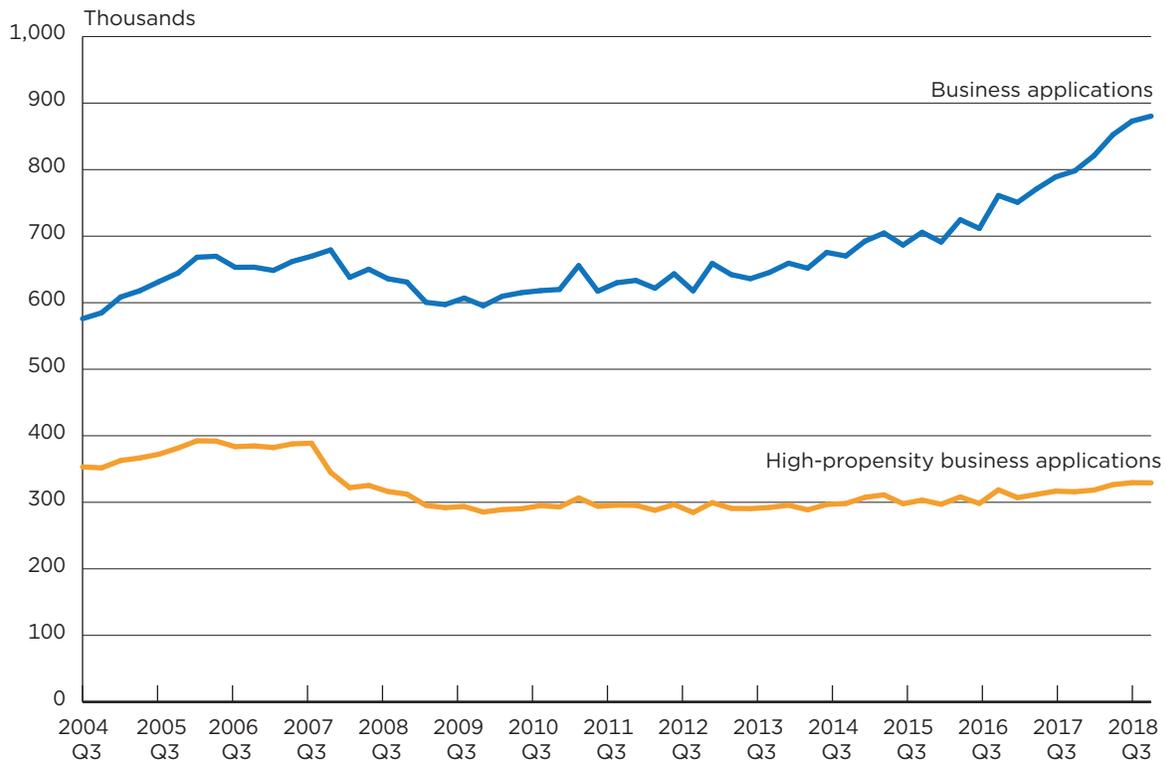
Figure 3-2 shows the time path for the BA and HBA series. We see that BA arrived at a rate

of nearly 700,000 per quarter for the quarters immediately preceding the Great Recession, but this rate dropped to about 600,000 in 2009, after the recession hit in the fourth quarter of 2007. A gradual recovery started after 2009 and accelerated especially after 2013. By 2018, BA come in at quarterly rates that are far above the pre-recession levels, nearing 900,000 per quarter.

HBA followed a similar trend with one major difference. While BA recovered relatively quickly from its lows during the Great Recession, HBA, which have a relatively high rate of turning

Figure 3-2.

Business Applications Versus High-Propensity Business Applications, Seasonally Adjusted



Source: U.S. Census Bureau, Business Formation Statistics.

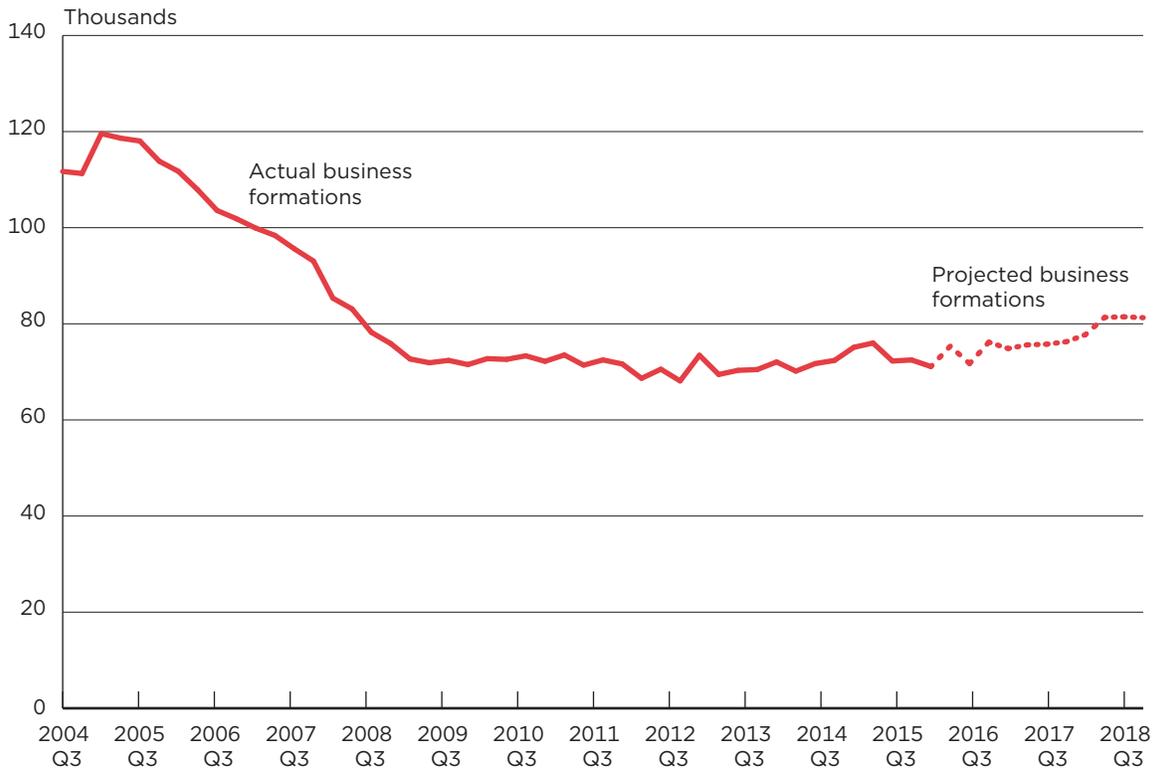
into job-creating businesses, did not exhibit a strong and speedy recovery. Even as HBA showed signs of recovery starting in 2016, the gap between the two series has widened. These statistics suggest that the Great Recession has likely had long-lasting adverse effects on high-propensity business applications. As a result, while there is recovery in the *quantity* of business applications, the *quality* of business applications is yet to rebound in full, where quality is measured specifically by the probability that an application becomes a job creator in the near future.

RECENT EVIDENCE ON BUSINESS FORMATIONS

Next, consider the patterns of business *formations*. One of the eight business formation series in the BFS is Business Formations within 4 Quarters (BF4Q), which is a forward-looking measure composed of business applications that turn into businesses with payroll within four quarters of application. Figure 3-3 plots this series, which is comprised of actual BF4Q (solid line) through the last quarter of 2015 and projected BF4Q (dotted line) starting in the first quarter of

2016 as actuals are not yet available. Here, projections are based on the estimates derived from an econometric model that relates application characteristics to the propensity that the application becomes an employer business within four quarters of the application. See accompanying text box for more details on projecting business formations. As in the case of the two business application series shown in Figure 3-2, BF4Q fell sharply during the Great Recession. However, the decline started much earlier compared to the business applications series, owing, in part,

Figure 3-3.
**Actual and Projected Business Formations (Within Four Quarters),
Seasonally Adjusted**



Source: U.S. Census Bureau, Business Formation Statistics.

to the forward-looking nature of business formations. Current projections indicate a continuing recovery starting in 2016, as the BF4Q is estimated to exceed 80,000 per quarter in 2018. Nevertheless, business formation rate remains far below its prerecession level.

EXPLORING GEOGRAPHIC VARIATION

To demonstrate how application activity and transitions to employer businesses have changed over time and across states, two sets of heat maps are presented.

All BFS series are available at the national level and by state, allowing one to investigate whether interesting geographic variation is present in business startup activity. The maps in Figure 3-4 depict how high-propensity business applications vary across states and over time. Here, the quarterly number of applications is normalized by state population and averaged across the four quarters of a year. States are then grouped into six categories based on the level of HBA per 1,000 people. The map for 2006 suggests a high degree of variation across states in applications per capita. Many states in the West, as well as those on the East Coast, tended to have high levels of applications per capita, whereas states in the middle exhibited lower levels of application activity. Delaware, Florida, and Nevada stand out with more than two high-propensity applications per 1,000 people. In contrast, West Virginia and many states in the Midwest

had less than one application per 1,000 people.

The 2010 map in Figure 3-4 shows that the number of high-propensity business applications per capita broadly declined after

the Great Recession. This decline persists into 2016, with weakness in application activity particularly concentrated in the middle of the country. While the 2018 map indicates slight recovery for

TEXT BOX 3-1.

PROJECTING BUSINESS FORMATIONS

Projections on business formations are based on estimates derived from a linear probability model that relates application characteristics to the propensity that the application becomes an employer business within four (or eight) quarters of the application. The set of predictors used to model business formations include indicator variables from the EIN application, including the type of entity, reason for applying, industry code (6-digit NAICS), and whether a date for first wages is included. The model also contains variables that indicate the week of application submission within the year, the business start date, the limited liability status of the business, and whether the application contains a trade name, an executor's name, or a distinct business address. In addition, the model uses a rich set of interactions between industry, the wage date, type of entity, and reason for applying.

A small set of predictors play the largest roles in explaining the propensity of an application to become an employer business. The wage date variable provides the strongest signal of transition to an employer business. As discussed in the previous section, applications from corporations, applications from individuals purchasing a business, and changing organization type had generally higher propensities of becoming an employer business. In addition, significantly higher propensities are associated with applications from multimember limited liability companies. There are also clear patterns across industries with applications from health care practitioners, restaurants, and manufacturers having higher transition rates.

Finally, a key point in the estimation strategy is that the model utilizes only information submitted on an application. This approach is important because in order to publish "real-time" business formation statistics based on incoming applications, there is little external data available (especially at the regional level) to incorporate into the estimation approach. In addition, from a model-fit perspective, including additional information appears to result in a loss of predictive accuracy. See Bayard et al. 2018 for further details on the model.

some states, many states still had much lower levels of high-propensity applications per capita compared to their pre-recession levels. Overall, Figure 3-4 shows that the volume of application activity per capita varies significantly across states and responds to the changing economic conditions brought about by the Great Recession.

What about the success rate of applications in becoming employer businesses? How does that vary across states and over time? Figure 3-5 shows the number of business formations (within a four-quarter window) per high-propensity business application made in a given

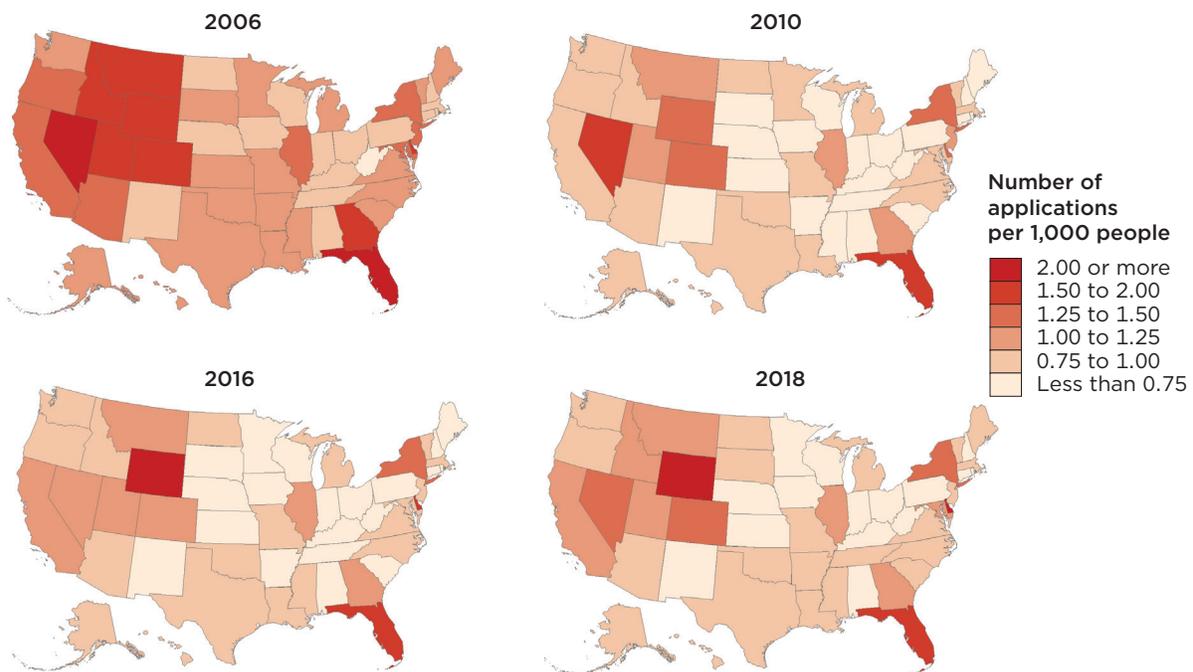
quarter. This measure can be interpreted as the average success rate of a high-propensity business application in turning into an employer business. The maps for 2006 and 2010 use actual business formations, whereas those for 2016 and 2018 use model-based, projected business formations.

As in the case of business applications per capita, there is considerable variation across states in business formations resulting from high-propensity applications. For instance, in the pre-Great Recession year of 2006, Florida and Nevada had average success rates that were less than one business formation for

every five high-propensity business applications. These rates contrast with the relatively better performance of these two states in terms of high-propensity applications per capita seen in Figure 3-4. In contrast, Idaho, North Dakota, South Dakota, and Vermont had success rates that exceeded two business formations for every five high-propensity applications.

Figure 3-5 also shows that the number of business formations per high-propensity application declined after the Great Recession. From 2006 to 2010, many states experienced a drop in the average success rate, though the decline does

Figure 3-4.
High-Propensity Business Applications Per 1,000 People



Note: Average of nonseasonally adjusted data across all quarters in a year by state is depicted. Population estimates are as of July 1.

Source: U.S. Census Bureau, Business Formation Statistics.

not appear to be as broad and pronounced as in the case of high-propensity business applications per capita. Meanwhile, projections of business formations, based on applications in 2018, suggest an increase in some states' success rates since 2016. At the same time, the relative ranking of states' success rates does not change much over these years, which point to potentially highly persistent state-specific factors. For instance, the variation in success rates may stem from differences across states in the distribution of entrepreneurial ability, the degree of local competition, population density, the types of

business activity specific to a state, and state tax and regulatory policies.

FUTURE DIRECTIONS

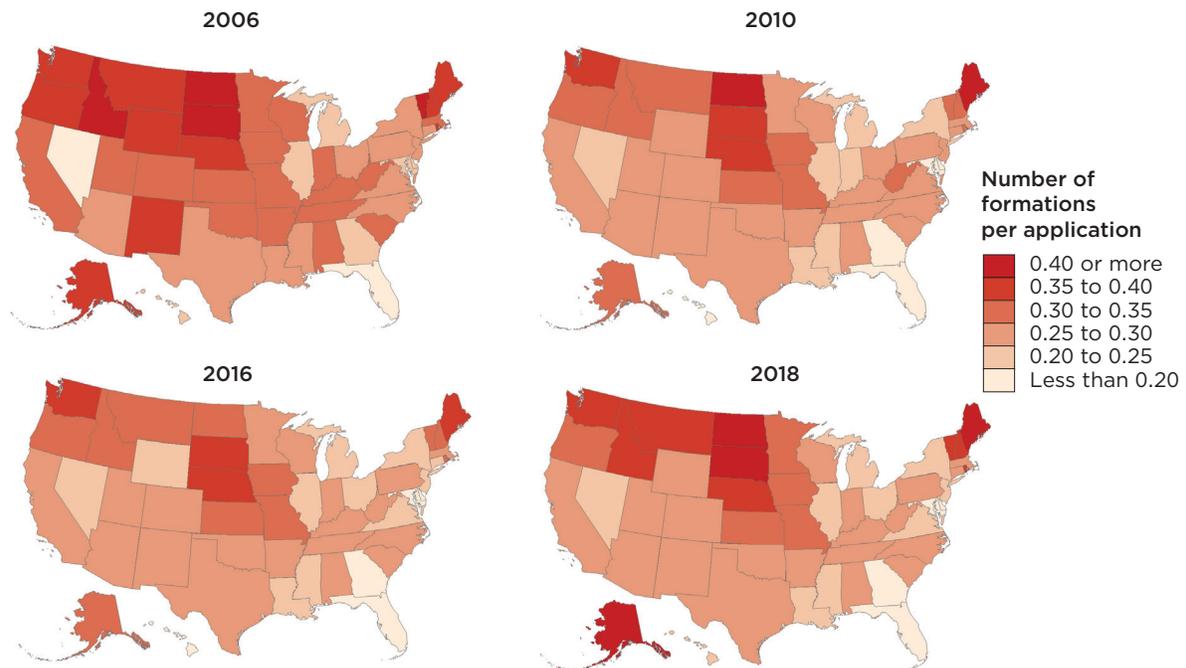
Until now, timely tracking of business startup activity in the United States has not been possible because of a lack of publicly available, up-to-date, comprehensive, and high-frequency data on new business initiations. The new business applications and formations series in the BFS aim to fill this gap. The BFS will help researchers, policymakers, and the business community monitor changes in the climate for

business startups with relatively little lag.

Ongoing research aims to generate even higher frequency (e.g., monthly and weekly) and more geographically granular series (e.g., county-level) in the future. These new data also open exciting possibilities for research on a variety of topics in entrepreneurship, including, but not limited to, the dynamics of entrepreneurial activity, the relationship between business cycles and new business formation, and the effects of local economic development policies on new business activity.

Figure 3-5.

Business Formations (Within Four Quarters) Per High-Propensity Business Application



Note: Average of nonseasonally adjusted data across all quarters in a year by state is depicted. The 2016 and 2018 maps contain projected formations.

Source: U.S. Census Bureau, Business Formation Statistics.

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Appendix 1.

OVERVIEW OF THE CENTER FOR ECONOMIC STUDIES

The Center for Economic Studies (CES) partners with stakeholders within and outside the U.S. Census Bureau to improve measures of the economy and people of the United States through research and the development of innovative information products.

RESEARCH

CES research staff use confidential microdata from Census Bureau censuses and surveys of business and households, linked employer-employee data, and administrative records from federal and state agencies to carry out empirical research that leads to:

- Discoveries in economics and other social sciences not possible using publicly available data.
- Enhancements to research microdata for future researchers.
- Improvements in existing Census Bureau surveys and data products.
- New statistics and information products for public use.

Research findings are disseminated through publications (see Appendix 2), CES discussion papers (see Appendix 4), conferences and seminars, and this annual report.

PRODUCTS

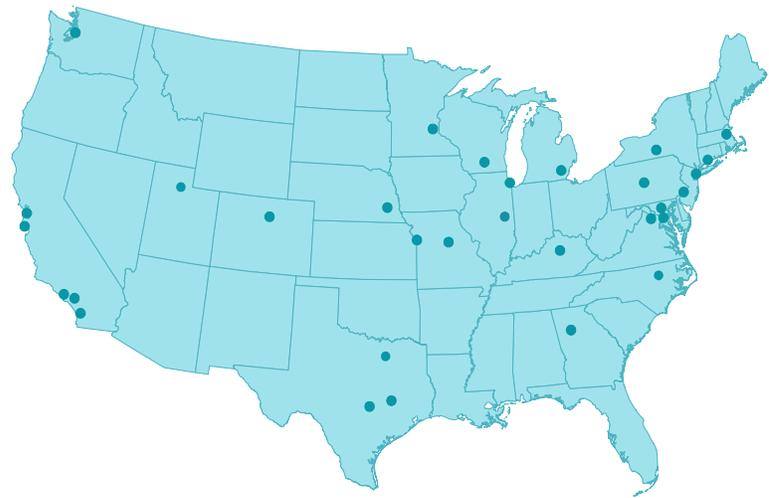
CES uses microdata from existing censuses and surveys, and from administrative sources, to create innovative public-use information products, including:

- *Business Dynamics Statistics (BDS)*. Tabulations on establishments, firms, and employment with unique information on firm age and firm size.
- *Business Formation Statistics (BFS)*. Quarterly statistics on business applications and formations, including projections for recent and future quarters.
- *Job-to-Job Flows (J2J)*. Statistics on worker reallocation, including job change, hires and separations from and to nonemployment, and characteristics of origin and destination jobs.
- *National Longitudinal Mortality Study (NLMS)*. Database for studying the effects of demographic and socioeconomic characteristics on differential in mortality rates.
- *OnTheMap*. Online mapping and reporting application showing where the U.S. population and workforce live and work.
- *OnTheMap for Emergency Management*. Intuitive Web-based interface for accessing U.S. population and workforce statistics, in real time, for areas being affected by natural disasters.
- *Opportunity Atlas*. Interactive mapping tool showing measures of social mobility for every Census tract in the United States.
- *Post-Secondary Employment Outcomes (PSEO)*. Statistics on the earnings and employment outcomes for college graduates, by institution, degree field, and degree level.
- *Quarterly Workforce Indicators (QWI)*. Workforce statistics by demography, geography, and industry for each state.
- *Synthetic Longitudinal Business Database (SynLBD)*. Beta version of synthetic microdata on all U.S. establishments.

FEDERAL STATISTICAL RESEARCH DATA CENTERS

Up until October 1, 2018, CES administered the Federal Statistical Research Data Centers (RDCs), which are Census Bureau facilities that provide secure access to restricted-use microdata for statistical purposes. Qualified researchers with approved projects can conduct research at the RDCs that benefit the Census Bureau (when using Census Bureau microdata) by improving measures of the economy and people of the United States. Research conducted at the RDCs spans a variety of topics, and results from this research are regularly published in major peer-reviewed journals (see Appendix 2).

Through partnerships with leading universities and research organizations and other federal statistical agencies (see Appendix 6), CES currently operates 29 Research Data Centers, which are located in Ann Arbor, Atlanta, Austin, Berkeley, Boulder, Cambridge, Chicago, College Park (MD), College Station (TX), Columbia (MO), Dallas, Durham, Irvine, Ithaca (NY), Kansas City (MO), Lexington, Lincoln, Los Angeles, Madison, Minneapolis, New Haven, New York, Philadelphia, Seattle, Stanford (CA), Suitland (MD), University



Park (PA), and Washington (DC), with two being planned for Salt Lake City and Urbana (IL).

Research proposals submitted to CES to use Census Bureau microdata are evaluated for:

- Potential benefits to Census Bureau programs.
- Scientific merit.
- Clear need for nonpublic data.
- Feasibility given the data.
- Risk of disclosure.

Proposals meeting these standards are further reviewed by the Census Bureau's Policy Coordination Office. Proposals may also require the approval of other data-providing entities. Abstracts of recently approved projects appear in Appendix 3.

All RDC researchers must become Special Sworn Status (SSS) employees of the Census Bureau—passing a background check and swearing for life to protect the confidentiality of the data they access. Failing to protect confidentiality subjects them to significant financial and legal penalties.

Selected restricted-access data from the Agency for Healthcare Research and Quality (AHRQ), Bureau of Labor Statistics (BLS), and National Center for Health Statistics (NCHS) can also currently be accessed in the RDCs. Proposals to use those data must meet the requirements of those agencies.

PARTNERSHIPS

CES relies on many supporters and partners within and outside the Census Bureau, including:

- Census Bureau divisions that collect, process, and produce the business and household data. These areas provide CES with:
 - The latest census and survey microdata, which are at the foundation of the research files CES makes available (see Appendix 5 for new data releases).
 - Expert knowledge of the methodologies underlying the microdata.
 - Occasional reviews of RDC research proposals.
 - The universities, research organizations, and federal statistical agencies that support the Federal Statistical Research Data Centers until recently operated by CES (see Appendix 6).
 - The National Science Foundation, which supports the establishment of new RDCs.
 - The members of the Local Employment Dynamics (LED) partnership (see Appendix 7), who provide employment and earnings data to CES
- that serve as the foundation for Longitudinal Employer-Household Dynamics (LEHD) research microdata and a number of public-use data products, including *Job-to-Job Flows*, *OnTheMap*, and the *Quarterly Workforce Indicators*.
- Census Bureau divisions that provide administrative and technical support, especially our colleagues in the Economic Directorate and the Research and Methodology Directorate.

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Appendix 2.

CENTER FOR ECONOMIC STUDIES (CES) STAFF AND RESEARCH DATA CENTER (RDC) SELECTED PUBLICATIONS AND WORKING PAPERS: 2018

[Term inside brackets indicates work by CES staff or RDC researchers.]

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Appendix 3.

ABSTRACTS OF PROJECTS STARTED IN 2018

The following are new FSRDC projects using U.S. Census Bureau microdata.

HOW DO U.S. FIRMS ADJUST TO CHINESE IMPORT COMPETITION?

Xavier Giroud—Columbia University
Holger Mueller—New York University

China's accession to the World Trade Organization in 2001 has led to a surge in U.S. imports from China and a decline in U.S. manufacturing employment in industries affected by Chinese import competition. While the implications of this "China Shock" for the U.S. manufacturing sector are well documented, little is known about how U.S. firms—the

entities that own plants and employ workers—adjust to the China Shock. Do firms reallocate resources away from affected plants and toward plants in less affected industries? Or do they shift resources towards affected plants, allowing them to compete more effectively against Chinese imports? And what explains the direction and magnitude of the resource

reallocation? This research will address these questions by using establishment-level microdata from the Longitudinal Business Database, Census of Manufactures, and Annual Survey of Manufactures, and worker-level data from the Longitudinal Employer-Household Dynamics program.

HUMAN CAPITAL AND CORPORATE FINANCING, RESTRUCTURING, AND GOVERNANCE

Warren Bailey—Cornell University
Antonio Falato—Federal Reserve Board of Governors
Dawoon Kim—Cornell University
Hyunseob Kim—Cornell University
Edith Liu—Federal Reserve Board of Governors
Song Ma—Yale University
Till von Wachter—University of California, Los Angeles

This research describes how corporate financing and restructuring activities impact firms, workers, and human capital. We use the Longitudinal Business Database, Census of Manufactures, and other economic datasets linked to the Longitudinal Employer-Household Dynamics to conduct several empirical analyses. First, we estimate the decline in wages and the employee human capital loss resulting from corporate bankruptcy. Next, we estimate the effects of corporate restructuring activities on establishment- or worker-level

outcomes such as productivity, employment, and wages. Examples of restructuring activities include investment by venture capital firms or private equity firms and changes in industry concentration. We also analyze the effects of corporate governance/ownership structure on firm or worker outcomes such as Tobin's Q, capital structure, wages, and labor productivity. Further, we estimate the effects of changes in an establishment's location. Using the Longitudinal Firm Trade Transactions Database to identify firms and establishments in the

U.S. importing or exporting goods from foreign subsidiaries, we estimate the effects of off- and reshoring of plants on plant- and worker-level outcomes, such as productivity and wages. In addition, we use the Annual Capital Expenditures Survey to estimate the effect of changes in firm or establishment location on capital expenditures. Finally, we estimate the role of unions in shaping the sensitivity of wages to productivity and analyze how changes in industry market concentration affect the worker-level outcomes such as wages.

LOCAL ECONOMIC SHOCKS AND FIRM GROWTH

Brian Greaney—Yale University

Conor Walsh—Yale University

Giuseppe Moscarini—Yale University

In this research, we use the detailed geographic information available in the Longitudinal Business Database and the Business Register to trace the impact of local economic shocks and conditions on firm entry and growth. In particular, we exploit house price variation in the period of the Great Recession to examine the sensitivity of entry to a major

economic shock, and estimate the subsequent impact on wage and productivity growth (as measured by revenue). We also examine how measures of density and agglomeration impact the firm life cycle, and what this can tell us about how physical space impacts firm growth. This research is part of our broader agenda unifying the firm lifecycle with the spatial

economics literature, which is an under-researched area of firm growth. This can help us understand whether and how space and the distribution of economic activity matters for macroeconomic aggregates, as well as the utility of local initiatives like place-based economic policy.

THE LOCAL ECONOMIC IMPACTS OF PRISONS

Matthew Notowidigdo—Northwestern University

Janjala Chirakijja—Northwestern University

This research studies the economic consequences of the prison construction boom in the United States. During the last three decades, growth in the prison population in the United States has been the largest in history. One of the biggest challenges in siting new prisons is resistance from local communities. Commonly cited negative impacts of prisons include falling property values, stunted local economic growth, and damage to the

community's reputation and ability to retain and attract businesses. However, prisons are not always unwelcome. Many rural towns have chosen to tie their economies to prisons, believing the institutions provide recession-proof jobs and often a much-needed boost to the stagnant local economy. Using restricted-use data from the Decennial Census and American Community Survey, this research evaluates the effect of prison openings during 1980-2010

on local housing values and rents, local labor markets and neighborhood demographics, as well as the overall welfare impact on residents. The research will also evaluate the Census Bureau's practice of including incarcerated individuals as residents when tabulating public-use community statistics, in light of changing circumstances of the U.S. correctional system.

THE ROLE OF IDIOSYNCRATIC FACTORS AS DETERMINANTS OF AGGREGATE OUTCOMES

Chen Yeh—University of Illinois at Urbana-Champaign

Claudia Macaluso—University of Illinois at Urbana-Champaign

This research seeks to comprehensively characterize how heterogeneity and idiosyncratic shocks at the firm and regional levels affect aggregate outcomes. Specifically, we are interested in describing how microeconomic forces shape aggregate outcomes through the dynamic behavior of firms. Recent contributions have shown that macroeconomic outcomes are disproportionately affected by

specific categories of firms and/or regions. However, aggregate data masks this rich level of heterogeneity. Thus, we use microdata from the Economic Censuses, Longitudinal Business Database, Standard Statistical Establishment List, and Annual Survey of Manufactures to uncover the heterogeneity in aggregate outcomes at the firm and regional level, and to demonstrate its importance for the aggregate economy. In

particular, we will document the extent of heterogeneity across plants and firms, and locations in the U.S. economy along several dimensions, including firm creation and growth, and produce several statistical estimates of the contribution of firm- and location-specific factors to the business cycle, labor market fluctuations, secular trends in market power, and business dynamism.

RACIAL DISTRIBUTION OF REAL ESTATE TRANSACTIONS AND ITS IMPACTS ON NEIGHBORHOODS

Geng Li—Federal Reserve Board of Governors

Vincent Yao—Georgia State University

This research examines housing transactions with respect to segregation and minority status. We answer the question of whether White households in better-off neighborhoods are less likely to sell their homes to Black households. To do so, we model the binary event of whether a property was sold to a minority buyer with respect to whether the seller was a minority, a measure

of segregation, and other independent variables related to housing. We examine transactions in American Housing Survey data linked to neighborhood characteristics from public Census Bureau data and National Change of Address data. With this model, we can examine several different aspects of how being a minority and the level of segregation of neighborhoods is important

in housing transactions. We take this analysis a step further to examine whether minority homebuyers have to pay a higher price in order to gain access to a better-off neighborhood, and test whether households that paid a premium to relocate to better neighborhoods are more likely to move back to their previous neighborhood.

LABOR MARKET SHOCKS, GEOGRAPHY, AND GOVERNMENT POLICY: EVIDENCE USING MATCHED EMPLOYER-EMPLOYEE DATA

*David Autor—Massachusetts Institute of Technology
Arindrajit Dube—University of Massachusetts Amherst
Matthew Freedman—Cornell University
Ethan Kaplan—University of Maryland
Alexandre Mas—Princeton University*

Substantial debate surrounds the effects of government-determined factors such as minimum wages, unemployment insurance (UI), trade protections, and place-based economic development programs. Moreover, what researchers observe in observational data frequently

runs counter to theoretical predictions from standard economic models. Recent work suggests that publicly available data from surveys may mask important micro-heterogeneity and obscure differential impacts across local labor markets. We match employee-employer data from the

Census Bureau's Longitudinal Employer-Household Dynamics program to uncover such micro-heterogeneity as we examine how minimum wages, UI, trade protections, and place-based economic development programs affect the functioning of the labor market.

IMMIGRATION IMPACTS, IMMIGRANT WELL-BEING, AND GEOGRAPHIC CONTEXT USING THE 1996-2008 SURVEY OF INCOME AND PROGRAM PARTICIPATION

Matthew Hall—University of Washington

Despite substantial differences in the size, history, and characteristics of foreign-born populations in local areas in the United States, immigration research has largely ignored the roles that local areas play in shaping immigrant incorporation and the consequences of immigration. Some of these local responses have resulted in policies aimed to attract or

aid immigrants (e.g., the guest worker program in Utah), while others have sought to deter immigrants (e.g., requiring police officers to verify immigration status in Alabama). This research uses restricted-access data from the 1996, 2001, 2004, and 2008 panels of the Survey of Income and Program Participation to examine the local dynamics of immigrant

well-being. Specifically, we seek to understand how features of local labor markets and characteristics of co-ethnic populations influence economic and social incorporation of foreign-born persons, as well as explore how the associations between immigration and native-born persons' economic well-being is moderated by features of local areas.

LINKAGES AMONG EMPLOYMENT, FIRM DYNAMICS, AND FINANCIAL CONDITIONS

Simon Gilchrist—Boston University

Michael Sierner—Federal Reserve Board of Governors

Egon Zakrajšek—Federal Reserve Board of Governors

This research will examine the linkages among external finance, employment, and firm dynamics. We examine how financial conditions impact employment and the dynamics of firms over the business cycle. We link bank financial statement/balance sheet data to Census Bureau establishment and firm data to study how the financial crisis of 2008 affected banks' supply of funds for lending and by extension, firms' employment outcomes and ability to take out loans. For

each employer establishment in the Longitudinal Business Database, we construct a measure to represent the financial constraints facing the firm in their geographic area. This measure is calculated using outside data about the balance sheet conditions of banks, weighted by the relative market share that each bank has in a given establishment's local area. The hypothesis is that employment will suffer at small/young firms when the financial conditions of local banks

deteriorate, because these types of firms are heavily reliant on commercial bank financing. If so, this could explain why entrepreneurial businesses suffered disproportionately during the financial crisis. Besides employment, we will also explore how the financial constraint variable affects other outcomes such as entry and exit rates, productivity, wages, volatility, inventories, and characteristics of new business owners.

QUANTIFYING THE ELIGIBILITY, ENROLLMENT, AND RETENTION OF LOW- AND MODERATE-INCOME POPULATIONS IN MEANS-TESTED PROGRAMS

Caroline Danielson—Public Policy Institute of California

This research will quantify short-run earnings volatility among low- and moderate-income families in California to estimate the incidence of family income changes and gauge implications for means-tested public insurance program eligibility. Moreover, this project will examine uptake of insurance programs and assess causes of disenrollment. To identify low- and moderate-income families in California, quantify earnings volatility, and assess public insurance eligibility, we will use quarterly earnings records contained in the Employment History File from the Longitudinal

Employer-Household Dynamics (LEHD) program linked to household records in the American Community Survey and Current Population Survey, and person-level characteristics in the LEHD Individual Characteristics File. To this, we will link Medicaid Statistics Information Systems records, in order to capture spells of enrollment to Medicaid and SCHIP. With this we will generate measures of inappropriate disenrollment (program drop-out despite continuing eligibility) and legitimate disenrollment where return to these programs occurs in a short period of time

(churning). In 2014, millions of Americans became eligible for government-subsidized health insurance programs where eligibility is determined by income falling within precisely defined ranges. We find it important to know whether eligible individuals have taken up benefits and, for families with more variable incomes, whether costs of maintaining enrollment results in an increased likelihood of churning—moving off and then back on a program within a short period of time—which is costly both for households and programs.

RISK EXPOSURE, MANAGERIAL CHARACTERISTICS, AND FIRMS' REAL ACTIONS

John (Jianqiu) Bai—Northeastern University

This research will test for the key relationship between firms' exposure to environmental risks, personal characteristics of firms' top executives, plant- and firm-level decisions such as investment, employment, R&D, and, ultimately, firm success. In particular, this project will advance the knowledge of traditionally overlooked "risk" factors (i.e., geographic dispersion, political risks, legal environment, particularly labor law) that drive corporate

behavior and how firms' management of these factors are tied to characteristics of top executives and board members. The project will explore the relationship between firms' operating and financing activities and their exposure to various types of environmental risks and the mechanism by which firms manage their business activities in response to exposure to various environmental risks such as reallocation of

resources. This research will explore the performance consequences of firms when faced with exogenous variation in risks. Datasets to be used include the Annual Capital Expenditures Survey, Census of Manufactures, Annual Survey of Manufactures, Longitudinal Business Database, Standard Statistical Establishment List, Survey of Industrial Research and Development, and Business R&D and Innovation Survey.

WELLS AND WELL-BEING: HOW THE SHALE ENERGY REVOLUTION IS CHANGING RURAL FAMILIES

Michael Betz—Ohio State University

Anastasia Snyder—Ohio State University

Advancements in oil and gas drilling have led to a rapid expansion of shale energy production across the United States. While increased domestic energy production has important strategic implications for the country as a whole, the most profound impacts may be on the small towns and rural areas where the energy extraction is occurring. Much work has been done to estimate the economic and

environmental impacts of shale energy development, yet little empirical work has assessed its impact on family outcomes and community demographic composition. We use restricted access American Community Survey microdata from 2006–2014 to estimate difference-in-differences models of shale energy development on family processes. Family outcomes of interest include fertility (marital and nonmarital), marriage,

divorce, cohabitation, and migration. We do not expect shale development to have progressed long enough to have a measurable impact on overall fertility rates. However, nonmarital fertility is more closely associated with short-term individual level economic, so we expect shale development to significantly impact nonmarital fertility.

PRODUCTION, ENERGY USE, AND EMPLOYMENT IN RESPONSE TO CHANGES IN ENERGY PRODUCTION, ENVIRONMENTAL FACTORS, AND THE BUSINESS ENVIRONMENT

Mark Curtis—Wake Forest University

Gale Boyd—Duke University

Jonathan Lee—East Carolina University

Ryan Decker—Federal Reserve Board of Governors

Significant heterogeneity exists in energy markets and the business environment across the United States. States and regions have adopted different strategies to address both the challenges of supplying electricity and the negative externalities associated with its production (e.g., emissions, pollutants). Variation in strategies leads to divergent energy market choices that differentially impact important economic outcomes. Theory suggests that plants facing variation in electricity prices should respond by adjusting output and employment, but it may be difficult to estimate the impact of electricity prices because

they are often negotiated. Recent research finds that larger or better managed firms generally receive better prices than smaller or more poorly managed firms. We will use Census Bureau manufacturing and energy consumption data, together with matched employee-employer data from the Longitudinal Employer-Household Dynamics program, to assess the effects of energy market variation in relation to the following questions. How do plants adjust output and employment in response to changes in the business environment, changes in energy prices, and environmental shocks? Which types of workers are impacted by these

adjustments, and do firms shift employment and output from plants located in regions that receive negative environmental or price shocks to plants located in regions that did not receive the shock? What firm and plant characteristics correlate with plant outcomes such as energy intensity and pollution intensity? What adjustments do plants and firms make in response to shocks (e.g., changes in the business environment, changes in energy prices, environmental shocks)? What plant characteristics correlate with the energy intensity, pollution intensity, and productivity of its production processes?

CHANGES IN LABOR DEMAND AND THE OCCUPATIONAL AND GEOGRAPHIC MOBILITY OF U.S. WORKERS

Ted Mouw—University of North Carolina at Chapel Hill

Existing research posits that changes in labor demand represent a source of labor market instability regardless of why the changes in demand arise. I will describe the impact of changes in labor demand on occupational and geographic mobility using data from the Survey of Income and

Program Participation (SIPP) and American Community Survey. I will also evaluate the relative performance of public, confidential, and synthetic versions of the SIPP while conducting an analysis of geographic mobility via the process of worker reallocation due to labor demand shocks.

Further, I will analyze the process of worker reallocation to different occupations and geographic regions in response to labor demand shocks, the speed with which the labor market adjusts to instability, and resulting impacts on worker well-being.

LOCAL MULTIPLIER EFFECT

Yichen Su—Federal Reserve Bank of Dallas

We use the Longitudinal Business Database to evaluate the effect of local labor demand shocks on economic outcomes in neighborhoods surrounding the affected locations. This research uses a series of highly localized exogenous variations in labor demand to examine its impact on local economic outcomes such as firm entries and exits, employment, local wages, rents, etc. We examine

how such effects differ by the characteristics of the locations in which the labor demand shocks take place. This study provides insights on how local jobs are created, how an initial labor demand shock would propagate through local economies through the “multiplier effects”, and how the propagation process depends on the types of neighborhoods in which it

takes place. By estimating the cross-industry local multiplier effects, this research also helps in understanding the nature of local production agglomeration. In addition, by estimating the effect of labor demand shocks on entries of local service firms and rents, the research also sheds light on the mechanism of local consumption agglomeration.

THE IMPACT OF ACCOUNTING FRAUDS ON LABOR MARKETS

Jung Ho Choi—Stanford University
Philip Berger—University of Chicago
Brandon Gipper—Stanford University
Mitchell Linegar—Stanford University
Sara Malik—Stanford University

Prior studies have investigated the effect of accounting fraud on various parties, including investors, top managers, consumers, and peer firms. However, the impact of accounting fraud on labor markets has received little attention, likely because of data limitations. The question this study addresses is whether the labor market outcomes of employees of accounting fraud firms could have been different if those firms had not been involved in accounting fraud. Using data from the Census Bureau’s Longitudinal Employer-Household Dynamics program, Longitudinal Business Database, Annual Survey of Manufactures, and Census of Manufactures, we examine employment effects, such as wages and employee turnover, before, during, and

after periods of fraudulent financial reporting. These data sets allow us to track employee information, such as wages and job switches, over time. To analyze the employment effects, we combine Census Bureau data with SEC enforcement actions against firms with serious misreporting. We find that, compared to a matched sample, employee wages decline during and after fraud, and that employment growth at fraud firms is positive during fraud periods and negative after. During fraud, managers overinvest in labor. Frauds cause informational opacity, and fraudulent reports tend to indicate good prospects, encouraging employees to still join the firm. After the fraud is revealed and the overemployment is unwound,

employee wages fall due to turnover, with related job-search challenges and losses of firm-specific investments, and the stigma associated with the fraud. We use various subsamples to provide evidence for these mechanisms, showing that labor market disruptions and stigma have meaningful and negative consequences for employees divorce, cohabitation, and migration. We do not expect shale development to have progressed long enough to have a measurable impact on overall fertility rates. However, nonmarital fertility is more closely associated with short-term individual level economic, so we expect shale development to significantly impact nonmarital fertility.

MANAGEMENT, UNCERTAINTY, FIRM SIZE, AND PERFORMANCE

Nicholas Bloom—Stanford University

Steve Davis—University of Chicago

Brian Lucking—Stanford University

Itay Saporta-Eksten—Tel Aviv University and University College London

Stephen Terry—Boston University

John Van Reenen—Massachusetts Institute of Technology

There is substantial dispersion in productivity across establishments in the United States. Management is an important factor in explaining differences in productivity, as is the role of economic uncertainty and firm expectations, which drive micro and macro performance. This research will quantify the roles of these factors and evaluate their causes and effects, using data from the

Management and Organizational Practices Survey, Annual Survey of Manufactures, Census of Manufactures, and Longitudinal Business Database, and other economic censuses and surveys. We will evaluate management practices and uncertainty across plants, firms, regions, and industries; examine channels through which management and uncertainty affect performance; and identify key factors driving

uncertainty, as well as the adoption of better management practices in organizations. This analysis will allow us to evaluate whether establishments that have more structured management, more stable organizational environments, and better forecasting have superior performance, less short-termism, and less sensitivity to transitory shocks.

DEVELOPING AN INNOVATIVE METHODOLOGY TO MEASURE THE URBAN-RURAL CONTINUUM AS APPLIES TO TOBACCO CONTROL

Erin Tanenbaum—NORC at the University of Chicago

Devi Chelluri—NORC at the University of Chicago

Frances Stillman—NORC at the University of Chicago

Mary Ellen Wewers—Ohio State University

Elizabeth Mumford—NORC at the University of Chicago

Nathan Doogan—Ohio State University

Megan Roberts—Ohio State University

This research aims to identify the best custom definition of rural-urban classifications to use with attributes of tobacco-use and attitudes and determine the similarities or differences that exist across two rural populations (Appalachia and Delta) regarding factors that contribute to high prevalence of tobacco use. We combine information from Tobacco Use Supplement (TUS) and other

Current Population Survey (CPS) supplements to assess the differential utility of several commonly used definitions and propose a new definition of the urban-rural continuum for explaining variation in tobacco-related outcomes. One end result of this project is a new, comprehensive custom urban-rural classification (isolation score measure) to assess rurality. Additionally, this

research is designed to compare urban/rural TUS-CPS tobacco use behaviors in comparative models examining Appalachia, the Delta, and a region more typical of the United States, to further examine the nuances in rural America. The Appalachian and Delta regions were carefully selected as areas of interest because of their well-documented health disparities including smoking prevalence.

ORGANIZATIONAL POLICIES AND CORPORATE DISCLOSURE QUALITY

Seth Carnahan—University of Michigan

Xiumin Martin—Washington University of Saint Louis

Maryjane Rabier—McGill University

Yifang Xie—Washington University of Saint Louis

The incomes of top earners are typically top-coded in survey data to protect individuals' identities. Common imputation methods used to recover top-coded income values are limited in several ways when applied to longitudinal data. We show that the accuracy of imputed income values for top earners in longitudinal surveys can be improved significantly by incorporating information from

multiple time periods into the imputation process in a simple way. Moreover, we introduce an innovative, nonparametric empirical Bayes imputation method that further improves imputation quality. With a sample of individuals for whom incomes are pseudo top-coded (i.e., in which the exact income figures are accessible but temporarily expunged), we show that the Bayesian

imputation method reduces the root mean-squared error of imputed income values by 19 to 46 percent relative to standard approaches in the literature. After documenting this improvement in performance, we illustrate the benefits of the Bayesian method for investigating multiyear income inequality. This research uses data from the Survey of Income and Program Participation.

IMPUTING TOP-CODED INCOME DATA IN LONGITUDINAL SURVEYS

Li Tan—University of Missouri

Cory Koedel—University of Missouri

This research examines which organizational policies contribute to efficient information collection and dissemination within manufacturing firms. Specifically, we will use the Census of Manufactures and the Management and Organizational

Practices Survey to examine how (1) organizational structure, (2) managerial incentives along corporate hierarchy and corporate governance policies, and (3) the extent of use of information technologies, affect the quality of corporate disclosures. Examining how each

dimension of organization policy affects corporate disclosures will help to understand the process of corporations' internal communication, and build on and aim to contribute new insights to the determinants of high-quality corporate disclosures.

ORGANIZATIONAL CHARACTERISTICS, THE CHARACTERISTICS OF ORGANIZATIONAL INSTITUTIONAL ENVIRONMENTS, AND TEXAS OIL AND GAS VENTING AND FLARING PRACTICES

Katherine Ann Calle Willyard—Texas A&M University

Mary Campbell—Texas A&M University

Theresa Morris—Texas A&M University

This research examines oil lease and gas well venting and flaring practices, the characteristics of organizational entities within the oil and gas extraction industry, and the institutional environments of gas wells, oil leases, and oil and gas extraction establishments operating in Texas through the use of multilevel statistical modeling. We utilize economic data from the Longitudinal Business Database, Business Register, and Census of Mining, as well as community demographic characteristics

from the Decennial Census and the American Community Survey. We combine restricted-use data with publicly available information from the Texas Railroad Commission, Environmental Protection Agency Greenhouse Gas Report, the National Center for Charitable Statistics, and other neighborhood-level resources. We then explore the relationship between venting and flaring practices at Texas onshore oil leases and gas wells, and the organizational characteristics and institutional environments

of Texas onshore oil leases and gas wells, Texas oil and gas extraction establishments, and/or oil and the gas extraction establishment's ultimate owning firm. By identifying the characteristics of the types of establishments and firms disproportionately responsible for venting and flaring extracted natural gas, decision-makers can better target ecologically inefficient operations and reduce the waste and pollution caused by venting and flaring from the oil and gas extraction industry.

A POLYGON-BASED APPROACH TO SPATIAL NETWORK ALLOCATION: OPTIMAL FACILITY LOCATION MODELING AND NETWORK ANALYSIS

James Gaboardi—Florida State University

David Folch—Florida State University

In network-centric research, population is represented by large, aggregated census geographies to reduce computational complexity and accommodate data availability. However, it is well known in the literature that as spatial data are aggregated and precise locational information is lost, error occurs. The purpose of this research is to develop a novel method, PolyPop2Net or PP2N (Population Polygons

to Networks), for allocating populations to networks by utilizing restricted-use 2010 Decennial Census microdata and the restricted-use Master Address File Extract as the benchmark truth. We will use publicly available 2010 decennial data to run Operations Research and Network Analysis models to evaluate the accuracy and validity of the PP2N. Specifically, we test the PP2N method using nested Census Bureau

geographies from the publicly available 2010 Decennial Census for Leon County, Florida. We use the simulated examples along with the true Leon County examples to determine the generalizability of the new method. The new method will then be shared with others and will be available for use through integration into a spatial analysis package in Python.

FARMS OR FACTORIES? TRADE, REALLOCATION, AND GENERAL EQUILIBRIUM ADAPTATION TO THE GLOBAL PRODUCTIVITY IMPACTS OF EXTREME WEATHER

Ishan Nath—University of Chicago

Michael Greenstone—Massachusetts Institute of Technology

This research endeavors to estimate the causal impact of extreme weather on manufacturing productivity in the United States as part of a broader global analysis of the aggregate productivity impact of intensifying temperature extremes. We will use data from the Annual Survey of Manufactures, Census of Manufactures, and Longitudinal Business Database from 1972–2014 to construct a plant-level panel of manufacturing

productivity that will be merged with county-level weather data to empirically estimate the causal effect of extreme temperatures. We will combine these results with separate estimates using microdata on manufacturing and agricultural production from many countries around the world to quantify the global heterogeneous impact of extreme temperatures on national comparative advantage between manufacturing and agriculture. These empirical

estimates will then be embedded in a model of global trade to understand how the endogenous reallocation of production between broad sectors of the economy could reduce the aggregate costs of the shifting distribution of global temperatures. The trade model will also be used to quantify the degree to which trade barriers impede this mechanism of adaptation.

PLACE AND COHORT OF BIRTH, PROGRAM AVAILABILITY, AND THE MEASUREMENT OF LABOR MARKET OUTCOMES

John Anders—Texas A&M University

Andrew Barr—Texas A&M University

Alex Smith—West Point

Joshua Witter—Texas A&M University

This research estimates the long run impact of childhood age, education, and nutrition exposure on adulthood labor market and related outcomes. We measure childhood exposure based upon variation in program or institution availability within an individual's county of birth. In particular, we consider ages 0 to 5 exposure to the rollout of Food Stamps, Head Start, and their interaction, ages 1 to 17 exposure to college openings, as well as childhood age and exposure to other nutrition

and education programs and institutions. County of birth is identified using the restricted-use versions of demographic surveys linked to the Numident File, which contains a place of birth variable. Surveys considered include the Decennial Census, the American Community Survey, the Current Population Survey, and the Survey of Income and Program Participation. These surveys enable us to measure the effects of program and institution exposure on a wide array of

outcomes including educational attainment, employment status, earnings as well as health, migration, adulthood program participation, and mortality. These estimates extend existing research that documents the short-run impacts of these programs and institutions by demonstrating the long-run impacts of these programs and institutions. Estimates of long-run impacts are necessary for understanding the full societal benefits of these large and costly programs and institutions.

THE DYNAMICS OF THE SMALL BUSINESS SECTOR: EVIDENCE FROM THE SURVEY OF BUSINESS OWNERS AND THE ANNUAL SURVEY OF ENTREPRENEURS

Benjamin Pugsley—University of Notre Dame

Sari Kerr—Wellesley College

William Kerr—Harvard University

Alicia Robb—Kauffman Foundation

E.J. Reedy—Kauffman Foundation

This research aims to understand the changing nature of new firms and their founders and some of the mechanisms that are at work behind firm birth, survival, and growth. We mostly utilize the 2012 Survey of Business Owners (SBO) and the annual waves of the Annual Survey of Entrepreneurs, but also plan to compare the firm and owner outcomes

with the 2007 SBO and its predecessors. Our research questions include understanding why start-up rates and overall rates of entrepreneurship differ across geographic areas and with the owner characteristics (relative to area population). We also seek to understand why there are so many successful businesses founded by certain population groups, but not that

many founded by others. Finally, utilizing the longitudinal nature of the data we evaluate whether there are differential changes in the rates of entrepreneurship across geographic areas and to what extent the changing area demographics, such as the aging of population or growing immigrant population, can account for that.

HOW DOES THE MORTGAGE LIABILITY AFFECT CAREER DECISION? EVIDENCE OF CASH FLOW HEDGING IN HOUSEHOLD FINANCIAL PLANNING

Xiao Cen—Columbia University

Wei Jiang—Columbia University

Nan Li—University of Minnesota, Twin Cities

This research characterizes the two-way spillover effects between the labor and mortgage markets. An understudied facet of home mortgage is its impact on the liquidity profile of the borrowing households. When home equity is low, serving the debt with periodic payments can constitute a real burden to borrowers and may change their risk appetite in the labor market.

We document how mortgage debt affects borrowers' propensity to take riskier jobs, such as working in startups or high-turnover industries, as well as how employment status affects borrowers' mortgage performance. Using data mainly from the Longitudinal Employer-Household Dynamics, Longitudinal Business Database, and Corelogic deeds, we identify effects utilizing a variety

of quasi-exogenous shocks on employment, home equity, and mortgage payments. We expect that mortgage liability discourages borrowers, and especially if the heads of the households are already in debt, from taking a riskier career path and increases the likelihood of staying in a stable job with predictable incomes.

EXIT SELECTION AND MISALLOCATION DYNAMICS

Ying Feng—University of California, San Diego

David Lagakos—University of California, San Diego

James Rauch—University of California, San Diego

We use data from the Longitudinal Business Database, the Census of Manufactures, and the Annual Survey of Manufactures to study U.S. firm dynamics and their structural implications on aggregate productivity. We examine selection channels in firm exits and the implications for resource misallocation. Aggregate measures of productivities and misallocation

levels essentially pull together moments of firms of different ages. We expect to document the empirical relationship of how “capital misallocation” changes with firm age. We will investigate the role of establishment productivity dynamics on investment and exit decisions. We will study the impact of industry-level operating environments on the firm-level resource allocation

in a unified quantitative model. This firm dynamic model will quantify to what extent the exit margin can explain the marginal product of capital dispersion with firm age and its implications on aggregate TFP. We also evaluate the correlation between item and unit nonresponse in manufacturing data and future firm exits and develop methodologies to impute nonresponse.

ANALYZING THE IMPACT OF FIRMS’ TRADE ACTIVITIES ON LABOR MARKET OUTCOMES: A MATCHED EMPLOYEE-EMPLOYER PERSPECTIVE

Jerónimo Carballo—University of Colorado Boulder

Richard Mansfield—University of Colorado Boulder

Recent research has attempted to determine the net effects of international trade on the U.S. economy. We aim to determine which types of jobs and industries are most impacted by international trade, and in particular how China’s accession to the World Trade Organization has impacted U.S. earnings and employment among firms that engage with

international companies in a variety of ways. By combining data from the Longitudinal Employer Household Dynamics, Economic Censuses, and the Longitudinal Firm Trade Transactions Database, we observe job transitions among workers with skills and firms that are heterogeneous in their susceptible-to-trade shocks. Using a two-sided matching

model, we are able to estimate how job matches change in response to these shocks, both directly as a result of foreign competition and indirectly in response to effects on other industries. Results thus generate a comprehensive account of “winners” and “losers” from foreign trade.

R&D, INTELLECTUAL PROPERTY, AND INNOVATION REVISITED

Filippo Mezzanotti—Northwestern University

Timothy Simcoe—Boston University

Fiona Scott-Morton—Yale University

J. Stuart Graham—Georgia Institute of Technology

Innovation is one of the most important factors driving U.S. economic growth. While a large literature uses patents to measure innovation outcomes, relatively few studies consider the decision to patent, or how that decision interacts with other dimensions of business strategy, including R&D investment. Overall, the purpose of this study is to investigate the link between innovation, intellectual property, and firm economic conditions. This research will use data from the Business R&D and Innovation Survey, along with

a newly created firm-level link between the Standard Statistical Establishment List, the Longitudinal Business Database, and the U.S. Patent and Trademark Office's data on issued patents, to study the links between innovation and intellectual property. The first part of this project is to understand the interaction between R&D investment decisions and the strategies used by firms to protect intellectual property. This initial descriptive study will be followed by two sets of analyses that will specifically focus on the

main economic forces shaping firms' decisions in innovation. First, we will examine the role of the risks connected with patent litigation in shaping the incentive to patent and innovate. Second, we will examine the role of large credit shocks and how they shape investment in R&D across different dimensions. Overall, this project is designed to better understand the nature of firm innovation and to explore the strategies that firms use to protect their intellectual property.

THE WELFARE IMPLICATIONS OF CORPORATE POLICY

Ryan Lewis—University of Colorado Boulder

Asaf Bernstein—University of Colorado Boulder

Katie Moon—University of Colorado Boulder

This research investigates the welfare implications of corporate actions by examining the effects of leverage, mergers, and acquisition on other nearby firms and local labor markets. In addition to leveraging well-established estimates of local commuting zones to assess spillover effects of these actions, we use data from Longitudinal

Employer-Household Dynamics and the Longitudinal Business Database to compute granular overlapping zones and a new measure of local labor and firm competition that we call Regions of Spatial Competition, which should be more accurate for areas on the borders of existing commuting zones. We then compare the mobility

and wages of workers in these markets who do and do not experience corporate shocks. If differences are found, results suggest that existing corporate finance theories focusing on privately optimal frameworks fail to capture ways that spillover impacts local markets more widely.

INPUT SOURCING AND SUPPLIER CHOICE IN INTERNATIONAL TRADE

Joaquin Blaum—Brown University

Federico Esposito—Tufts University

Sebastian Heise—Federal Reserve Bank of New York

We study how U.S. importers select their foreign input suppliers and, in particular, how this choice is affected by risk. To this end, we use data from the Longitudinal Foreign Trade Transactions Database, the Longitudinal Business Database, the Annual Survey of Manufactures, and the Census of Manufactures. First, we document the distribution

of the number of foreign suppliers within narrowly defined products to show that top importers typically source their products from multiple suppliers. Next, we explore whether this pattern of supplier diversification can be linked to different sources of risk, including the uncertainty stemming from the supplier's location and contractual

problems that may lead to hold-up. We plan to build a theoretical model of supplier choice under uncertainty and estimate it with the microdata. We will then study how counterfactual shocks, such as an increase in uncertainty in a source country, can affect aggregate trade flows and the overall volatility of the U.S. economy.

LABOR MARKET SEGMENTATION AND THE DISTRIBUTION OF INCOME

Markus Schneider—University of Denver

Ellis Scharfenaker—University of Utah

Paulo dos Santos—The New School

This research aims to provide a more comprehensive understanding of the change in U.S. income inequality and labor market dynamics by characterizing the nation's income distribution using an innovative set of distributional forms, namely a mixture model with a finite number of components. We use data from the Current Population Survey's Annual Social and

Economic Supplement to construct fine-grained, highly populated frequency histograms that allow us to estimate a multicomponent statistical model of the income distribution, which better capture the three generative processes that prior researchers have speculated shape the income distribution. Findings will identify the crucial characteristics of each of

these processes and inform empirically-based theorizations of different modalities of income appropriation. This will ultimately cast light on the occurrence and consequences of unemployment or partial engagement with labor markets, segmentation and stratification in labor markets, and the relationship between functional and individual income.

REGIONAL EVOLUTIONS AND FIRM RELOCATION

Ryan Shyu—Stanford University

Shai Bernstein—Stanford University

Emanuele Colonnelli—University of Chicago

What are the causes and consequences of the relocation choices of firms and establishments? We will use geocodes from the Business Register, in conjunction with longitudinal establishment and firm identifiers drawn from the Longitudinal Business Database, to construct measures of the physical relocation of business activity. These measures will include both the relocation of individual establishments and the relocation of operations within large firms that are not traceable using establishment

identifiers. We will explore how to best undertake these data constructions, which are motivated by the extensive literature documenting the significance of establishments across and within firms as the locus of particular productive technologies. Then, we will use these measures of establishment and firm relocation to examine the role that relocation plays in reallocating job-creating technologies across regions. We are broadly interested in whether the response of relocation flows to local

economic shocks and demographic trends amplify or dampen resulting regional economic inequality, either through gross job flows or through firm sorting by quality. This will complement the literature that has examined how household migration has interacted with the rise in inequality. Firm mobility is relatively less studied as it is comparatively difficult to measure. We are also interested in the other side of the coin, the impact of relocation on local economic activity.

FACTORS ASSOCIATED WITH INTERNAL AND INTERNATIONAL MIGRATION AT THE BLOCK-GROUP LEVEL

Ernesto Amaral—Texas A&M University

Corey Sparks—University of Texas at San Antonio

Valen Johnson—Texas A&M University

In this research, we estimate factors associated with internal and international migration flows to the United States, taking advantage of restricted-use data on current residence at the block-group level and previous residence at the county level. The analyses

use a historical perspective, investigating data from Decennial Censuses and American Community Surveys between 1950 and 2016. Individual characteristics in the models include individual characteristics, as well as distance between counties

and population size, which is consistent with gravity models and the regional equilibrium framework. Treatment of spatial dependence, by measuring the influence of neighboring areas at origin and destination on the likelihood of migrating, is also employed.

SMALL BUSINESSES AND EMPLOYER-SPONSORED HEALTH INSURANCE

Patrick Krueger—University of Colorado Denver

Melanie Tran—University of Colorado Denver

Employer-sponsored health insurance (ESI) is the backbone of coverage and health care in the United States. Yet, there has been a substantial decline in employers offering health insurance, especially among small businesses, over the past 20 years. These small businesses occupy an especially important position in the employment of racial/ethnic minorities, and

thus lower rates of ESI provision for small businesses may help explain the lower rates of health coverage among disadvantaged groups. However, not all small businesses fail to provide ESI, and researchers have failed to examine the potential impacts of business owner and community demographics, which may play an important role in explaining ESI coverage. By combining

data from the Survey of Business Owners, Annual Survey of Entrepreneurs, and Annual Business Survey, we are able to examine ESI provision among small businesses by employer race/ethnicity, employer nativity, and the race/ethnic composition of the surrounding geographic area.

DYNAMIC EFFECTS OF WAGE SETTING: EVIDENCE FROM THE NATIONAL WAR LABOR BOARD

Ethan Kaplan—University of Maryland

Chris Vickers—Auburn University

Nicolas Ziebarth—Auburn University

Inequality and employment in the United States. We combine demographic data from the Decennial Censuses of 1950–2000 with data on wage setting minimums and maximums by occupation and geographical area during World War II. We then estimate the impact of wage controls on wage inequality using spatial discontinuity in wage setting

across War Labor Board regions and zones. In particular, we compare economically similar proximate towns located in different War Labor Board regions and zones and, thus, subject to different wage regulation during World War II. Using this approach, we will estimate the effect of minimum and maximum wages on wage inequality and employment

using the 1950–2000 Decennial Censuses to estimate the dynamic impacts of the regulation after it was rescinded. In doing so, this project sheds light on the causes of the decline in inequality experienced in the post-war period and contributes to the ongoing discussion regarding the importance of institutions for inequality.

LABOR MARKET FLUIDITY AND FIRM RESPONSES IN AN AGING ECONOMY

Ying Zhou—University of Chicago

Steven Davis—University of Chicago

While the aging of the labor force due to decline in fertility rates over the past few decades and the accompanying decline in labor market fluidity in the United States has drawn research attention recently, their influence on firms is little known. In this research, we investigate how firms respond to the shifting labor force age

structure and the evolving labor market fluidity by focusing on three aspects: firm entry and exit rates, decisions affecting productivity (such as R&D activities, physical capital investment, and hiring of skilled labor), and realized productivity (mainly residual TFP). To this end, we link together data from the Longitudinal Business

Database, Longitudinal Employer-Household Dynamics, Annual Capital Expenditures Survey, Business R&D and Innovation Survey (BRDIS), Census of Manufactures, and Annual Survey on Manufactures at the firm and establishment levels.

SHAREHOLDER-CREDITOR CONFLICTS, FINANCIAL DISTRESS, AND THE REAL ECONOMY

Nuri Ersahin—Michigan State University

Rustom Irani—University of Illinois at Urbana-Champaign

Katherine Waldock—Georgetown University

Hanh T. Le—University of Illinois at Chicago

A central tenet of U.S. corporate governance is that management should maximize shareholder value. However, as is now well-understood, shareholder maximization may impose costs on other stakeholders, including creditors and employees, that may not be internalized by shareholders. While there is recent evidence that the conflicts between shareholders and creditors—and even conflicts of interest among different classes of creditors—can have large impacts on corporate policies, there exists limited research analyzing precisely how these conflicts influence resource

(mis)allocation in the economy. The purpose of this research is to conduct a micro-level analysis that documents how creditor control and borrower-lender relationships influence the investment, employment, and asset redeployment decisions, as well as employees of borrowing firms in (or in close proximity to) financial distress. The Census of Manufactures, Annual Survey of Manufactures, Longitudinal Business Database, Longitudinal Employer-Household Dynamics, Quarterly Financial Report, Auxiliary Establishment Survey, and Standard Statistical Establishment List will be used

to quantify the effect of credit markets on individual firm behavior and performance, as well as worker earnings. We examine the influence of these conflicts on real activity and employees using two financial distress events that afford creditors greater control over corporate decision-making: bankruptcy and covenant violations (“technical default”). We complement these “ex post” analyses of creditor control with an “ex ante” analysis of The 1978 Bankruptcy Reform Act—a major piece of legislation that strengthened shareholders’ rights relative to creditors.

LABOR MARKET IMPLICATIONS OF CREDIT SUPPLY SHOCKS

Manasa Gopal—New York University

Philipp Schnabl—New York University

We study the interaction between credit and labor markets with the objective of understanding the impact of financial imperfections on firm and worker outcomes. To do this, we use the Longitudinal Business Database, Longitudinal Employer-Household Dynamics, Census of Manufactures, and Annual Survey of Manufactures, along with data on loan

originations in the United States. First, this research will evaluate the effect of credit supply shocks on firm investment, net employment, and the ability of the firm to retain human capital. For this, we create instruments of credit supply shock. We then track current and future labor market outcomes of workers employed at firms affected by credit supply shocks. Our

research aims to identify the effects of credit supply shocks, both during and surrounding the financial crisis. Through this research, we also aim to understand the differences in firm and worker outcomes based on (1) lender type—specifically the role of banks vs. nonbanks and (2) the underlying collateral pledged by the firm.

GLOBALIZATION, FINANCIAL MARKETS, AND TRADE ADJUSTMENTS

Avishai Schiff—University of Texas at Austin

This research examines the interaction of financial markets and trade shocks on the domestic manufacturing sector. The analysis combines data on exposure to foreign trade with restricted-use microdata on employment (from the Longitudinal Business Database and Business Register), manufacturing activity (from the Census of Manufactures and

Annual Survey of Manufactures), on imports and exports (from the Longitudinal Firm Trade Transaction Database), and with publicly available data on firm financials. The goal of the research is to measure the extent to which financial frictions affect adjustment to trade at public and private firms. The relevant margins of adjustment include employment,

firm entry and exit, factor adjustments, and entry into import and export markets. In addition, this research also examines how increased trade exposure affects industry merger and consolidation patterns.

THE NEW YORK STATE HOMESTEAD TAX OPTION: TAX INCIDENCE AND EQUITY

David Schwegman—Syracuse University

John Yinger—Syracuse University

In this research, we estimate how a local property tax increase affects rental housing cost and maintenance quality. We construct a unit-level panel from the American Housing Survey from 1974 to 2005 to exploit within-city variation caused by the adoption of a unique tax law in several municipalities in New York State. In 1981, New York State created the Homestead Tax Option (HTO), which allowed local

governments that adopted the law to charge rental complexes with four or more units a higher property tax rate than rental complexes of three or fewer units. To identify the effect of this policy on renters, we use the census-block code available in the restricted-use data to identify if a surveyed unit is located in a city that adopted the HTO. We then utilize the within-city tax rate changes caused by the HTO to

estimate, within a difference-in-differences framework, if and to what degree property owners shift the burden of this tax onto renters. This policy-relevant parameter will give insight into the equity of the property tax system in an urban setting and identify how local tax structures, such as the property tax, contribute to increased housing costs.

THE IMPACT OF INFORMATION TECHNOLOGY, MANAGEMENT PRACTICES, AND INNOVATION ON ENVIRONMENTAL PERFORMANCE

Shital Sharma—Clark University

Wayne Gray—Clark University

Wang Jin—Massachusetts Institute of Technology

Kristina McElheran—University of Toronto

This research will examine the effect of regulation on various organizational outcomes, such as output and productivity, and their resulting effect on environmental performance. Our analysis will explore how environmental regulations, such as the Continuous Emissions Monitoring Systems, arising out of the 1990 amendment to the Clean Air Act and the Cluster Rule, affect organizational outcomes like expenditures on information technology (IT), changes in management practices, firm-level innovations in production processes and services, innovation intensities,

and rates of technology transfer. Heterogeneity in organizational outcomes across industries, types of innovation, firm characteristics, and plant characteristics like size, age, and location will also be explored. Additionally, we will analyze how changes in these organizational outcomes affect environmental performance as measured by the TRI emissions data as well as Pollution Abatement Costs and Expenditures survey data. Establishment-level data on IT expenditures will be used from the Information and Communication Technology Survey, Annual

Capital Expenditures Survey, Computer Network Use Survey, Annual Survey of Manufactures, and Census of Manufactures. Management and Organizational Practices Survey provides information on various establishment-level management practices and manager characteristics. Firm-level innovation, research and development expenditures, and technology transfer measures will be obtained from the Business R&D and Innovation Survey.

UNDERSTANDING THE LONG-TERM IMPACTS OF STATE MANDATORY KINDERGARTEN ATTENDANCE

Jade Jenkins—University of California, Irvine

Maria Rosales-Rueda—Rutgers University

Zhiling Shea—University of California, Irvine

This research examines the effects of state mandatory kindergarten requirements on long-run educational attainment and labor market outcomes. While in most states kindergarten began as a voluntary program, starting in the 1970s some states evolved to mandating kindergarten attendance. Several changes in state mandatory school entrance laws across—and in some instances, within—states

over time provide an opportunity to causally identify the influence of an additional year of early-childhood education on important individual education and labor market outcomes, comparing states with mandatory attendance to those with voluntary attendance. Using a natural experiment design, we exploit variation in kindergarten requirements between 1970 and 2000 using pooled repeated

cross-sections for individuals born between 1965 and 1995 observed in the 2000 Decennial Census and the 2001–2016 American Community Survey. We compare population-level outcomes for birth cohorts observed in the surveys over time. Our results will shed light on the anticipated impact of universal prekindergarten programs given the national trend towards preschool for all.

LONGITUDINAL PREDICTORS OF SKILL DEMANDS IN TARGETED U.S. INDUSTRIES

Hye Jin Rho—Massachusetts Institute of Technology

Andrew Weaver—University of Illinois at Urbana-Champaign

This research seeks to investigate the relationship between longitudinal establishment-level characteristics and plant-level skill demands in the U.S. manufacturing industry as well as two additional occupations in the IT and healthcare industries—computer support specialists and laboratory technologists. What establishment characteristics predict high-skill demands and/or skill-related hiring difficulties? Although the issue of skills receives considerable attention in debates related to economic growth, unemployment, and

income inequality, the existing literature rarely measures skills directly, instead relying on rough proxies for skill. Even in cases where more precise measures of skill are available, these measures are rarely linked to firm- or establishment-level data. We seek to address these limitations by linking manufacturing datasets from the Census Bureau with an external data that contains detailed measurements of manufacturing establishment-level skill demands. More specifically, we will link the 2012 MIT Production in the Innovation Economy (PIE)

Manufacturing Survey to the Longitudinal Business Database, Annual Survey of Manufactures, including the Management and Organizational Practices Survey, Census of Manufactures, and National Employer Survey. The link will occur both at the establishment- and firm-level. In addition, we will link the 2015 Computer Support Specialist/IT Helpdesk National Skills Survey and Laboratory Technologist National Skills Survey (IT and healthcare industry equivalent survey to the PIE survey) to the Census of Services and Services Annual Survey, among others.

SOCIAL CAPITAL AND ENTREPRENEURSHIP

Kalee Burns—Georgia State University

Julie Hotchkiss—Federal Reserve Bank of Atlanta

Carlianne Patrick—Georgia State University

Anil Rupasingha—U.S. Department of Agriculture

The central purpose of this research is to examine the influence of social capital on entrepreneurship (in the form of self-employment). Social capital (SK) can be defined as “the societal analogue of physical or economic capital—the value inherent in friendship networks and other associations that individuals and groups can draw upon to achieve private or collective objectives.” Previous literature indicates that community and individual SK is important in determining who becomes an entrepreneur. However, much of the previous

analyses used small samples sizes or weak measures of social capital. In this research, we will use the 2000 Decennial Census, the 2000 Annual Social and Economic Supplement to the Current Population Survey, and an external data set, the Social Capital Community Benchmark Survey (SCCBS), to address the following questions: (1) What types of social capital (structural or cognitive) are more important in predicting self-employment, both at the individual and community levels? (2) How important is the role of social capital in

the transition between paid employment or unemployment to self-employment? (3) In the transition to self-employment, how does social capital influence an individual to remain in the same occupation or industry? We will also explore how the results vary across rural and urban environments and natives versus immigrants to assess how relationships between social capital and entrepreneurial activity differ across demographic and geographic dimensions.

CORPORATE FINANCE: THE EFFECTS OF OUTSIDE AGENTS

Manuel Adelino—Duke University

W. Ben McCartney—Duke University

Manju Puri—Duke University

We use the Longitudinal Employer-Household Dynamics data, as well as other restricted-use data, on U.S. businesses from the Census Bureau to investigate the role of external actors on internal corporate finance decisions. Outside influences of particular interest include the actions of local financial intermediaries, local universities, and peer firms. Existing research suggests that banks might be more willing to lend

in more highly concentrated banking markets, that the role universities play in their local environments influences how firms are financed (e.g., universities sometimes are financiers of firms), and that a firm’s investment decisions correlate with actions taken by, and events related to, peer firms—investment decisions, financial reporting, accounting restatements, actions taken by the Securities and Exchange Commission, etc. To build on the

existing literature, we will model (1) funding decisions of venture capital firms as functions of the competitiveness of the banking industry and firm characteristics; (2) the relationship between the proximity of a firm to a local university and the incidence of venture capital funding for a firm, local university research spending, firm characteristics, and worker turnover rates; and (3) investment by one firm as a function of events related to peer firms and other factors.

MODELING CENSUS TRACT-LEVEL HOUSING QUALITY AND SUBSTANDARD UNIT REPAIR COSTS

Eileen Divringi—Federal Reserve Bank of Philadelphia

Keith Wardrip—Federal Reserve Bank of Philadelphia

Lauren Lambie-Hanson—Federal Reserve Bank of Philadelphia

The need for home repairs is a critical quality-of-life challenge for many low- and moderate-income households and communities. Despite the clear utility for policy making and program development, few publicly-available, neighborhood-level housing quality indicators exist. To address this information gap, this research develops small area estimates of home repair need for occupied housing

units using American Housing Survey (AHS), American Community Survey (ACS), and proprietary repair cost data. We estimate the unit-level total cost of repairs by relating cost estimates to housing problems reported in the AHS. AHS units are then merged with publicly available tract- and region-level data from the ACS using geographic identifiers available in the restricted-use AHS file. We

develop multilevel regression models to predict repair costs using characteristics of the unit, surrounding census tract, and region. We apply the resulting models to publicly-available data to produce aggregate tract-level estimates using a post-stratification approach. The resulting estimates will help decision makers understand the scope and magnitude of home repair needs and target resources accordingly.

WAGE CHANGES, NET AND GROSS EMPLOYMENT FLOWS

David Wiczer—Stony Brook University

In this research, we study how firm-level worker flows affect the earnings growth that workers experience when they switch from one firm to another. While it is well-documented that earnings grow disproportionately during employer transitions, worker-side survey data are silent on the effect on this growth from shocks on the origin and the destination employers. Using

matched employer-employee data from the Longitudinal Employer-Household Dynamics program, we estimate how the employers' net size changes and turn-over rate affect workers' earnings in transition. Particularly, we estimate the contribution of job destruction at the origin to lower earnings growth and of job creation at the destination to higher growth. Turn-over also notably

affects earnings growth as climbing the job wage-ladder is closely associated with job switches to employers with declining gross hires. We quantify how worker transitions with the flow of employment towards faster-growing employers, contribute more substantially to total earnings growth than simple reallocation.

HOUSEHOLD SPATIAL SORTING IMPACTS OF THE HOUSING AND FINANCIAL CRISIS

John Anderson—University of Nebraska-Lincoln

Aaron Scholl—University of Nebraska-Lincoln

This research will examine the effects of the bursting of the housing bubble during the 2007–2009 period on the Tiebout-like sorting pattern of households within and across communities, using data from the American Community Survey. The areas of interest include three large metropolitan areas that experienced varying degrees of housing market impacts: Phoenix, Denver, and St. Louis. The testable hypothesis of this research

project is that the housing crisis caused a significant resorting of individuals within and across communities in large metropolitan areas. We will conduct the analysis using two empirical strategies. The first is a descriptive approach in which homogeneity metrics will be computed and aggregated to the city, or borough, level in order to identify the varying degrees of homogeneity within and across communities. Such metrics will be used to gauge

the intensity of change in these measures of homogeneity over time. The second approach will rely on regression analysis in order to identify which explanatory variables are driving these changes in homogeneity over time and across geography. This research will provide one of the most comprehensive pictures as to how households were forced to migrate during the Great Recession.

THE GEOGRAPHY OF INDUSTRIAL REALLOCATION

Oren Ziv—Michigan State University

Dominick Bartelme—University of Michigan

Over the course of the 20th century and continuing today, U.S. regions have experienced massive shifts to the geographic distribution of economic activity. In this research, we will seek to answer the following three questions: (1) How can we better catalogue these changes in the location of economic activity and industrial

networks over the past half-century? (2) To what extent have changes in transportation costs, productivity spillovers, production networks, or exposure to international trade contributed to this reallocation and to regional divergence? (3) How have forces specifically internal to the firm contributed to regional reallocation? We

will obtain establishment-level employment data and geographic information from the Longitudinal Business Database. Sales data from the Census of Manufactures, in conjunction with Commodity Flows Survey, will be used to produce causally identified industry-year estimates of agglomeration forces.

LOCATIONAL ATTAINMENT AND RESIDENTIAL SEGREGATION OF FOREIGN-BORN AND NATIVE-BORN BLACKS

Nicole Jones—University of Missouri

Of all major racial-ethnic minority groups, Blacks tend to experience the greatest disparity in gaining access into White neighborhoods, oftentimes inferior to those where other minorities reside. However, recent research suggests forces creating and maintaining White-Black segregation are not as

monolithic as once perceived. This research project uses Decennial Census and American Community Survey microdata to assess the impact individual (i.e., race) and social (i.e., socioeconomic status) characteristics have on Black residential outcomes over time. Two questions guide this study: (1) To what extent do individual

and social characteristics affect Black residential outcomes over time? (2) Stratified by nativity, to what degree do individual and social characteristics affect foreign-born Black residential outcomes? The outcome variables are neighborhood racial/ethnic composition and neighborhood socioeconomic status.

INVESTIGATING DEMAND THRESHOLDS TO UNDERSTAND QUALITY AND SHORTCOMINGS OF CURRENT ESTIMATES

Craig Carpenter—Texas A&M University

Rebekka Dudensing—Texas A&M University

Anders Van Zandt—Texas A&M University

Scott Loveridge—Michigan State University

This study evaluates how local geographic, socioeconomic, and industrial factors impact the size of an industry in a county. We utilize data from the Business Register, the Longitudinal Business Database, the Annual Retail Trade Survey, and the Annual Survey of Manufactures, as well as other economic and demographic datasets to assess the size of an

industry in a county. We model the unbiased minimum and total establishment counts due to the inclusion of nonemployers, and the increased accuracy in the measurement of industry size by using employment and payroll, rather than only the number of establishments, in a broader range of industries than previous research has addressed. We also examine

how local geographic, socioeconomic, and industrial factors predict operating costs, and how local geographic, socioeconomic, and industrial factors predict e-commerce usage, which will significantly contribute to economic and regional science academic literature.

THE EFFECT OF MEDICAID EXPANSION ON EMPLOYMENT OF INDIVIDUALS WITH DISABILITIES

Purvi Sevak—Mathematica Policy Research

Jody Schimmel Hyde—Mathematica Policy Research

The Patient Protection and Affordable Care Act (ACA) of 2010 substantially expanded the availability of health insurance coverage, particularly for adults with disabilities. One notable change was the option for states to offer Medicaid coverage to adults with household incomes that were below 138 percent of the federal poverty line; most but not all states expanded Medicaid to this population. In this research, we will investigate whether states that expanded Medicaid coverage through the ACA in 2014—the first year that expansion was possible under

the ACA, and the year that most states opted to expand—experienced differential changes in the employment rate of adults with disabilities relative to states that did not expand Medicaid. Comparing changes in employment in all states that expanded Medicaid to the same change in states that did not is likely invalid however, as those states varied in many other ways that likely affect the employment of individuals with disabilities. Comparing a single expansion state to a single (or multiple) nonexpansion state likely suffers from the same challenge, as

no two states are identical. Our approach to identify a counterfactual is to identify within-state geographies, counties, in expansion states and match them to comparable geographies in nonexpansion states, such that the treatment and comparison groups are as closely aligned as possible. We will then use data from the American Community Survey from 2010 to 2017 to produce difference-in-difference estimates of the effect of the expansions on employment of people with disabilities.

REGIONAL ENTREPRENEURSHIP, INNOVATION, AND FIRM DYNAMICS

Aaron Chatterji—Duke University

Rahul Gupta—Duke University

We describe the role of entrepreneurial activity in regional dynamism, with an emphasis on firm entry, innovation, and labor mobility, using matched Longitudinal Employer-Household Dynamics data and R&D data from the Census Bureau. We analyze economic and labor

market dynamism across geographic areas by (1) using the introduction of innovative entrepreneurs to a region to identify and quantify agglomeration and productivity spillovers; (2) investigating the role of entrepreneurship in facilitating regional growth; and (3) characterizing the skills

profile of workers employed in entrepreneurial firms. We will also investigate the changing role of entrepreneurship in the U.S. economy in relation to the 2007–2009 Great Recession and previous recessions, as well as how entrepreneurship varies by region across the United States.

AN EMPIRICAL STUDY OF FRANCHISING

*Peter Newberry—Pennsylvania State University
Charles Murry—Boston College*

In 2007, the Census Bureau began including a question about franchise ownership for a broad range of sectors in the Economic Census. Our research combines the Census of Services (CSR) and the Census of Retail Trade (CRT) with data on the locations of quick-service food establishments to provide a comparison of the Census Bureau franchise data with a reliable outside data source. We also combine

the Census Bureau data with information on numerous state franchise regulations. Using an establishment-level, two-stage regression model, we study the relationships between local market characteristics, state franchise laws, establishment franchise status, and outcomes. There are 16 U.S. states that prohibit franchisors from terminating franchisee contracts without “good cause” and 11 states that prohibit cancellation

of contract renewal without “good cause.” We test the hypothesis that these laws impose costs of franchising to franchisors and will affect the prevalence of franchised establishments. Next, using information on total sales and employment from the CSR and CRT, we relate franchise status to outcomes, using state franchise regulations as an instrument for franchise status.

IMPROVING ESTIMATES FOR POST-2000 SMALL AREA DATA

*John Logan—Brown University
Wenquan Zhang—University of Wisconsin-Whitewater
Hongwei Xu—Queens College
Todd Gardner—U.S. Census Bureau*

We examine how using the reduced sample sizes of the 2007–2016 American Community Survey data at the tract level, relative to the 2000 decennial long-form sample, can affect estimates of demographic composition

and socioeconomic conditions. We find that measures of income segregation are biased upwards by smaller samples at the tract level, and seek to apply corrections to those measures. In addition, we examine how Bayesian models

can be applied to small area estimation for point estimates of tract characteristics and how estimates of tract characteristics can be harmonized over time to adjust for changes in tract boundaries.

WEIGHTING FACTOR DEVELOPMENT USING THE CENSUS OF RETAIL TRADE

Saki Kinney—RTI International

Shawn Karns—RTI International

Derick Brown—RTI International

Caroline Blanton—RTI International

Stephanie Zimmer—RTI International

Peter Siegel—RTI International

We will investigate methods for producing weighting factors using data from the Census Bureau's Census of Retail Trade (CRT). This research will provide insight into the quality of North American Industrial Classification System codes and

corresponding sales figures for food and beverage categories in the CRT by benchmarking CRT sales figures for these categories against industry classification and product line data from external Infoscan data provided by Information

Resources Inc. We will generate weighting factors for the CRT data by industry, geographic area, and year, and investigate potential methodologies for generating such weighting factors in between Economic Census years.

EXPOSURE TO TELEVISION AND THE AMERICAN FAMILY: HISTORICAL EVIDENCE FROM THE UNITED STATES

Francisco Javier Romero Haaker—Duke University

Erica Field—Duke University

Recent studies in developing countries indicate that exposure to television affects individual behavior and roles, and find that women change their fertility behavior and attitudes as a result of exposure to television. We will add a historical component to this literature, using 1950–1970 Decennial Census data to explore the impact of the introduction

of commercial television on women's fertility decisions and related socioeconomic outcomes in the United States. Outcomes to be studied include labor force participation, education, average household size, age at marriage, etc. We will undertake this research using "television question" data from the 1960 and 1970 Censuses, with 1950 serving

as a baseline. The study will also analyze how the spread of television affected the Decennial Census program itself. In particular, we will assess the extent to which the spread of television explains observed characteristics of the population in each Census from 1950 to 1970.

PRODUCTIVITY GROWTH IN CONSTRUCTION

Leo Sveikauskas—Bureau of Labor Statistics

Michael Brill—Bureau of Labor Statistics

James Mildenberger—Bureau of Labor Statistics

Nathan Modica—Bureau of Labor Statistics

Michael Giandrea—Bureau of Labor Statistics

The goal of this research is to study the determinants of productivity growth in construction. Using data from the Census of Construction, and from the new construction-related Producer Price Index developed at the Bureau of Labor Statistics, we will develop new methods and better estimates of productivity for

the construction sector. We will develop establishment-level measures of multifactor productivity and labor productivity, and we will investigate how a variety of factors, such as establishment size, industry, location, regulation, and the presence of undocumented immigrants, influence observed productivity.

In addition, we examine some elements of productivity dynamics, examining what proportion of productivity growth occurs in existing establishments and the productivity performance of establishments that enter or exit.

EFFECTS OF UNEMPLOYMENT INSURANCE BENEFITS ON JOB AND MATCH QUALITY

Adriana Kugler—Georgetown University

Ammar Farooq—Georgetown University

Umberto Muratori—Georgetown University

This research investigates the impact of unemployment insurance extensions during and in the aftermath of the Great Recession on the quality of jobs obtained by jobseekers. The working hypothesis is that workers in states that had longer duration of unemployment insurance (UI) benefits worked in jobs with higher quality and were able to find jobs better matched to their abilities. While it is well established that workers take longer to search for

jobs if they have access to generous unemployment insurance benefits, their post-unemployment outcomes have not been carefully analyzed in the United States. Only a handful of papers examine the impact of UI on post-employment wages in Austria and Germany. Our study is the first analysis to examine the impact of UI on the quality of jobs and the quality of job matches. We use Longitudinal Employer-Household Dynamics data that provides

employer-employee matched data. This allows removing observed and unobserved worker and firm characteristics and to define the quality of the job as the wages of jobs in a firm that cannot be accounted for by the characteristics of the job or the workers in that firm themselves. These data also allow examining the wages of matches between worker and firm that cannot be accounted by these characteristics.

RACE IN RURAL AMERICA: DIFFERENTIALS IN TEENAGE MOTHERHOOD AND HIGH SCHOOL COMPLETION

*Seth Sanders—Duke University
Laurel Wheeler—Duke University*

We study differences in teenage motherhood and high school completion between races, and in particular how such differences relate to differences in housing. This research uses a combination of restricted-access data from the American Community Survey and Decennial Census, plus public data on household assets from corresponding years of the Federal Reserve's

Survey of Consumer Finances, to investigate omitted variable bias in the relationship between race, teenage motherhood, and high school completion. Our previous work indicates that among mobile home residents (a population group that on average has relatively few financial assets), rates of teenage motherhood and high school completion are similar between Blacks and Whites.

The restricted-access data allow us to disentangle wealth effects from social interaction effects via fixed effect control variables created at the tract-level to (approximately) group mobile home residents into mobile home parks. In so doing, we test the hypothesis that omitted variable bias drives the correlation between race, teenage motherhood, and high school completion.

THE EFFECTS OF MERGERS AND ACQUISITIONS ON FIRM-SPECIFIC WAGE PREMIUMS

*David Arnold—Princeton University
Henry Farber—Princeton University*

When evaluating mergers and acquisitions (M&A), the Department of Justice and Federal Trade Commission focus entirely on consumer welfare. Efficiency gains through consolidation help consumers by decreasing prices, but anti-competitive behavior in the product market hurts consumers by increasing prices. While generally

ignored, the same efficiency and competition concerns are relevant for labor markets. If M&A increases efficiency, wages may rise if the gains from efficiency are shared with workers. If M&A increases consolidation in the labor market, wages may fall due to decreased bargaining power for workers. This research uses data from the Longitudinal-Employer

Household Dynamics program combined with a dataset of M&A from Thomson Reuters to document the impact of M&A on workers. In particular, we will document how the effect of M&A on wages differs by the level of concentration in the labor market in order to disentangle anti-competitive effects from efficiency effects.

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Appendix 4.

CENTER FOR ECONOMIC STUDIES (CES) DISCUSSION PAPERS: 2018

CES Discussion Papers are available at <www.census.gov/ces>.

18-01	“The Employee Clientele of Corporate Leverage: Evidence from Personal Labor Income Diversification,” by Jie (Jack) He, Tao Shu, and Huan Yang, January 2018.	18-08	“Innovation, Productivity Dispersion, and Productivity Growth,” by Lucia Foster, Cheryl Grim, John Haltiwanger, and Zoltan Wolf, February 2018.
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18-42	“The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility,” by Raj Chetty, John N. Friedman, Nathaniel Hendren, Maggie R. Jones, and Sonya R. Porter, September 2018.	18-51	“The Management and Organizational Practices Survey (MOPS): Collection and Processing,” by Catherine Buffington, Andrew Hennessy, and Scott Ohlmacher, December 2018.
18-43	“A Portrait of U.S. Factoryless Goods Producers,” by Fariha Kamal, October 2018.		
18-44	“Development of Survey Questions on Robotics Expenditures and Use in U.S. Manufacturing Establishments,” by Catherine Buffington, Javier Miranda, and Robert Seamans, October 2018.		

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Appendix 5.

NEW CENSUS BUREAU DATA AVAILABLE THROUGH RESEARCH DATA CENTERS (RDCs) IN 2018¹

BUSINESS DATA—Con.

Data product	Description	New or updated years
Annual Capital Expenditures Survey (ACES)	The ACES is a firm-level survey that collects industry-level data on capital investment in new and used structures and equipment. Every 5 years, additional detail on expenditure by asset type (by industry) is collected. All nonfarm sectors of the economy are covered by these surveys.	2016
Annual Retail Trade Survey (ARTS)	The ARTS collects data on total annual sales, e-commerce sales, end-of-year inventories (including those held outside the United States), purchases, total operating expenses, and end-of-year accounts receivable for retail businesses located in the United States. The ARTS collects annual sales and e-commerce sales for accommodation and food service firms.	2015–2016
Annual Survey of Entrepreneurs (ASE)	The ASE collects data on the characteristics of businesses and their owners. For each owner, information is collected on sex, age, citizenship, ethnicity, race, military service, education, prior ownership experience, reasons for owning the business, percent of ownership, method of acquisition and when, job functions, and hours worked. Business characteristics collected include age, aspirations, sources and amounts of capital funding, profitability, negative impacts, customer characteristics, exports and other foreign activities, e-commerce, and types of workers employed. In 2014, the ASE also included a topical module on business innovation and research and development activities and expenditures. In 2015, a module on management practices and alternate forms of work arrangements was included.	2015
Annual Survey of Manufactures (ASM)	The ASM collects data on manufacturers, including employment, payroll, workers' hours, payroll supplements, value of shipments, cost of materials, value added, capital expenditures, inventories, and energy consumption. It also provides data on the value of shipments by product class and materials consumed by material code.	2016

¹ These tables do not include custom extract data made available to approved projects from the U.S. Census Bureau, the National Center for Health Statistics, and the Agency for Healthcare Research and Quality.

BUSINESS DATA—Con.

Data product	Description	New or updated years
Annual Wholesale Trade Survey (AWTS)	The AWTS collects data on total annual sales, e-commerce sales, end-of-year inventories (including those held outside the United States), purchases, and total operating expenses for merchant wholesalers and for manufacturers' sales branches and offices located in the United States. The AWTS also began collecting sales, commissions, and operating expenses data for agents, brokers, and electronic markets in 2005.	2015
Business Research and Development and Innovation Survey (BRDIS)	The BRDIS collects a broad range of research and development (R&D) data from both manufacturing and service companies along with select innovation data. Data include financial measures of R&D activity, measures related to R&D management and strategy, measures of company R&D activity funded by organizations not owned by the company, measures related to R&D employment, and measures related to intellectual property, technology transfer, and innovation. The BRDIS replaced the Survey of Industrial Research and Development (SIRD) in 2008.	2014–2016
Foreign Trade—Export Transactions (EXP)	The EXP database contains information on the universe of export transactions (valued at more than \$2,500), including commodity, value, quantity, weight, date, origin, destination, method of transportation, and other variables. Filing this information through the Automated Export System is required by law. For U.S. exports to Canada, the United States uses Canadian import information.	2015–2016
Foreign Trade—Import Transactions (IMP)	The IMP database contains information on the universe of import transactions (valued at more than \$2,000), including commodity, value, quantity, weight, date, origin, destination, method of transportation, and other variables. This information is primarily collected through the U.S. Custom and Border Protection's Automated Commercial System, as well as import entry summary forms, warehouse withdrawal forms, and Foreign Trade Zone documents. Data on imports of electricity and natural gas from Canada are obtained from Canadian sources.	2015–2016
Integrated Longitudinal Business Database (ILBD)	The ILBD is a research data set constructed at the Center for Economic Studies that contains the roughly 20 million businesses in the U.S. economy (per year) <i>without</i> paid employees from 1977 to 2014. The ILBD contains a firm identifier that allows the linkage of these nonemployers across time and to businesses with <i>paid</i> employees found in other Census Bureau surveys and databases. The ILBD can be used to investigate nonemployer entry and exit, gross revenue flows, and transitions between nonemployer and employer status.	2015

BUSINESS DATA—Con.

Data product	Description	New or updated years
Longitudinal Business Database (LBD)	The LBD is a research data set constructed at the Center for Economic Studies that contains basic information on the universe of all U.S. business establishments with <i>paid</i> employees from 1976 to 2015. The LBD can be used to examine entry and exit, gross job flows, and changes in the structure of the U.S. economy. The LBD can be linked to other Census Bureau surveys at the establishment and firm level.	2016
Longitudinal Firm Trade Transactions Database (LFTTD)	The LFTTD links individual trade transactions to the firms that undertake them. It links export transactions to the U.S. exporter and import transactions to the U.S. importer. The firm identifier in the LFTTD allows linkages to other Census Bureau surveys and databases.	2016
Manufacturing Energy Consumption Survey (MECS)	The MECS collects detailed data on the consumption of electricity and other types of fuel by the manufacturing sector. Data are also collected on end uses, fuel-switching capability, energy technologies, and energy-management activities. The survey is conducted approximately every 4 years.	2014
Medical Expenditure Panel Survey—Insurance Component (MEPS-IC)	The MEPS-IC collects data on health insurance plans obtained through employers. Data collected include the number and type of private insurance plans offered, benefits associated with these plans, premiums, contributions by employers and employees, eligibility requirements, and out-of-pocket costs. Data also include both employer (e.g., size, industry) and workforce (e.g., percentage of workers female, earn low/medium/high wage) characteristics.	2017
Monthly Wholesale Trade Survey (MWTS)	The MWTS collects data on monthly sales and inventories for merchant wholesalers, excluding manufacturers' sales branches and offices (MSBOs) and agents, brokers, and electronic markets (AGBRs).	2016
Quarterly Financial Report (QFR)	The QFR is conducted quarterly and collects data on estimated statements of income and retained earnings, balance sheets, and related financial and operating ratios for manufacturing corporations with assets of \$250,000 and over, and corporations in mining, wholesale trade, retail trade, and selected service industries with assets of \$50 million and over, or above industry-specific receipt cut-off values.	2015

BUSINESS DATA—Con.

Data product	Description	New or updated years
Services Annual Survey (SAS)	The SAS provides estimates of revenue and other measures for most traditional service industries. Collected data include operating revenue for both taxable and tax-exempt firms and organizations; sources of revenue and expenses by type for selected industries; operating expenses for tax-exempt firms; and selected industry-specific items. Starting with the 1999 survey, e-commerce data are collected for all industries, and export and inventory data are collected for selected industries.	2015–2016
Standard Statistical Establishment List (SSEL)	The SSEL files maintained at the Center for Economic Studies are created from the old SSEL (prior to 2002) and the new Business Register (2002 and forward).	2016
UMETRICS Crosswalk	UMETRICS contains transaction-level data on university research grants, including information on the awards, wage payments to university employees, vendor purchases, and subcontracts. Information on research output, including doctoral dissertations, publications, and patents, is also available. Crosswalks to restricted-use Census Bureau data on employment and employers permit users to study the effects of research investments on the broader economy, including the careers of impacted individuals and on the performance of the businesses and industries that hire them. These data are the result of a partnership between the Census Bureau and the University of Michigan’s Institute for Research on Innovation and Science.	2017

HOUSEHOLD DATA

Data product	Description	New or updated years
American Community Survey (ACS)	The ACS is an ongoing nationwide household survey that collects information traditionally collected on the long-form of the decennial census, including age, sex, race, family, ancestry, languages, place of birth, disability, education, veteran status, income, employment, health insurance, commuting, and housing characteristics.	2017 (1-year and 5-year files)
American Housing Survey (AHS)	The AHS collects data on the nation's housing, including apartments, single-family homes, mobile homes, vacant housing units, household characteristics, income, housing and neighborhood quality, housing costs, equipment and fuels, size of housing unit, and recent movers. The national survey has a sample spread throughout the United States, while the metropolitan survey focuses on housing units in specific metropolitan areas. National data are collected in odd-numbered years, and data for each of 47 selected metropolitan areas are collected about every 4 years, with an average of 12 metropolitan areas included each year.	2017 (National)
Current Population Survey (CPS)	The CPS is a monthly survey of households cosponsored by the Census Bureau and the Bureau of Labor Statistics. The CPS is the primary source of labor force statistics and is also used to collect data on a wide variety of topics through supplemental questions to the basic monthly questions. These supplemental inquiries vary month to month and are usually conducted annually or biennially, depending on the needs of the supplement's sponsor. The <i>Annual Social and Economic</i> (ASEC, or "March") supplement of the CPS collects data on work experience, several sources of income, migration, household composition, health insurance coverage, and receipt of noncash benefits. The <i>Civic Engagement</i> supplement of the CPS, conducted in five Novembers, collected data from respondents 18 years and older on their civic engagement in their communities, including political discussion and action, membership and participation in local organizations, and interactions with family, friends, and neighbors.	2017 (ASEC/ March) 2010, 2011, 2013 (Civic Engage- ment)
National Survey of College Graduates (NSCG)	The NSCG is a longitudinal survey designed to provide data on the characteristics of the nation's college graduates, including age, citizenship status, country of birth, disability status, educational history (degree, field, date), employment status, geography, immigration status (year of entry, visa), labor force status, marital status, number of children, occupation, primary work activity, publication and patent activities, race and ethnicity, salary, satisfaction in job, school enrollment status, sector of employment, sex, and work-related training.	2015

HOUSEHOLD DATA—Con.

Data product	Description	New or updated years
National Crime Victimization Survey (NCVS)	The NCVS collects data from respondents who are 12 years of age or older regarding the amount and kinds of crime committed against them during a specific 6-month reference period preceding the month of interview. The NCVS also collects detailed information about specific incidents of criminal victimization. The NCVS is also periodically used as the vehicle for fielding a number of supplements to provide additional information about crime and victimization. The <i>School Crime</i> supplement to the NCVS collects information about victimization, crime, and safety at school, and includes topics such as alcohol and drug availability; fighting, bullying, and hate-related behaviors; fear and avoidance behaviors; gun and weapon carrying; and gangs.	2017 2017 (School Crime)
Survey of Income and Program Participation (SIPP)	The SIPP collects data on the source and amount of income, labor force information, program participation and eligibility, and general demographic characteristics. The data are used to measure the effectiveness of existing federal, state, and local programs, to estimate future costs and coverage for government programs, and to provide improved statistics on the distribution of income in the United States.	2008 Panel: Waves 15-16 2014 Panel: Wave 3

Appendix 6.

FEDERAL STATISTICAL RESEARCH DATA CENTER (FSRDC) PARTNERS

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Bureau of Labor Statistics
National Center for Health Statistics
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Cornell University
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Cowles Foundation at Yale University
Yale University Department of Economics
Yale School of Management
Institution for Social and Policy Studies at
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Appendix 7.

LONGITUDINAL EMPLOYER–HOUSEHOLD DYNAMICS (LEHD) PARTNERS

Under the Local Employment Dynamics (LED) partnership, the Longitudinal Employer–Household Dynamics (LEHD) program at the Center for Economic Studies produces new, cost-effective, public-use information combining federal, state, and Census Bureau data on employers and employees. The LED partnership works to fill critical data gaps and provide indicators increasingly needed by state and local authorities to make informed decisions about their economies.

LOCAL EMPLOYMENT DYNAMICS (LED) STEERING COMMITTEE

As of January 2019.

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Vacant

New York/New Jersey

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Labor Market Information
New Jersey Department of Labor and
Workforce Development

Mid-Atlantic (*Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia*)
Keith Bailey, Director
Center for Workforce Information and Analysis
Pennsylvania Department of Labor and
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Florida Department of Economic Opportunity

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Labor Market Information Bureau
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Robert Uhlenkott, Division Director
Workforce and Economic Research
Oregon Employment Department

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U.S. Department of Homeland Security,
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U.S. Department of the Interior
U.S. Office of Personnel Management
U.S. Bureau of Labor Statistics
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As of December 2018.

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Labor Market Information Division
Alabama Department of Labor

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Dan Robinson, Director
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Alaska Department of Labor and Workforce
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Doug Walls, Acting LMI Director
Arizona Office of Economic Opportunity

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Robert S. Marek, Administrative Services Manager
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Appendix 8.

**CENTER FOR ECONOMIC STUDIES (CES) ORGANIZATIONAL CHART
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