

Center for Economic Studies and Research Data Centers Research Report: 2014

Research and Methodology Directorate

Issued May 2015



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. **Lucia Foster** and **Cheryl Grim** authored Chapter 2, and **Todd Gardner** authored Chapter 3. **Brian Holly** and **Kacie Rader** provided the material found in Appendix 3. Our RDC administrators and executive directors helped compile information found in Appendixes 2 and 6. Other CES staff contributed updates to the other appendixes.

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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.

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U.S. Department of Commerce
Penny Pritzker,
Secretary

Bruce H. Andrews,
Deputy Secretary of Commerce

Economics and Statistics Administration
Mark Doms,
Under Secretary
for Economic Affairs

U.S. CENSUS BUREAU
John H. Thompson,
Director

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**Economics
and Statistics
Administration**

Mark Doms,
Under Secretary for
Economic Affairs



U.S. CENSUS BUREAU

John H. Thompson,
Director

Nancy A. Potok,
Deputy Director and
Chief Operating Officer

Thomas A. Louis,
Associate Director
for Research and Methodology

Ron S. Jarmin,
Assistant Director
for Research and Methodology

Lucia S. Foster,
Chief, Center
for Economic Studies

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A MESSAGE FROM THE CHIEF ECONOMIST

Each year, we take the time to reflect on recent Center for Economic Studies (CES) accomplishments, celebrate staff achievements, and preview upcoming research and development. The mission of CES is to undertake research and development activities that benefit the Census Bureau by creating new data products, discovering new ways to use existing Census products, and suggesting improvements to existing Census data products and processes. CES also facilitates the research of others through the Federal Statistical Research Data Center (FSRDC) program, as the data repository for Census researchers, and as the archivist for Census business data. These activities either directly or indirectly enhance our understanding of the U.S. economy and its people.



Taken together, the three chapters in this year's annual report provide an overview of activities at CES (Chapter 1) and examples of a research project (Chapter 2) and a research support project (Chapter 3) which will lead to new data products.

With its access to micro-level data, the Census Bureau can produce statistics that yield a more nuanced, richer view of the economy than aggregate or industry statistics provide. Providing one such statistic is the motivation for the Collaborative Micro-productivity Project (CMP) described by economists Cheryl Grim and Lucia Foster in Chapter 2. The CMP represents an innovative partnership between researchers at the Census Bureau and the Bureau of Labor Statistics (BLS) to produce micro-level measures of productivity and eventually publish within-industry measures of dispersion.

The decennial census has proven to be an enormously powerful tool in understanding trends in the United States. Demographer Todd Gardner describes work to enhance the power of the 1960 decennial census in Chapter 3. This work (some of which was in partnership with the Minnesota Population Center) has resulted in the addition of the restricted-use 1960 census data at the RDCs and a new 1960 public use microdata sample (PUMS).

In sum, it has been an exciting year as our research and development activities continue to help the Census Bureau meet its challenges in providing information about the U.S. economy and its people. Over the coming year, we are looking forward to the further expansion of the FSRDC program; continuing improvements to our existing data products (especially Business Dynamics Statistics and Job-to-Job Flows); and expanded research efforts to better understand the U.S. economy (for example, through enhancements to the Longitudinal Business Database), improve content on new and existing surveys, and discover innovative uses of administrative data.

(Continued)

A MESSAGE FROM THE CHIEF ECONOMIST—Con.

Thank you to everyone who contributed to this report. Randy Becker compiled and edited all of the material in this report. Design services and editorial review were performed by Linda Chen of the Center for New Media and Promotions and Donna Gillis of the Public Information Office. Linda Chen produced the cover art. Other contributors are acknowledged on the inside cover.



Lucia S. Foster, Ph.D.

Chief Economist and Chief of the Center for Economic Studies

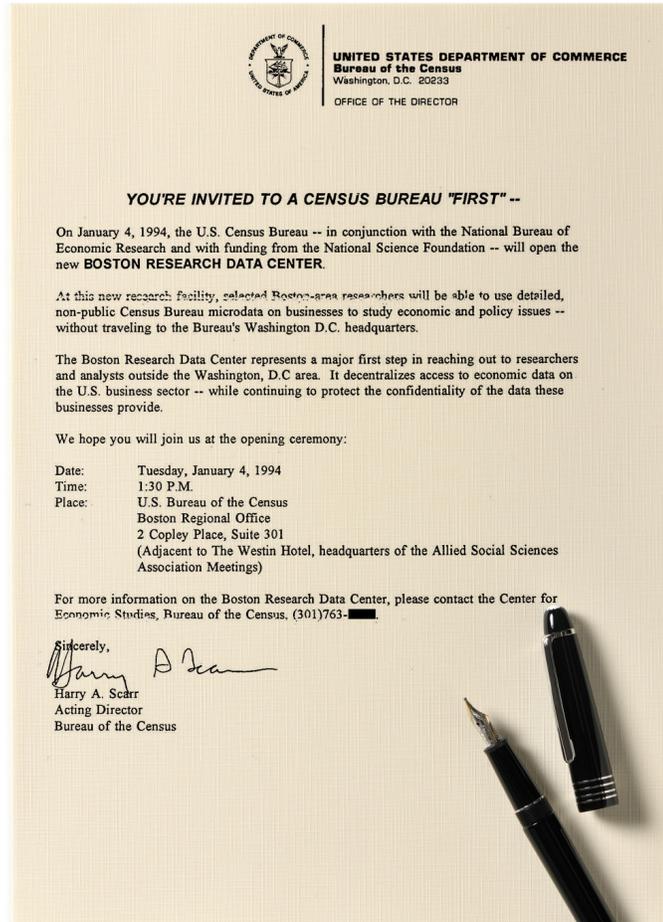
Chapter 1. 2014 News

THE RDC NETWORK CONTINUES TO GROW AND PROSPER

On January 4, 2014, the Census Bureau's Research Data Center (RDC) network celebrated its twentieth anniversary. "The Boston Research Data Center represents a major first step in reaching out to researchers and analysts outside the Washington, D.C. area," stated Harry Scarr, Acting Director of the Census Bureau back in 1994.

Two decades later, the RDC system continues to grow. In 2014, the Center for Economic Studies (CES) opened three new RDC locations, at the University of Southern California, Pennsylvania State University, and the University of California, Irvine. This brings the current number of RDCs to 18, with six more locations well along in the planning and construction stages.

The RDCs are Census Bureau facilities that provide secure access to restricted-use microdata, where qualified researchers with approved



Invitation to the opening ceremony of the first-ever Research Data Center in 1994.



projects can conduct research that benefits the Census Bureau by improving measures of the economy and people of the United States. On the occasion of the grand opening of

Census Bureau Director John Thompson and Penn State President Rodney Erickson at the grand opening of the Penn State RDC on April 7.

the Penn State RDC, Census Bureau Director John Thompson remarked, “The Census Research Data Center program is a great way to engage top-notch minds in academia to conduct research using Census Bureau microdata in ways that enrich our knowledge and data products.”

This year also saw the start of the rebranding of the RDCs as the Federal Statistical Research Data Centers. While the Census Bureau will continue to administer the RDCs, the rebranding acknowledges the fact that other federal statistical agencies also make their restricted-use data available to researchers through these same facilities. The hope is that additional statistical agencies will join in this partnership and begin making their restricted-use data available through the RDCs as well. For more information, visit www.census.gov/fsrdc.



The RDCs currently host about 700 researchers working on about 185 different projects. In 2014, 72 new RDC projects began. Of those, 44 use Census Bureau microdata (see Appendix 3-A), while 1 uses data from the Agency for Healthcare Research and Quality and 27 use data from the National Center for Health Statistics (see Appendix 3-B).

Meanwhile, RDC researchers using Census Bureau microdata continue to be tremendously

PUBLICATIONS BY RDC RESEARCHERS AND CES STAFF: 2014 AND FORTHCOMING

Economics journals (by rank)	RDC researchers	CES staff	Total
AAA (1–5)	8	1	9
AA (6–20)	13	2	15
A (21–102)	25	4	29
B (103–258)	12	4	16
C (259–562)	6	4	10
D (563–1202)	1	0	1
Journals outside of economics	10	3	13
Book chapters	4	5	9
TOTAL	79	23	102

Note: Based on known publications listed in Appendix 2. Ranking of journals in economics is taken from Combes and Linnemer (2010). In select cases, a ranking was imputed using the journal ranking from RePEc.

prolific, with at least 79 publications and another 47 working papers in 2014 (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 9 of the top 20 journals in economics, including several articles in the *American Economic Review*, *Journal of Political Economy*, and *Quarterly Journal of Economics*.

RDC researchers include many graduate students working on their Ph.D. dissertations. Currently, there are about 85 such students from 30 different universities, including 69 who use Census microdata. 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 who advises the student on the use of Census Bureau microdata and a visit to CES to meet with staff economists and present research in progress. In 2014, CES accepted three new participants into the program and has had 23 since the program began in 2008.

The microdata available to researchers has also expanded. Among the notable releases are data from the 2012 Economic Census, the final waves of the 2008 panel of the Survey of Income and Program Participation, and the 2011 Snapshot of the Longitudinal Employer-Household Dynamics (LEHD) infrastructure files. See Appendix 5 for more details.

RELEASES OF PUBLIC USE DATA

CES released five public use data products in 2014: *Business Dynamics Statistics*, *Quarterly Workforce Indicators*, *OnTheMap*, *OnTheMap for Emergency Management*, and *Job-to-Job Flows*.

In September 2014, the Census Bureau released the 2012 **Business Dynamics Statistics** (BDS), which provides annual statistics on establishment openings and closings, firm startups and shutdowns, employment, job

creation, and job destruction, from 1976 to 2012, by firm (or establishment) size, age, industrial sector, state, and metropolitan area status.

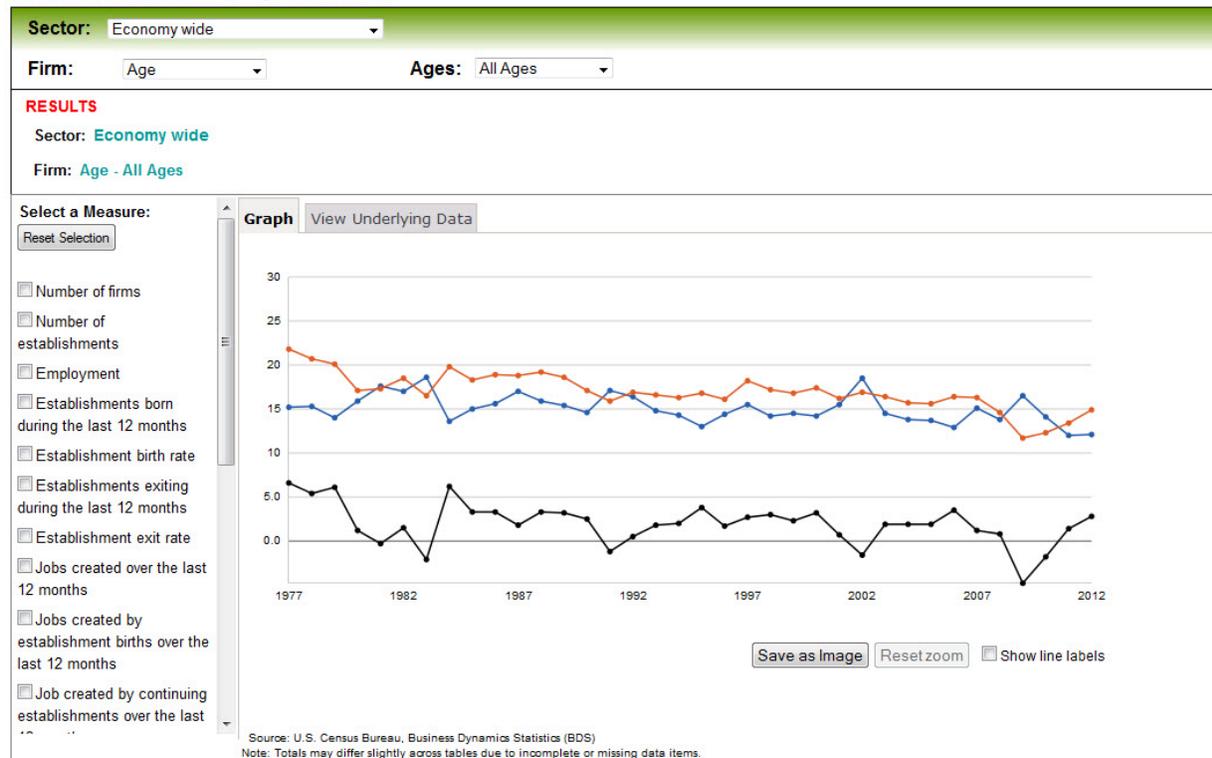
For the first time, BDS data will be available via the Census API, allowing more access and easier customization of data products. Developers can now use the statistics available through the API to create a variety of apps and tools. See <www.census.gov/developers/>.

To help visualize BDS statistics, the Census Bureau also offers the *Business Dynamics Statistics*

Visualization Tool. The tool has three major components, including an interactive thematic map for the 50 states, interactive bar charts that give side-by-side comparisons of states and business sectors, and time series data comparisons.

More information about the BDS can be found at <www.census.gov/ces/dataproducts/bds>. The BDS results from a collaboration between CES and the Ewing Marion Kauffman Foundation, with additional support from the U.S. Small Business Administration.

Interactive Time Series: Compare Measures



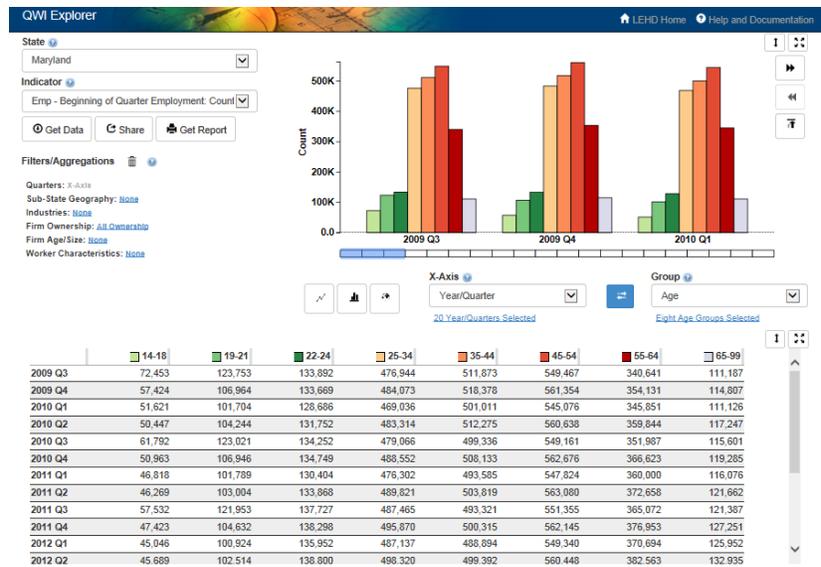
Example of the *Business Dynamics Statistics Visualization Tool* in action.

The **Quarterly Workforce Indicators (QWI)** are 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 2014, the Census Bureau launched the beta version of *QWI Explorer*—a new, Web-based analysis tool that enables comprehensive access to the full depth and breadth of the QWI dataset. 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, and a PDF report. With the release of *QWI Explorer*, the *QWI Online* and *Industry Focus* applications have been officially retired.

To use *QWI Explorer*, visit <qwiexplorer.ces.census.gov>. More information about the QWI can be found at <lehd.ces.census.gov/data>.

CES staff continued to update and improve **OnTheMap**, with the release of version 6.3 in 2014. *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



In 2014, the Census Bureau launched QWI Explorer.

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.

This year's release of *OnTheMap* contains improvements to the map cartography and road network. The map is more readable and more capable when highlighting the attributes of the data.

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

In June, version 4 of **OnTheMap for Emergency Management** (OTM-EM) was released. 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, winter storms, and 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 last year's report for a more detailed overview of *OTM-EM*.

Among the improvements in the latest release are newly added social, economic, and housing data from the American Community Survey (ACS), greater reporting flexibility to better analyze communities affected by disaster events, and a variety of user interface

enhancements. New tools for local, regional, and comparative analyses enable a way to quickly assess the relative impact of disasters and weather events across different communities and political jurisdictions. *OnTheMap for Emergency Management* version 4.0 can be accessed at onthemap.ces.census.gov/em.html.

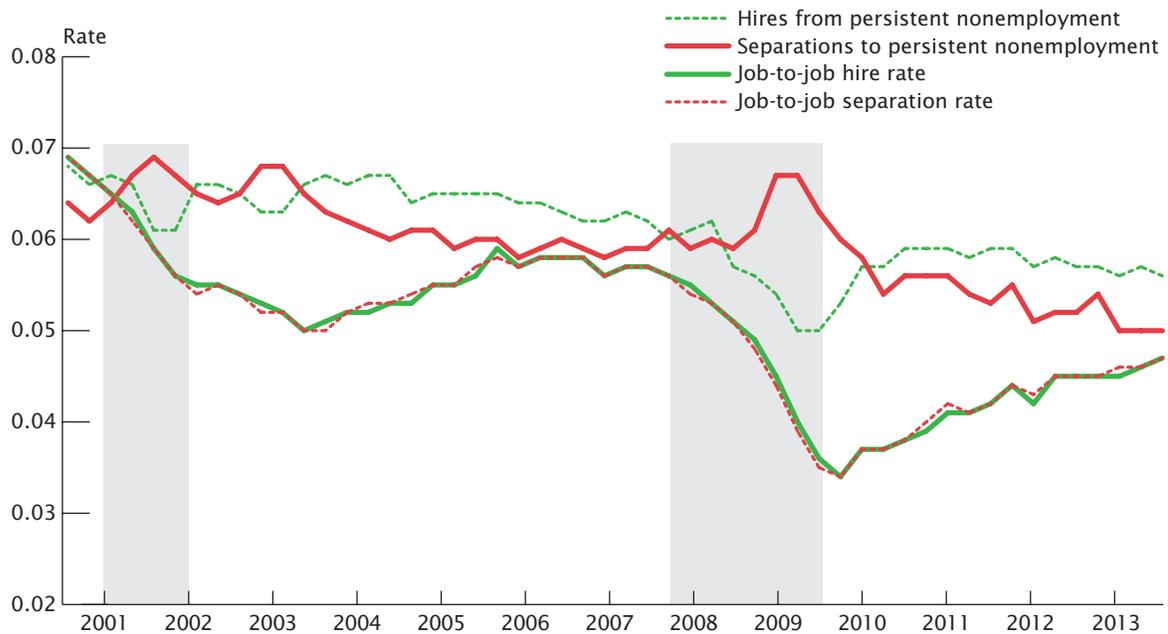
Both *OnTheMap* and *OnTheMap for Emergency Management* are supported by the state partners under the Local Employment Dynamics (LED) partnership with the Census Bureau as well as the Employment and Training Administration of the U.S. Department of Labor.

In November, the Census Bureau unveiled **Job-to-Job Flows (J2J)**, a new set of statistics on the movements of workers between jobs. This initial, beta release contains national data on worker flows, distinguishing hires and separations associated with job change from hires from and separations to nonemployment. Future releases will publish data with more detail and will tabulate the characteristics of the origin and destination jobs of workers changing jobs. A Web-based data visualization tool will be released in 2015.

The beta *J2J* data files and documentation are available for download at lehd.ces.census.gov/data/j2j_beta.html.

Figure 1-1.

Hires and Separations: Job Change Versus Nonemployment



The Census Bureau unveiled Job-to-Job Flows, a new set of statistics on the movements of workers between jobs.

RDC ANNUAL RESEARCH CONFERENCE

The RDC Annual Research Conference brings together researchers from the Research Data Centers (RDCs) 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 June 12 at the Census Bureau and featured 21 papers in seven sessions. Themes included firm organization and behavior; labor markets; youth and young adults; data and estimation; research and development; environmental and trade economics; and firm productivity. The conference also included three training sessions on business data from the Longitudinal Business Database, demographic data from the Survey of Income and Program Participation, and health data from the National Center for Health Statistics and the Agency for Health Research and Quality. The conference opened with remarks from Census Bureau Deputy Director Nancy Potok, who emphasized



*Sue Helper, Chief Economist,
U.S. Department of Commerce.*

the critical importance of research in keeping the Census Bureau on the cutting edge of economic and social measurement. This was followed by a keynote address by Sue Helper, Chief Economist at the U.S. Department of Commerce, on evidence-based governing. The next conference will be held at Stanford University on September 17 and 18, 2015.

LOCAL EMPLOYMENT DYNAMICS (LED) PARTNERSHIP WORKSHOP

The 2014 Local Employment Dynamics (LED) Partnership Workshop was held at the Department of Commerce and the Census Bureau on September 9 and 10, respectively. Now in its fifteenth year, this workshop has been a key component in strengthening the voluntary partnership between state data agencies and the Census Bureau to leverage existing data in the development of new sources of economic and demographic information for policy makers and data users. The workshop brings together key stakeholders, including state Labor Market Information directors, data analysts and data providers at state and federal agencies, nonprofit organizations, businesses, and other data users of LED data products, to discuss the latest product enhancements, to discover how their peers are using the data, and to learn about the research that will shape future improvements.

The theme for this year's workshop was "Open for

Business—LED and Economic Development." Topics addressed by invited speakers, state partners, and data users included economic development, defining regions, new hires data, high tech industries, and high-performing MSAs. CES staff discussed newly available data and enhancements to data applications, including QWI Explorer, OnTheMap for Emergency Management, National Quarterly Workforce Indicators, and Job-to-Job Flows. CES staff also offered training sessions on QWI Explorer and LED Extraction Tool, OnTheMap/LODES for Advanced Users, OnTheMap for Emergency Management, and LED in Action. Each training session offered scenario-based exercises, giving attendees hands-on experience. Presentations and materials from the 2014 workshop (and those from previous years) can be found at lehd.ces.census.gov/learning/#workshop.

Commerce Undersecretary for Economic Affairs, Mark Doms, and Census Bureau Director John Thompson provided opening remarks, and Jay Rowell, Director of the Illinois Department of Employment Security, offered the workshop's opening address. John Abowd, Edmund Ezra Day Professor, Department of Economics, Cornell University was the mid-day featured speaker.

The 2015 LED Partnership Workshop—on the theme "Discerning the Dynamic Workforce"—will be held on June 23 and 24.

STATISTICAL AGENCIES COLLABORATE ON RESEARCH WORKSHOPS

BLS-CENSUS RESEARCH WORKSHOP

On May 19, the Bureau of Labor Statistics (BLS) and the Census Bureau cohosted a workshop featuring empirical research by economists from both agencies. These annual workshops are intended to encourage and nurture collaboration between researchers at BLS and Census.

BLS Commissioner Erica Groshen provided welcoming remarks, followed by opening remarks by CES Chief Lucia Foster. This year's workshop consisted of three themed sessions with two papers each—one from each agency—with discussants from the other agency. The three sessions were: The Role of the Establishment in Earnings Inequality, Research Using Household Data, and Research Using Firm Data. Papers included:

- *What Are Establishment Fixed Effects?*
- *Inequality Statistics From the LEHD*
- *An Analysis of Long-Term Unemployment*
- *Analyzing the Labor Market Outcomes of Occupational Licensing*
- *Domestic Employment Characteristics of Globally Engaged U.S. Firms*
- *The Role of Entrepreneurship in U.S. Job Creation and Economic Dynamism*

The workshop was a success thanks to the researchers from both agencies who participated and especially to Kristin McCue (Census) and Nicole Nestoriak (BLS), who organized the workshop. The fifth annual BLS-Census Research Workshop will be held on June 18, 2015, at the Census Bureau.

BEA-CENSUS RESEARCH WORKSHOP

On October 28, the Bureau of Economic Analysis (BEA) and the Census Bureau hosted their first-ever joint research workshop, inspired by the success of the annual BLS-Census Research Workshop (noted above). Recognizing that research economists at the two agencies often work on similar topics with similar datasets, this annual workshop will provide a forum to discuss topics of common interest, promote collegiality, and provide an opportunity to learn about data from other statistical agencies.

Commerce Undersecretary for Economic Affairs, Mark Doms, encouraged these research collaborative efforts in his welcoming remarks. The chief economists from both agencies, David Johnson and Lucia Foster, also provided their perspectives on the benefits of research collaboration in their opening remarks. This year's workshop featured seven papers on three themes: health; research and development; and labor. Papers included:

- *Bending the Cost Curve: Explaining the Recent Slowdown in Premium Growth for Employer-Sponsored Insurance*
- *Defining Disease Episodes and the Effects on the Components of Expenditure Growth*
- *Regional Patterns in Medical Technology Adoption*
- *Tracing the Evolution and Characteristics of Top R&D Performing U.S. Firms*
- *The Role of Industry Classification in the Estimation of Research and Development Expenditures*
- *Engines of Job Creation? Heterogeneous Labor Supply in a Model of Entrepreneurship*
- *Is Labor's Loss Capital's Gain? Gross Versus Net Labor Shares*

The workshop was a success thanks to the researchers from both agencies who participated and especially to Fariha Kamal (Census) and Anne Hall (BEA), who organized the workshop. Planning for the second annual BEA-Census Research Workshop is currently underway.



Mark Doms, Under Secretary for Economic Affairs, U.S. Department of Commerce.

CES STAFF RECEIVE RECOGNITION

CES economist David Brown and other team members received a Department of Commerce Gold Medal for their work in support of the 2020 Census. The group developed a statistical methodology and successfully negotiated an interagency agreement allowing the information from federal income tax returns to assist the Census Bureau in its research and planning of the next census. This sharing of data will enable updating of Census files and lessen the

duplication of records. The gold medal is the Department of Commerce's highest honor.

Robert Sienkiewicz, Assistant Center Chief for the LEHD Program, and other team members received a Department of Commerce Silver Medal for their work in creating a road map for the Census Bureau to revolutionize its data dissemination. The team developed frameworks to guide governance, metadata management, technology, customer experience management, and external information services.

Cathy Buffington and other team members won the Director's Award for Innovation for their work on the Management and Organizational Practices Survey (MOPS). The Director's Award recognizes Census employees for their creativity, effectiveness, and risk-taking behavior in developing new processes, products, or services that contribute to the mission of the Census Bureau. Cathy's work on the MOPS has included developing quality checks for the microdata, ensuring their timely delivery to researchers in the RDC network, and developing a public use version of the MOPS.

Chapter 2.

The Bureau of Labor Statistics and the Census Bureau Collaborate to Create New Productivity Statistics

Lucia Foster and Cheryl Grim, Center for Economic Studies

Productivity measures are critical for understanding economic growth and business survival. The Bureau of Labor Statistics (BLS) produces the official U.S. productivity statistics using aggregate industry-level data, and these statistics provide important insights at the sector and industry levels. (See Text Box 2-1.) Unfortunately, BLS statistics cannot provide insight on the *within-industry* variation in productivity, limiting our understanding of the rich productivity dynamics in the U.S. economy. To address this gap, the BLS and the Census Bureau are collaborating to create new measures of the within-industry dispersion of productivity. This innovative partnership between the two agencies will combine the technical expertise of BLS staff in producing aggregate statistics

and of Census staff in developing business-level measures using Census microdata to provide a unique view into the dynamics of productivity.

Work on the *Collaborative Micro-productivity Project* (CMP) began in 2014 with the goals of producing both public-use and restricted-use data on productivity dispersion. The public-use data will include within-industry measures of the distribution of productivity for industries in the manufacturing sector and is planned to be published jointly by the BLS and the Census Bureau. The restricted-use data will consist of microdata files containing input, output, and productivity measures to be made available to researchers through the secure Federal Statistical Research Data Centers (FSRDCs).

The CMP will create measures of within-industry productivity dispersion for both labor productivity (i.e., output per unit of labor) and multifactor productivity (i.e., output per unit of combined inputs) using establishment-level microdata that are already collected by the Census Bureau.

We next describe how users will benefit from measures of productivity dispersion.

IMPACT OF MICRO-PRODUCTIVITY RESEARCH ON ECONOMICS

Why create measures of within-industry productivity dispersion? Starting with Bailey, Hulten, and Campbell (1992), research findings using microdata on productivity have changed the way economists think about aggregate productivity growth, labor market dynamics, international trade, and globalization. Syverson (2011) provides a recent review of the many facets of micro-productivity research.

Existing research highlights two key findings. First, there are large, persistent differences in productivity across establishments even within narrowly-defined industries. Second, these differences are correlated with important economic outcomes for businesses. Specifically, researchers have found low productivity plants contract and exit, while high productivity

Text Box 2-1.

THE BLS PRODUCTIVITY PROGRAM

The BLS produces the official productivity statistics for the United States, including annual growth rates for both labor productivity and multifactor productivity (MFP). Productivity measures are produced at both the major sector level (business, nonfarm business, and manufacturing) and more detailed industry levels—in some cases down to 6-digit NAICS.

Two types of MFP are produced: MFP using capital and labor inputs and KLEMS MFP using capital, labor, energy, materials, and services inputs. Published estimates show the contributions of different industries to both output and aggregate productivity growth. More information about the BLS productivity program can be found on the BLS Web site <bls.gov/bls/productivity.htm>.

plants survive and expand. This implies aggregate productivity growth is driven in part by the reallocation of resources from low- to high-productivity plants. In a recent paper, Foster, Grim and Haltiwanger (2014) look at this productivity-enhancing reallocation across the business cycle with a focus on the Great Recession. They find that the “cleansing effect of recessions” was somewhat attenuated during the Great Recession relative to earlier recessions. See Text Box 2-2 for more information about productivity and reallocation research. These findings have led to other important questions that public- and restricted-use data on within-industry productivity dispersion

can help answer. For example, how does productivity dispersion affect establishment, firm, and industry outcomes? How is productivity dispersion related to intangible capital, such as research and development and brand identity?

INPUT AND OUTPUT MEASUREMENT PRESENTS CHALLENGES

The first step in constructing industry-level productivity dispersion measures is to create establishment-level productivity measures, which require high-quality establishment-level measures of inputs and output. The CMP uses restricted-use establishment-level data

collected by the Census Bureau in conjunction with industry-level data from the BLS, the Bureau of Economic Analysis, and the NBER-CES Manufacturing Industry Database. The establishment-level data used are from the Annual Survey of Manufactures (ASM), the Census of Manufactures (CMF), and the Longitudinal Business Database. These data provide information on inputs, outputs, and industry, and have high-quality longitudinal identifiers for establishments. The industry-level data provide information on capital costs and depreciation rates as well as deflators.

While perhaps seemingly straightforward, measurement of inputs and output at the establishment level presents challenges. For example, total hours are the desired measure of the labor input. However, the ASM and CMF only collect hours data for production workers. The CMP examines various adjustments to provide an estimate of total hours for both quality and consistency with BLS’s measures of total hours in its industry-level multifactor productivity (MFP) calculations.

Capital stock (i.e., total physical capital) is another challenging input to measure given the nature of the ASM sample. In particular, the ASM employs a new sample every 5 years, beginning in years ending in “4” and “9.” Large establishments are sampled with certainty, and smaller establishments are sampled with a probability

Text Box 2-2.

PRODUCTIVITY AND REALLOCATION

The link between productivity and the reallocation of economic activity across businesses is the subject of a rich literature in economics. On the theory side, there is debate about the effect of the reallocation of resources (e.g., workers) from low- to high-productivity firms over the business cycle. Caballero and Hammour (1994) modeled the “cleansing effect of recessions” in which this reallocation process accelerates during recessions, leading recessions to be a time of “cleansing” as lower productivity businesses exit and higher productivity businesses enter. Subsequently, Caballero and Hammour (1996) and others highlighted distortions that could impact incentives for job creation and job destruction over the cycle and thus mitigate this “cleansing effect.” Foster, Grim, and Haltiwanger (2014) examine whether this reallocation process changed in the latest recession (the Great Recession). They build upon earlier empirical work using business microdata (Foster, Haltiwanger, and Krizan 2001, 2006) that showed the importance of reallocation in the manufacturing and retail trade sectors. In all discussions about productivity and reallocation, it is important to remember the point made in Foster, Haltiwanger, and Syverson (2008) that establishment entry, exit, and survival are actually based on profitability, of which productivity is only one component.

increasing in size. In recent years, total assets are only collected in CMF years (years ending in “2” and “7”). Capital expenditures are collected in all years. Perpetual inventory methods can be used to calculate capital stock, where capital stock in the current period is depreciated existing capital stock plus capital expenditures in the current period. However, the rotating nature of the ASM panel presents complications because not all establishments are in the sample all the time.

Related measurement issues include the lack of establishment-level price data for inputs and output and the lack of information on purchased services. The CMP team will provide detailed

documentation on all of its methodology and measurement decisions.

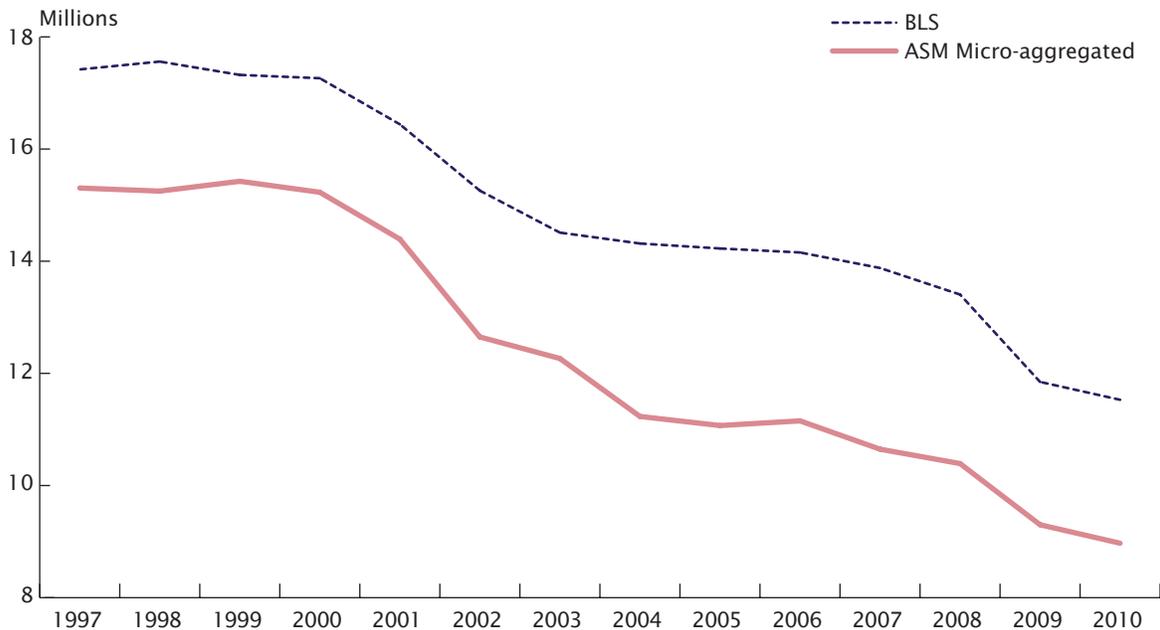
COMPARING INDUSTRY-LEVEL AND AGGREGATED MICRO-LEVEL MEASURES OF LABOR

Published industry-level BLS productivity measures are indices measuring changes over time within industries or broad sectors. The dispersion measures to be created by the CMP are based on dispersion in levels of productivity within industries. To create dispersion measures that are complementary to the BLS published measures, it is important to understand the correlation between industry-level micro-aggregated measures

created from Census microdata and BLS industry-level measures.

As a first step toward understanding the relationship between micro-aggregated measures and industry-level measures, the CMP team examined one of the most important inputs to production—labor. Preliminary results show published BLS employment numbers are highly correlated with employment calculated by aggregating establishment-level ASM data. Figure 2-1 plots published BLS employment numbers and aggregated Census establishment-level employment over time for total manufacturing. The correlation between the two series is over 0.98.

Figure 2-1.
Manufacturing Employment Series, 1997–2010



Source: The “ASM Micro-aggregated” series is created from the authors’ calculations on ASM microdata; the nonmail universe is excluded. The “BLS” series is BLS Office of Productivity and Technology total manufacturing employment less self-employed and unpaid family workers.

MANY POSSIBLE MEASURES OF PRODUCTIVITY

The CMP will create measures of within-industry productivity dispersion for both labor productivity and MFP.¹ Labor productivity is simply output per unit of labor, so once the optimal way to measure both output and labor is determined, it is relatively straightforward to measure labor productivity.

The best way to measure MFP—output per unit of *combined* inputs—is less clear. At issue is how to combine the inputs of production. Generally speaking, these inputs of production include labor, capital, materials, energy, and purchased services. Economic theory describes the relationship between these inputs and output via a production function. An important component of this production function is the factor elasticities (i.e., the effect of a change in an input on the output). Multiple methods exist to estimate factor elasticities and to measure this production relationship. Two main types of methods are under consideration—growth accounting and statistical methods—each with its own pros and cons.

The advantages of the *growth accounting* method are that it

¹ Note multifactor productivity (MFP) and total factor productivity (TFP) are two different names for essentially the same concept.

does not require econometric estimation, is flexible about the exact form of the production function, and is relatively easy to implement. However, strong assumptions about a firm's optimizing behavior are required.

The *statistical methods* under consideration are flexible regarding the nature of the production function, address endogeneity issues present in simpler methods, and rely on establishment-specific variation to identify productivity shocks. However, these methods may exacerbate measurement error, some methods are computationally demanding, and the small

sample behavior of these methods is largely unexplored.

Foster, Grim, Haltiwanger, and Wolf (2015) compare various methods for calculating MFP. While they find there are non-trivial differences in factor elasticities across methods, they also find there are large productivity differences across establishments regardless of method. See Text Box 2-3 for further discussion.

In choosing between methods for calculating MFP, it is important to consider the quality of the measure, consistency with existing BLS measures, feasibility of calculation, and the

Text Box 2-3.

PRODUCTIVITY MEASUREMENT: THE DEVIL IS IN THE DETAILS

Foster, Grim, Haltiwanger, and Wolf (2015) compare different MFP calculation methods, including ordinary least squares; more complex estimation methods based on Olley and Pakes (1996), Levinsohn and Petrin (2003), and Wooldridge (2009); and the growth accounting method as described in Foster, Haltiwanger, and Krizan (2001). They examine the effect of choice of MFP calculation method on elasticity distributions; within-industry dispersion in MFP; growth and survival of establishments; and structural decompositions of aggregate productivity growth.

The MFP calculation method is found to matter for elasticity distributions. They also find that while the magnitudes vary, there are large productivity differences across establishments regardless of the choice of method. Meanwhile, results on the growth and survival of establishments are found to be robust to choice of method. Finally, they find the main conclusions of the aggregate productivity growth literature hold across all methods.



Collaborative Micro-productivity Project (CMP) team members from left to right: Lucia Foster (U.S. Census Bureau), Sabrina Pabilonia (U.S. Bureau of Labor Statistics), Zoltan Wolf (Westat), Cheryl Grim (U.S. Census Bureau), and Cindy Zoghi (U.S. Bureau of Labor Statistics). Not pictured: Jay Stewart (U.S. Bureau of Labor Statistics) and John Haltiwanger (University of Maryland and U.S. Census Bureau).

impact of the choice of method on resulting statistics. As part of the commitment to transparency, the microdata in the FSRDCs will include not only the micro-level measures of productivity, but also the inputs and outputs used in creating these measures so that researchers can create their own measures and compare to measures created by the CMP.

OTHER BENEFITS FROM THE PROJECT

The CMP has benefits over and above the resulting data products. First, in the course of constructing the joint BLS-Census data product, the researchers will explore and attempt to reconcile differences between published aggregate statistics and their counterparts constructed by aggregating microdata. In addition, this partnership could serve as the prototype for other interagency measurement projects.

Further, the statistics on the distribution of productivity could

potentially be integrated with other public domain products on firm dynamics including those that provide information on management practices, entrepreneurship and high growth firms, and innovation. Finally, the CMP will pilot a new way of tabulating existing collected data to provide valuable new information to the data user community. If the pilot is successful, similar statistics could be produced for variables other than productivity and sectors other than manufacturing. For example, it may be possible to produce similar statistics on dispersion for capital expenditures.

EXPERT FEEDBACK

The CMP team is committed to obtaining early feedback from the data user and research communities on many of the challenges described in this chapter (see Text Box 2-4). The CMP has been presented at the December 2014 Federal Economic Statistics Advisory Committee (FESAC) meeting at the Census Bureau. The FESAC has been asked to comment on the data products they would like to see as an outcome of the CMP and provide suggestions on how to deal with technical issues in creating the final data products. Papers associated with the CMP have also been presented at several conferences and seminars (see Text Box 2-5).

NEXT STEPS

The joint BLS-Census CMP team is working to meet the challenges presented in creating new statistics on the within-industry dispersion of productivity in the manufacturing sector. The team continues to explore the use of different measures of inputs and output, look at differences resulting from the choice of MFP calculation method, and consider the effects of weighting and imputation on the resulting statistics. The team is currently developing prototypes for the published statistics.

The CMP team will continue to seek feedback from advisory committees, researchers, and other members of the data user community.

Text Box 2-4.

MEASUREMENT CHALLENGES

There are a number of measurement challenges to producing a high-quality, useful statistic on within-industry productivity dispersion.

Measuring Inputs and Output

Measurement of inputs and output at the establishment level presents challenges. Calculation of the labor input is complicated by lack of collected data on nonproduction worker hours. Capital stock calculation is not straightforward due to the nature of the ASM sample. Other challenges include the lack of establishment-level prices for inputs and output and the lack of information on purchased services.

MFP Calculation Method

There are multiple ways to estimate factor elasticities and calculate MFP. The quality of the measure, consistency with existing BLS measures, feasibility of calculation, and the impact of the choice of the method on the resulting statistics will be considered in determining the MFP calculation method.

Imputation

Item-level imputation rates in the ASM and CMF are significant. It is possible the imputation methods affect dispersion measures. For example, White, Reiter, and Petrin (2012) look at a select set of industrial products and show dispersion in MFP is higher when they account for imputation using the classification and regression trees (CART) method.

Weighting

Both the ASM and CMF have a nonmail universe—a set of very small establishments that are not eligible for inclusion in the sample of establishments mailed a survey form. Published ASM and CMF statistics are weighted sample totals plus adjustments for the establishments in the nonmail universe. Adjustments for the nonmail universe will also be required for any published statistics on within-industry productivity dispersion.

Disclosure Avoidance

Disclosure avoidance is of paramount concern in any release of public statistics. Respondent privacy must be protected while providing as much useful information as possible to the data-user community.

Text Box 2-5.

FEEDBACK

An integral part of the CMP project is getting feedback from the data user and researcher communities about the measurement of MFP and the most useful statistics to produce. Feedback will come from articles in peer-reviewed journals, working papers, seminars, and presentations at conferences and federal statistical advisory boards. The list below includes CMP presentations and associated papers to date. The team expects to continue informing interested stakeholders and soliciting feedback over the duration of the project.

2014 Federal Economic Statistics Advisory Committee

The joint BLS-Census CMP team presented an overview of the CMP at the 2014 Federal Economic Statistics Advisory Committee (FESAC) meeting in December 2014 at the Census Bureau in Suitland, Maryland. The FESAC advises the Director of the Bureau of Economic Analysis, the Director of the Census Bureau, and the Commissioner of the BLS on statistical methodology and other technical matters related to the collection, tabulation, and analysis of federal economic statistics.

International Research Forum on Monetary Policy

Foster, Grim, and Haltiwanger (2014) was presented at the International Research Forum on Monetary Policy (IRFMP) in March 2014 at the Federal Reserve Board in Washington, D.C. The purpose of the IRFMP is to promote discussion of innovative research on issues relevant for monetary policy.

2014 Allied Social Science Associations Annual Meeting

Foster, Grim, and Haltiwanger (2014) was presented at the Allied Social Science Associations (ASSA) Annual Meeting in January 2014 in Philadelphia, Pennsylvania. The ASSA Annual Meeting is held by the American Economic Association in conjunction with over 50 associations in related disciplines to present papers on general economic topics.

2013 Comparative Analysis of Enterprise Data Conference

Early versions of Foster, Grim, and Haltiwanger (2014) and Foster, Grim, Haltiwanger, and Wolf (2015) were presented at the 2013 Comparative Analysis of Enterprise Data (CAED) conference in September 2013 in Atlanta, Georgia. The purpose of the CAED conference is to promote scientific research using business microdata.

2013 Society of Labor Economists Annual Meeting

An early version of Foster, Grim, and Haltiwanger (2014) was presented at the Society of Labor Economists (SOLE) Annual Meeting in May 2013 in Boston, Massachusetts. The purpose of the SOLE Annual Meeting is to promote and disseminate research in labor economics.

2013 National Bureau of Economic Research Conference

An early version of Foster, Grim, and Haltiwanger (2014) was presented at the National Bureau of Economic Research Conference on “The Labor Market in the Aftermath of the Great Recession” in May 2013 in Boston, Massachusetts.

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Chapter 3.

Newly Available 1960 Decennial Census Microdata

Todd Gardner, Center for Economic Studies

The 1960 census was taken at an extraordinary moment in the nation's demographic and economic history and, as such, serves as a valuable reference point for much social science research. The Center for Economic Studies (CES) has recently begun making restricted-use 1960 decennial census microdata available to qualified researchers on approved projects in the Federal Statistical Research Data Centers (RDCs). Now, decennial censuses from 1960 to 2010 are available. This chapter describes some of the unique features of the 1960 census, the efforts undertaken to restore the microdata, and the value that has been added to the data to facilitate research.

IMPORTANCE OF THE 1960 CENSUS

Each decennial collection provides an important snapshot of the American people and economy. The 1960 census has additional importance due to the unprecedented scope of its collection. The 1960 census represents a key benchmark in any study of recent American history. It was just three years after the peak of the baby boom and one year after the peak of the marriage boom. As we seek to understand the sources of the ongoing transformation of fertility and marriage behavior, the 1960 census is an essential starting point. The 1960 census also provides a baseline for

understanding the spectacular economic transformation of the late-twentieth century. The decade from 1959 to 1968 saw the largest increase in real per capita domestic product of any 10-year period since World War II.

The 1960 census is also crucial for the study of seismic late-twentieth century shifts in such areas as race relations, inequality, and immigration. The modern civil rights movement had just begun, making the 1960 census a key point of reference for the study of racial inequality and segregation. Across the population as a whole, income inequality was near an all-time low in 1960, and yet race and gender wage differentials were large. Because 1960 was the last census taken before the 1965 Immigration Act abolished national origin quotas, it also provides a benchmark for analysis of the late-twentieth century boom in immigration.

The 1960 census incorporated an important innovation that made it far more powerful than any previous enumeration. The 1960 census was the first to use a "long form" to gather detailed information about *households*. With one out of every four households asked these additional questions, the 1960 long-form dataset is the densest such sample ever constructed by the Census Bureau. Understanding the format of the pre-1960

censuses helps to illuminate the motivation for this innovation.

The Census Bureau first made use of "sampling" in the 1940 census to collect additional detail from a set of randomly selected *individuals*. At that time, each sheet of the census enumeration schedule had 40 rows, with 1 row for each person, and 34 columns, with a different census question in each column. This was essentially the same layout as had been used since 1850. What was different in 1940 was that two rows on every page were highlighted, and the individuals enumerated on those rows were asked a set of 17 supplemental questions. This yielded a systematic, geographically stratified sample representing 5 percent of the population. The Census Bureau adopted a similar approach in the 1950 census, except that the sample density increased to 20 percent and many more questions were asked of those sampled. In particular, the 1950 census included a total of 64 questions, more than twice the number asked in 1930.

There were limitations to sampling individuals, however. The addition of so many detailed questions strained the conventional door-to-door enumeration methodology. If the sample individual was not present when the enumerator visited the household, the household's respondent might not know the answers to some of the detailed

questions on the form, such as nonwage income or highest grade completed. Another liability of this sampling approach was that only one individual in each household ordinarily would have been asked the supplemental questions. This means, for example, that one cannot compare the income or education of husbands with that of their wives, since only one member of a couple would have been asked those questions.

These problems were resolved in 1960 by a redesign of the census form and new enumeration procedures. The census enumerators carried out sampling on a household basis rather than an individual basis. The Census Bureau mailed each household an “Advance Census Report” form to fill out before the census taker arrived, containing a sharply restricted set of six population questions (name, relationship, sex, race, date of birth, and marital status) and 13 housing questions. The enumerator then went from house to house and collected the forms in person. If a household failed to complete its advance report form, or filled it out incorrectly, the census taker did a conventional interview.

The enumerators designated every fourth household visited as a sample household, and gave the respondent a “sample form” containing 28 additional questions for each person in the household and 33 additional housing questions. The enumerators requested that respondents complete the form and mail it to their local census office in a postage-paid

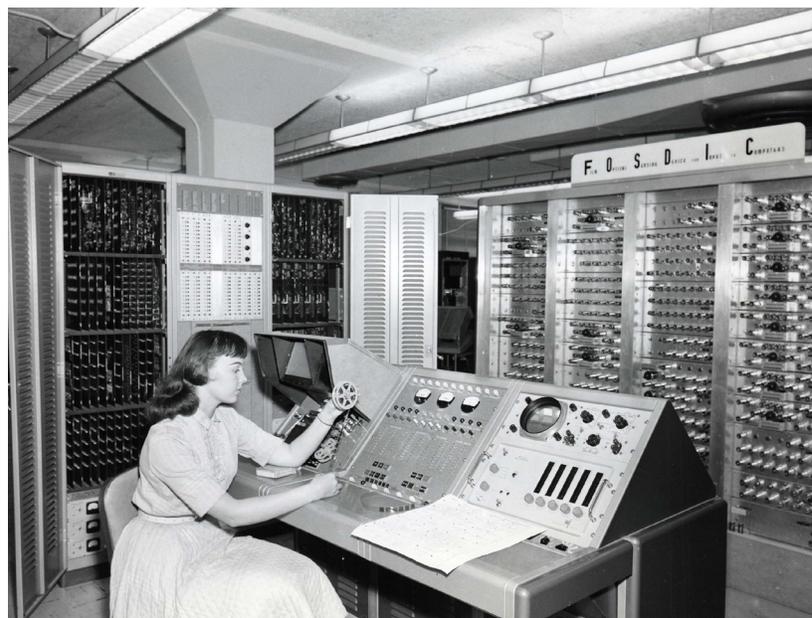
envelope. When they received these sample forms, Census Bureau personnel checked them for consistency and completeness, and conducted telephone or in-person inquiries to complete unanswered questions when necessary.

This two-stage procedure with the Advance Census Report greatly reduced the complexity of fieldwork, and testing suggested that the accuracy of responses to the long-form questions was considerably higher than had been obtained in 1950. The increased efficiency allowed expansion of the census to a total of 81 questions, approximately the same number as were asked on the Census 2000 long form. Since researchers can observe the characteristics of multiple household members in a sampled household, the microdata from 1960 is substantially more useful

compared with that from 1940 or 1950.

DATA RECOVERY AND RESTORATION EFFORTS

The 1960 census was the first fully computerized enumeration. Census enumerators received completed census forms from respondents and transferred the information onto bubble-coded forms, which were then microfilmed and scanned. The information on these forms was then converted to digital form by means of an innovative optical scanning system, the Film Optical Sensing Device for Input to Computers (FOSDIC). Developed by the Census Bureau, in conjunction with the National Bureau of Standards, work on the FOSDIC scanner began in 1951, with the goal of reducing the 200,000 person-days of keypunching required for the 1950 census. The



In 1960, questionnaire responses were read, converted to digital form, and recorded to magnetic computer tapes using Film Optical Sensing Device for Input to Computers (FOSDIC).

CONFIDENTIAL—The Census is required by the United States Constitution and further authorized by 13 U.S.C. 5, 9, 141, 221-4. The law requires that the inquiries be answered completely and accurately, and guarantees that the information furnished will be accorded confidential treatment. The Census report cannot be used for purposes of taxation, investigation, or regulation.

U.S. DEPARTMENT OF COMMERCE
1960 CENSUS OF POPULATION

FIRST—Copy sample key and address from listing sheet to P1, H1 and H2.
SECOND—Determine if more than 1 HU.
THIRD—List names in P2; mark relationship in P3. Before listing "other relatives" or "nonrelatives," find out if they have separate quarters.
FOURTH—If no ACR, ask: Is there anyone else here but is temporarily absent? If yes, list name and address. If no ACR, ask: What is the name of the head of this household? What are the names of all other persons who live here?

Line No.	P1. Sample key	P2. Name—Enter last name first.	P3. What is his relationship to the head of the household?	P4. Sex	P5. Color or race
1	Household heads Persons listed out of order All "GG" persons Vacant units	List (The head his wife Unmarried sons and daughters (in order of age) Married sons and daughters and their families Other relatives Other persons, such as lodgers, maids, or hired hands who live in and their relatives living in	Head Wife of head Son or daughter Other relative Nonrelative Inmate	Male Female	White Negro American Indian Japanese Chinese Filipino Other Spanish
2	○ ○ ○ ○ ○		○ ○ ○ ○ ○	○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
3	○ ○ ○ ○ ○		○ ○ ○ ○ ○	○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
4	○ ○ ○ ○ ○		○ ○ ○ ○ ○	○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
5	○ ○ ○ ○ ○		○ ○ ○ ○ ○	○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Enumerators transferred collected data to a FOSDIC-readable form.

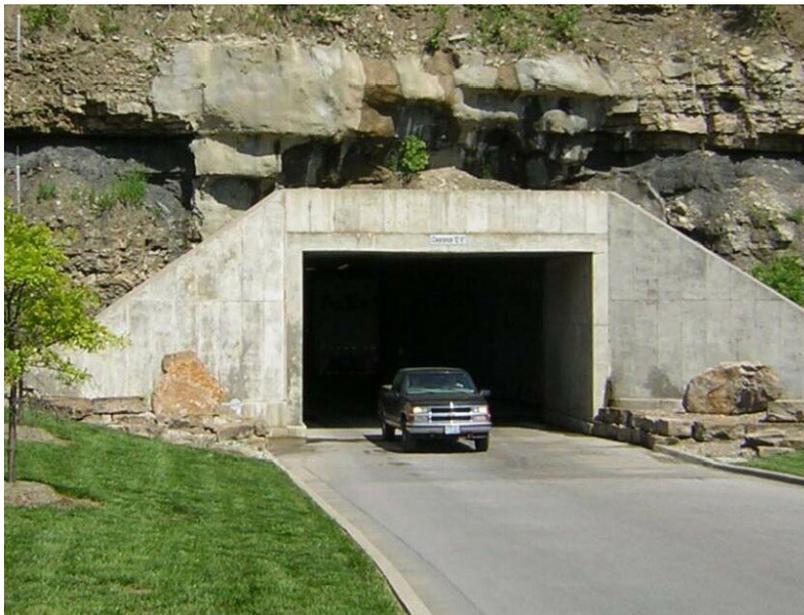
machine was capable of reading forms at the extraordinary rate of 100 frames per minute. The new technology was so successful that it was used again for the 1970, 1980, and 1990 censuses.

The FOSDIC machines used for the 1960 census recorded the information from the microfilm on 7-track magnetic computer tapes that were readable by the Census Bureau's computers. As

technology changed between 1960 and 2000, these tapes were repeatedly migrated to new systems and storage media. At some point along the way, some of the data on the original tapes were degraded beyond recovery. In particular, data from some parts of the country—most notably Cook County (Chicago), Illinois—was missing.

Fortunately, the missing information still survives on the microfilmed enumeration coding sheets. The film is stored at the Federal Records Center of the National Archives and Records Administration (NARA) in Lenexa, Kansas, in a 35 degree cold room on shrink-wrapped pallets. The images of the sample forms, which contain the responses of 25 percent of the population, are contained on approximately 30,000 100-foot reels of 16-millimeter film. Each reel includes information from approximately 10 enumeration districts, or 6,000 individuals. In accordance with Census privacy rules, copies of the film are scheduled for public release in April 2032.

Through a collaboration between the Minnesota Population Center (MPC) and the Census Bureau, the unrecoverable data from the 1960 census was restored. The FOSDIC forms contained on the microfilm are compatible with modern mark recognition software. To recover the missing data, approximately 2.5 million microfilm forms were scanned. Once the microfilmed forms were scanned, the data were digitized taking advantage of the infrastructure developed for the Integrated Public Use Microdata Series (IPUMS) developed at MPC. IPUMS has made a considerable investment in the development of efficient and flexible editing and allocation routines that were used here. The newly created data were then merged with the existing records to restore the complete 25 percent sample.



Microfilm containing the 1960 census forms is stored in NARA's underground facility in Lenexa, Kansas.

Text Box 3-1.

COLLABORATION BETWEEN THE MPC AND THE CENSUS BUREAU

The accomplishments described in this chapter arose from a collaboration between the Minnesota Population Center (MPC) and the Census Bureau. The project had several main goals:

- Recover lost data from the 1960 Census of Population and Housing.
- Create new public use data products for the 1960 census, including new and improved public use microdata samples (PUMS).
- Create new restricted-use long-form microdata files covering a 25 percent sample of the 1960 U.S. population.
- Harmonize the restricted-use long-form microdata files.

Work on this project began in 2006. The Census team included Todd Gardner and Trent Alexander, with Trent beginning this project while still on staff at MPC. The MPC team, led by the visionary Steven Ruggles, also included Caren Arbeit, Leslie Ashton, Peter Clark, Katie Coursolle, Chandra Darjatmoko, Colin Davis, Cathy Fitch, Sarah Flood, Kevin Horne, Ryan Klein, Ellen Manovich, Kelsey McDonald, Kris Michaelson, Matt Nelson, Petra Noble, Dave Van Riper, Natasha Rivers, Matt Schroeder, Matt Sobek, and Rebecca Vick. Staff at the Census Bureau's National Processing Center in Jeffersonville, Indiana, as well as National Archives and Records Administration staff working at the Federal Records Center in Lenexa, Kansas, also made substantial contributions to this project.

DEVELOPMENT OF NEW 1960 PUBLIC USE DATA

In addition to the restricted-use 1960 census data available through the RDCs, this project also resulted in a new 1960 public use microdata sample (PUMS). Since 1976, the National Institutes of Health and the National Science Foundation have funded the creation of new historical microdata samples of every surviving census from 1850 to 1950. IPUMS combines these historical samples with the modern public use samples

for the period 1960 through 2010 created by the Census Bureau, resulting in a time-series database covering 160 years. See Text Box 3-2 for more information on the creation of the new 1960 PUMS. Public use microdata samples have been used in a wide variety of research efforts. MPC maintains a searchable database containing citations of publications using the IPUMS. The database, which currently has over 7,500 entries, is available online at [<bibliography.ipums.org/citations/search>](http://bibliography.ipums.org/citations/search).

HARMONIZATION AND DOCUMENTATION OF 1960 MICRODATA

Not only did the infrastructure developed for IPUMS dramatically reduce the effort required for the 1960 data restoration project, but this collaboration also opened up a significant opportunity to facilitate research in the RDCs in two important ways. First, of the decennial censuses and other household surveys housed at CES, the restored restricted-use 1960 long-form microdata is the first to be harmonized using the coding first established by the IPUMS. When completed, harmonization will make time-series analysis much easier by standardizing the coding of every variable across all years without any loss of information. The consistent coding and record layout across datasets will also allow for easier creation of multiyear extracts. Currently researchers working on projects using data from different surveys or across multiple years need to spend a significant amount of time and effort to make these datasets compatible with each other.

Second, harmonization of the restricted-use data allows researchers in the RDCs to take advantage of the extensive documentation created for the public use version of these files and available in the IPUMS. The core of the collection is the comparability discussions, which highlight important differences, provide warnings about likely errors, and suggest strategies for enhancing compatibility for specific comparisons. In addition, IPUMS provides extensive

Text Box 3-2.

A NEW 1960 PUBLIC USE MICRODATA SAMPLE

Upon its release, the 1960 census played a pivotal role in the development of quantitative social science. It was the first census to provide researchers with machine-readable data on computer tapes. Indeed, the 1960 census was the first large-scale machine-readable data source to be widely used for social science research. In 1963, the Census Bureau produced a 1-in-1000 sample of the data tapes they had used to create tabulations for the published census volumes. Detailed geographic codes and other potentially identifying information were removed, and the sample was made available to researchers who wanted to make specialized tabulations. This 1960 public use sample revolutionized analysis of the American population and led to an explosion of new census-based research.

Despite its impact, the initial 1960 sample had two serious limitations. First, the sample size was relatively small. The 1-in-1000 sample density yielded about 180,000 person records. Given the modest capacity of computers in 1964, this was a substantial number of cases. However, as researchers began to use the sample for detailed analyses of small population subgroups, its limitations became apparent. Second, the 1960 public use sample provided little geographic information. To ensure confidentiality, the Census Bureau stripped off all information on places below the state level. This meant, for example, that it was impossible to extract a subsample of the New York City population. The restricted geographic information applied not only to place of residence, but also to the variables on migration and journey to work.

In 1973, the Census Bureau responded to user demand by enlarging the 1960 sample from 1-in-1000 to 1-in-100. This 1960 sample nevertheless remains much smaller than the microdata samples available for subsequent census years. For the censuses of 1970 through 2000, the Census Bureau has released samples ranging between 6 percent and 9 percent of the population.

The 1960 data restoration project offered a prime opportunity to improve the public use microdata available from the 1960 census. Two public use microdata samples were created: a 1 percent sample with geographic codes compatible with the censuses of 1850 through 1950, and a 5 percent sample with geographic codes compatible with Census 2000 and the American Community Survey. These new microdata samples produced by this project are now part of IPUMS and disseminated through the IPUMS data access system at usa.ipums.org/usa-action/variables/group.

ancillary documentation, including enumeration instructions, full detail on sample designs and sampling errors, procedural histories of each dataset, full documentation of error correction

and other post-enumeration processing, and analyses of data quality.

The ultimate goal is to harmonize all of the decennial census and household survey data

files using IPUMS technology. Researchers will then be able to do significant preparatory work using public use files, thereby making the experience in the RDCs more efficient.

Appendix 1.

OVERVIEW OF THE CENTER FOR ECONOMIC STUDIES

The Center for Economic Studies (CES) partners with stakeholders within and outside the 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.
- 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.
- *Job-to-Job Flows (J2J)*. Beta version of statistics on worker reallocation, distinguishing hires and separations associated with job change from hires and separations from and to nonemployment.
- *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.
- *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.

RESEARCH DATA CENTERS (RDCs)

CES administers 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 RDCs that benefit the Census Bureau 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 (see Appendix 6), CES currently operates 18 Research Data Centers located in Ann Arbor, Atlanta, Berkeley, Cambridge, Chicago, College Station (TX), Durham, Irvine, Ithaca (NY), Los Angeles, Minneapolis, New York, Research Triangle Park (NC), Seattle, Stanford (CA), University Park (PA), and the Washington DC area, with more being planned.

RESEARCH DATA CENTERS—Con.



Research proposals submitted to CES are evaluated for:

- Potential benefits to Census Bureau programs.
- Scientific merit.
- Clear need for nonpublic data.
- Feasibility given the data.
- No risk of disclosure.

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

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) and the 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. Abstracts of recently approved AHRQ and NCHS projects appear in Appendix 3-B.

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 and research organizations that support the Research Data Centers 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 *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.

Appendix 2.

CENTER FOR ECONOMIC STUDIES (CES) STAFF AND RESEARCH DATA CENTER (RDC) SELECTED PUBLICATIONS AND WORKING PAPERS: 2014

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

PUBLICATIONS

- Acemoglu, Daron, Ufuk Akcigit, Douglas Hanley, and William Kerr. Forthcoming. "Transition to Clean Technology." *Journal of Political Economy*. [RDC]
- Akerberg, Daniel A., David R. DeRemer, Michael H. Riordan, Gregory L. Rosston, and Bradley S. Wimmer. 2014. "Estimating the Impact of Low-Income Universal Service Programs." *International Journal of Industrial Organization* 37: 84–98. [RDC]
- Agarwal, Rajshree, Benjamin Campbell, April M. Franco, and Martin Ganco. Forthcoming. "What Do I Take with Me: The Impact of Transfer and Replication of Resources on Parent and Spin-Out Firm Performance." *Academy of Management Journal*. [RDC]
- Alcacer, Juan, and Mercedes Delgado. Forthcoming. "Spatial Organization of Firms and Location Choices through the Value Chain." *Management Science*. [RDC]
- Andersson, Fredrik, Monica Garcia-Perez, John Haltiwanger, Kristin McCue, and Seth Sanders. 2014. "Workplace Concentration of Immigrants." *Demography* 51: 2281–2306. [CES]
- Armour, Philip, Richard V. Burkhauser, and Jeff Larrimore. 2014. "Levels and Trends in U.S. Income and its Distribution: A Crosswalk from Market Income towards a Comprehensive Haig-Simons Income Approach." *Southern Economic Journal* 81: 271–293. [RDC]
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- Becker, Randy A. 2014. "Measuring Pollution Abatement Expenditures: The U.S. Experience." In *La Estadística Ambiental en México* [Environmental Statistics in Mexico], edited by Alfonso Mercado García and Carlos Roberto López Pérez, El Colegio de México. [CES]
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- Bozkaya, Ant, and William R. Kerr. 2014. "Labor Regulations and European Venture Capital." *Journal of Economics and Management Strategy* 23: 776–810. [RDC]
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Appendix 3-A.

ABSTRACTS OF PROJECTS STARTED IN 2014: U.S. CENSUS BUREAU DATA

Projects in this portion of the appendix use data provided by the Census Bureau.

COST INCENTIVES, TRADE-INDUCED COMPETITIVE PRESSURES, AND TECHNOLOGY ADOPTION: EVIDENCE FROM THE U.S. MANUFACTURING SECTOR

Steven Davis – University of Chicago

Mary Li – University of Chicago

Technological progress and innovation is arguably the largest factor that drives long-run economic growth. Many studies have shown that increasing competition from lowering trade barriers enhances efficiency and increases overall TFP growth. Nearly all these studies found that with an increase in competition, large productivity gains can be observed in the data,

and that these gains account for a majority of the overall industry gains. However, the underlining mechanism that drives the overall TFP gain is not clear. A primary objective of this research is to examine the effect of increased trade-induced competition pressure and energy costs on technology adoption behavior of establishments. This research examines whether an

increase in technology adoption is a main channel for an increase in TFP when firms face rising competitive pressure or rising energy costs. This research uses various empirical strategies to quantify the technology adoption response to a change in international trade environment as well as a change in domestic energy market environment.

BARGAINING POWER IN FIRM-TO-FIRM RELATIONSHIPS

Sebastian Heise – Yale University

Peter Schott – Yale University

This project investigates the effects of bargaining power and long-term relationships on price setting in producer markets. One set of questions centers on the effect of bargaining power on the average price level and the size and frequency of price changes. For example, are sellers with more bargaining power able to charge higher prices for the same product? Another set

of research questions concerns the connection between the average length of a relationship and bargaining power. For example, do relationships characterized by asymmetric bargaining power become more stable over time? Using transaction-level trade data involving U.S. firms, this research identifies both the buyer and the seller firm for import transactions.

This feature makes it possible to determine in the import data whether firms are in an ongoing relationship with each other and to assess their relative bargaining power. Bargaining power is estimated using proxies for firms' size, the ease with which they can find an alternative trading partner for the same product, and the uniqueness of the product traded.

DENSITY, PRODUCTIVITY, AND SORTING

Richard Hornbeck – Harvard University

Oren Ziv – Harvard University

Firms in cities are larger, more productive, and more profitable. At the same time, rents in cities are higher. This relationship between density, rent, and profits holds true in comparisons between cities in terms of size,

average population density, and average firm density. This project explores intra-city relationships between firm and location characteristics to understand how firm location decisions affect the relationship between

density, market access, and firm productivity at the intra-city level, and to test and estimate a novel model accounting for these relationships.

SHORT-RUN AND LONG-RUN IMPACTS OF POLLUTION ABATEMENT SPENDING ON ECONOMIC AND ENVIRONMENTAL OUTCOMES

Anna Belova – Abt Associates

Brendan Casey – Clark University

Wayne Gray – Clark University

The research investigates the impact of pollution abatement spending on a variety of economic and environmental outcomes at manufacturing plants, including production costs and productivity, employment, investment, location, and emissions of various pollutants. Timing of the transition process is of particular interest

as new regulations take effect, potentially influencing investment in pollution abatement capital equipment, changes in production processes, and shifts in activity across plants. This research considers both the initial expansion of federal regulation in the 1970s and later regulations, such as EPA's multi-media cluster rule

Wang Jin – Clark University

Ron Shadbegian – U.S. Environmental Protection Agency

Shital Sharma – Clark University

affecting the pulp and paper industry and California's recent regulation of greenhouse gas emissions. The analyses take advantage of the plant- and firm-level detail in the Census Bureau data in testing whether different types of plants and firms show different responses to pollution abatement costs.

INTERMEDIATE GOODS TRADE AND FIRM ORGANIZATIONAL FORM: OFFSHORING, OUTSOURCING, AND THE EFFECT ON LABOR

Philip Luck – Drexel University

This project examines the relationship between the organizational form of firms and the sourcing of intermediate goods, both domestically and internationally. Specifically, it investigates a firm's decision to obtain intermediate

goods at home (onshore) or abroad (offshore) and whether to produce its own intermediates (in-house) or contract with arms-length suppliers (outsource). This research has three main goals: (1) characterize the structure of intermediate good

production and procurement of U.S. firms, (2) develop theory that predicts the observed structure, and (3) determine how decisions of organizational form influence employment and wages of production and non-production labor.

INTERNATIONAL BUYER-SELLER MATCHES

David Jinkins – Pennsylvania State University
Cornell Krizan – U.S. Census Bureau
James Tybout – Pennsylvania State University

Zi Wang – Pennsylvania State University
Yi Xu – Duke University
Chuhang Yin – Duke University

This project attempts to increase the usefulness of the Census Bureau's international trade statistics by assessing the quality and possible biases of the shipment-level data that lie behind them. A second goal is to develop descriptive statistics and structural models that characterize the formation and maturation of cross-border business relationships, again using shipment-level data. Both dimensions of the analysis will improve an understanding of trade flow dynamics between the United States and its trading

partners. The first part of this project will document international discrepancies in bilateral trade statistics at the level of individual shipments, looking in particular for evidence that might indicate a reporting/collection problem on the U.S. side. The second part of the project will augment the trade shipments records with information on the characteristics of the exporting firms and importing firms, which will allow study of the characteristics of buyer-seller matches. One exercise will involve the estimation of a

dynamic model of international trade in which firms' exporting (importing) behavior reflects a search and learning process in their foreign markets. A second exercise will develop descriptive statistics that allow characterization of the evolution of international buyer-seller networks, and will contrast the characteristics of rapidly expanding networks (China-U.S.) with slower-growing networks (Colombia-U.S.). A third type of exercise will involve the development of structural models of international buyer-seller networks.

THE ROLE OF SOCIAL CAPITAL IN LABOR MARKETS, MIGRATION, AND SURVEY RESPONSE

Earnest Curtis – Wake Forest University
Julie Hotchkiss – Federal Reserve Bank of Atlanta
Yanling Qi – Georgia State University

Zichong Qu – Georgia State University
Anil Rupasingha – Federal Reserve Bank of Atlanta

This project will investigate the relationship between individual social and civic engagement (referred to as "social capital") at a narrowly defined level of geography and individual labor market outcomes, migration decisions, and survey return/response rates. The first

research question will investigate the relationship between a person's level of social and civic engagement and his/her labor market decisions/outcomes. One question is whether social engagement and labor force participation are substitute or complementary

activities. The second research question focuses on the relationship between a person's social capital and individual migration decisions, and how a person's propensity to move might be related to the person's propensity to engage in social and civic activities.

CAPACITY COSTS: EVIDENCE FROM CENSUS DATA

Merle Ederhof – University of Michigan

Venky Nagar – University of Michigan

This project investigates the degree to which production schedules and capacity utilization decisions are driven by companies' financial accounting goals, such as meeting the consensus analyst earnings forecast. It also examines the

role that capacity utilization plays in the time series of financial accounting information and how analysts and investors react to them. Of particular interest in addressing this question is whether the recent change in the financial accounting treatment of

capacity costs has improved the quality of the data, as perceived by analysts and investors. Thirdly, the project analyzes how product costs vary with the level of capacity utilization.

DYNAMICS OF EMPLOYMENT, TRADE, AND INVESTMENT AT MULTINATIONAL FIRMS

Nicholas Bloom – Stanford University

Daniel Grodzicki – Stanford University

Kyle Handley – University of Michigan

Sui-Jade Ho – University of Michigan

Nitya Pandalai Nayar – University of Michigan

Megha Patnaik – Stanford University

David Price – Stanford University

Itay Saporta Eksten – Stanford University

Teng Sun – Stanford University

This research focuses on the measurement of multinational activity, comparing it to domestic activity, and using measures to benchmark Census Bureau data. Using measures of domestic and multinational activity, two broad questions

are addressed. First, what are the causes and consequences of multinational growth within the U.S. and abroad? The research design assesses the impact of multinationals across a range of economic variables including productivity, employment, and

trade patterns. Second, what are the main drivers for technological change and reorganization at the firm level? How are these different for multinationals in terms of aggregation and behavior over the business cycle?

THE ROLE OF RISING FEMALE LABOR FORCE PARTICIPATION FOR INNER CITY GENTRIFICATION

Lena Edlund – Columbia University

Maria Sviatschi – Columbia University

Gentrification is evident in a number of inner cities in the United States. Increasingly, families with young children are choosing city over suburban living. This study investigates the rise of dual-earner couples among high-income households as a driver of gentrification. This research hypothesizes

that such families have high willingness-to-pay for a short commute (since there is no full-time homemaker) and therefore choose to locate close to work. Since skilled jobs are disproportionately located in city centers, the strive for a short commute results in gentrification of previously poverty

stricken but centrally located areas. This project aggregates census tract-level information on household demographics from the Decennial Censuses and various years of the American Community Survey and matches to zip code-level real estate prices.

ESTIMATING A LOCAL HEDONIC PRICE INDEX FOR GROUP HEALTH INSURANCE

Abe Dunn – U.S. Bureau of Economic Analysis

Bryn Whitmire – U.S. Bureau of Economic Analysis

This project uses data from the Insurance Component of the Medical Expenditure Panel Survey (MEPS-IC) in conjunction with the Longitudinal Business Database to develop a methodology to construct a quality-and-risk-adjusted hedonic price index for health insurance

premiums. The hedonic price index will be an estimate of the premium level in a local geographic market in a particular year, holding quality and risk constant. Since this project will also examine the role that geography plays in setting these premiums, the estimated

premiums will be used to test whether insurance prices differ across local geographic markets. In so doing, this project will also examine the factors that affect health insurance premiums and will develop a method to impute for non-response based on these factors.

INSIDE THE LABYRINTH: HOUSING SEGREGATION IN AMERICA

Yana Kucheva – Stanford University

Richard Sander – University of California, Los Angeles

This project examines trends in residential segregation and the effects of several waves of government policy upon residential segregation between the 1950s and 2010. Decennial Census microdata from the period between 1960 and 2010

are used to examine four inter-related questions regarding the significance of fair housing legislation and the processes underlying racial residential segregation. This research examines: (1) general patterns of black migration across neighborhoods

between 1960 and 2010; (2) the characteristics of black pioneers who move into white neighborhoods; (3) the Schelling process of racial “tipping”; and (4) the role of inter-urban migration in producing residential segregation.

FIRM FINANCIAL CONSTRAINTS AND EMPLOYMENT

Tania Babina – University of North Carolina at Chapel Hill

Timothy Dore – Federal Reserve Board of Governors

Paige Ouimet – University of North Carolina at Chapel Hill

Geoffrey Tate – University of North Carolina at Chapel Hill

Liu Yang – University of Maryland

Rebecca Zarutskie – Federal Reserve Board of Governors

This research examines how financial constraints affect firm behavior and how a financially constrained firm’s employees conditionally influence the impact of those constraints. Types of constraints studied here include restricted access to

commercial bank credit, venture capital financing, and public bond and equity markets. This research tests whether employees alleviate financial constraints by deferring wages until firms can pay them. It also examines the alternative hypothesis that

workers exacerbate financial constraints by requiring higher upfront wages as compensation for the higher risk of failure that a financially constrained firm faces, leading such a firm to invest less in the development and training of its employees.

GLOBALIZATION, INVESTMENT, AND CORPORATE PAYOUT STRATEGIES

Deniz Civril – Brandeis University

Catherine Mann – Brandeis University

Firms in recent years have changed their corporate payout strategies and have gone more global in their activities. This project investigates the relationship between the international activities of a firm, its profitability, payout strategies, and capital accumulation. The analysis is carried out on three categories of firms according to their

payout strategy: (1) dividend payers and regular repurchasers, (2) regular repurchasers, and (3) occasional repurchasers. It starts with an assessment of the relationship between global activities and the observed corporate payout behavior, focusing on the international characteristics of firms, controlling for other firm, product, and country

characteristics. Then, it assesses the relationship between global activities and corporate profitability for these three groups of firms. The last part investigates whether the increase in payments coincides with the decrease in capital accumulation and employment.

AN ANALYSIS OF THE MEASUREMENT AND DETERMINANTS OF VERTICAL INTEGRATION

Jonathan Lee – East Carolina University

This project uses internal Census Bureau microdata, as well as inspection data from the Mine Safety and Health Administration (MSHA), to study the effects of product differentiation and regulatory compliance on the vertical integration of select production processes within a company. In

particular, this research focuses on the vertical integration of mining, pulp production, foundries, die casting, etc. across NAICS industries 311, 321, 322, 323, 327, 331, 332, and 334. The project analyzes the impact of transaction costs on firms' decisions to integrate vertically

integrate. This research develops methods for accurately aggregating vertical integration data to the firm level, as well as develops methods for handling data with missing values and measurement error.

NATIVE AMERICAN ECONOMIC DEVELOPMENT

Christian Dippel – University of California, Los Angeles

Dustin Frye – University of Colorado at Boulder

This project studies changes in Native American economic development as indicated by average incomes and measures of income inequality over the past several decades. The broad aim is to understand today's large differences in economic development between different

tribes and between different reservations, rather than between different Native American individuals. First, this project estimates the effect of local governance on differences in average incomes among reservations. Second, it estimates the dynamics of income inequality

and income growth across reservations and tribes. This requires building aggregate tribal and reservation characteristics from individual records in the Decennial Census and American Community Survey data.

FIRM OWNERSHIP AND INNOVATION BEHAVIORS

Lilei Xu – Harvard University

Yao Zeng – Harvard University

This project compares innovative activities of public firms with observably similar private firms to investigate whether public and private firms innovate differently. The research estimates the causal impact of ownership structures on firms' R&D behaviors, the novelty of innovation, the sources of R&D funding, and whether firms conduct

in-house R&D or acquire external technologies. The project also evaluates the quality of Business Research and Development and Innovation Survey (BRDIS) data for responses to new measures for worldwide operations such as worldwide net sales and revenues, total worldwide costs, worldwide R&D expenses and compensations, worldwide

R&D agreements, worldwide R&D employees, scientists and engineers, as well as worldwide R&D performed by others. The analysis compares the measures and reports of firms' worldwide operations to their counterparts in Compustat, as reported to the Securities and Exchange Commission (SEC).

HOME EQUITY LENDING AND SMALL BUSINESS: RELAXING CREDIT CONSTRAINTS IN TEXAS

William Lastrapes – University of Georgia

Zichong Qu – Georgia State University

Ian Schmutte – University of Georgia

This project uses integrated data to measure the characteristics and dynamics of small and non-employer businesses, and evaluates how well Census Bureau data products measure small business dynamics and the characteristics of small business owners. Home equity is an important source of capital for many small business ventures, but it is possible that the business activities of these marginal entrepreneurs are not well represented, or well measured in Census Bureau data.

This research evaluates how measurement of small- and non-employer business characteristics and dynamics change with access to home equity. A change in Texas law provides a natural experiment to directly evaluate how well administrative and survey sources measure the characteristics and activity of business that rely on this form of financing. Economic growth may depend on the ability to convert personal property into liquid capital, but testing such a theory is difficult since

it is hard to disentangle the effects of the ability to borrow from other institutional and economic variables. The Texas law change provides a unique opportunity to evaluate the effects of changing one feature of the bundle of property rights that attach to home ownership. Specifically, the research design uses the variation in access to home equity financing induced by the law change to identify its influence on the formation and growth of small and young businesses.

CREDIT MARKETS AND REAL CORPORATE POLICIES

Nuri Ersahin – University of Illinois

Hanh Le – University of Illinois at Chicago

Rustom Manouchehri Irani – University of Illinois

Katherine Waldock – New York University

This project investigates the impact of a reliance on credit markets on real corporate behavior—patterns of investment and employment—by conducting a detailed microeconomic analysis using plant-level data. Two topics will be considered: first, real estate asset collateral values and corporate debt capacity; second, the transfer of control rights to creditors (“creditor intervention”)

following contractual default in private credit agreements. The project will build new bridge files between Census Bureau data and external sources, such as data on financial contracts associated with bank lending in the U.S. syndicated loan market (Thomson Reuters’ Loan Pricing Corporation Deal Scan dataset), as well as data on real estate price indices and local housing

supply elasticities. By producing estimates of various firm characteristics, this project will enhance the Census Bureau’s understanding of economy-wide establishment dynamics (formation, closure, growth, contraction, and performance) and their responsiveness to changes in credit market conditions.

IMPACT OF R&D PRACTICES ON R&D EFFECTIVENESS

Anne Marie Knott – Washington University in Saint Louis

Carl Vieregger – University of Illinois

This project will empirically test a number of theories regarding firm characteristics and firm behavior (incentives to innovate), as well as firm characteristics and economic outcomes (the effectiveness of innovation).

It will construct a new measure of R&D effectiveness, called RQ, which will allow one to test economic performance hypotheses for any firm with R&D activity (rather than just firms with patents), covering a broad swath

of industries in the U.S. economy. This research will provide important advancements in the research of R&D determinants and outcomes, providing new estimates to the Census Bureau.

DO BIG BOX GROCERS IMPROVE FOOD SECURITY?

Charles Courtemanche – Georgia State University

This project aims to identify the causal effects of big box grocers and warehouse clubs on household and child food insecurity. These types of stores may reduce food insecurity by lowering food prices and expanding

food availability, especially for low-income households in areas with few grocery options. Food insecurity related outcomes (binary variables for household food insecurity, household very low food security, child

food insecurity, and child very low food security) will come from the Current Population Study December Food Security Supplement (CPS-FSS).

THE ECONOMIC GEOGRAPHY AND DYNAMICS OF BUSINESSES ON INDIAN RESERVATIONS: THE ROLE OF SPACE, DEMOGRAPHICS, AND TRIBAL INSTITUTIONS

Richard Todd – Federal Reserve Bank of Minneapolis

This research attempts to assess whether the business sector on American Indian reservations differs significantly from its off-reservation counterpart. Specifically, does the reservation business sector exhibit distinctly

different spatial density, as well as entry, exit, and growth rate dynamics and technology, and if so, why? This project applies multivariate econometric models to relate the observed differences to spatial, demographic,

and institutional factors. This research will also enhance existing Census Bureau business data by geocoding for reservation location.

ORGANIZATIONS IN THE DIGITAL ECONOMY: INFORMATION TECHNOLOGY USE, COMPLEMENTARY INVESTMENTS, AND IMPACTS ON FIRM OUTCOMES

Patricia Angle – Georgia Institute of Technology

Mercedes Delgado – Temple University

Christopher Forman – Georgia Institute of Technology

Naomi Hausman – Hebrew University of Jerusalem

Wang Jin – Clark University

Kristina McElheran – Massachusetts Institute of

Technology

Oren Ziv – Harvard University

This research investigates recent IT adoption and considers complementary organizational investments. It examines

different margins of IT use and investigates both traditional and non-traditional firm outcomes from IT and complementary

investments, including productivity, entry, innovation, operational responsiveness, and organizational structure.

EXTERNAL CAPITAL INFLUENCE AND FIRM PRODUCTION

Yelena Larkin – Pennsylvania State University

This project addresses a long-going debate in the financial literature regarding the paradox of stock run-up and subsequent deterioration after the issuance. While past studies tried to distinguish between market timing and capital budgeting explanations, the lack of detailed data produced mixed results and conclusions. Census Bureau data on firm's productivity allow

a better way of disentangling between these explanations. This study examines the sources of the price increase before the issuance and underperformance after the issuance by examining the production variables at the plant level, including total factor productivity, capacity utilization, costs of inputs and outputs, and subsequent plant acquisition. The ability to observe

the changes in the production function of the plants before and after the issuance allows one to determine whether the firms raised capital as a response to improving growth opportunities, which can be captured through increases in productivity, capacity, and profit margins, or whether they just took advantage of current financial market conditions.

FOOD MANUFACTURING AND MARKUP ESTIMATION

Jan De Loecker – Princeton University

Paul Scott – Princeton University

This project aims to contribute to an understanding of recent changes in the composition of food manufacturing industries, fluid milk manufacturing in particular. This research proposes two tests of a new method for

estimating price/cost ratios: The first compares it to demand-based methods, and the second considers the importance of observing gross output quantities rather than just revenues. The new method provides a

robust method for estimating markups, which may serve the Census Bureau as a broad measure of industry performance.

EMPLOYEE RISK TOLERANCE AND CORPORATE DECISIONS

Jie He – University of Georgia

Tao Shu – University of Georgia

Huan Yang – University of Georgia

This research examines how employees' tolerance for risk affects corporate decisions and firm performance, including firm debt, capital expenditures, patents, acquisitions, returns on assets and equity, firm age, and public/private status. Proxies for

employee risk-tolerance include firm-level measures of employee age and gender, percentage of employees with earnings sources from other companies, percentage of employees with dual wage earners in their household, and county-level

measures of religiosity. This project also examines a firm's ownership status, i.e., public or private, and the demographic characteristics of the firm's employees.

PERSONAL BANKRUPTCY LAW AND ENTREPRENEURSHIP

Nathaniel Johnson – City University of New York

Robert Seamans – New York University

This research investigates how statewide changes in debtor protection provided by U.S. personal bankruptcy law affect firm entry and exit dynamics. The project assesses the

effects of personal bankruptcy law on entrepreneurship rates, the size and industry distribution of incumbent firms, and on business closures, as well as the extent to which firm entry

and exit varies with bankruptcy exemption laws and local demographic and economic conditions.

U.S. IMPORTER HETEROGENEITY AND EXPORTER PERFORMANCE

Raluca Dragusanu – Federal Reserve Board of Governors

This project explores the characteristics of the overseas trading partners, and how the various dimensions of U.S. importer heterogeneity, characteristics of U.S. importers, and importer types affects the performance of exporting firms in the manufacturing sector in India over time. The project will match a database of Indian firms provided by the Center for Monitoring

Indian Economy (CMIE)-Prowess with the Longitudinal Firm Trade Transactions Database (LFTTD). The LFTTD can credibly establish a causal relationship between U.S. importer types and their characteristics, on the one hand, and the productivity of Indian firms, as well as identify the mechanisms that can explain these relationships. This research will produce estimates

of the nature of adjustment of U.S. imports during large crises, and if import adjustments happen at the extensive margin, with U.S. importers dropping overseas suppliers, or at the intensive margin, with importers adjusting downward the quantity purchased from each supplier.

ANALYZING THE LONG-TERM EFFECTIVENESS OF BUSINESS ASSISTANCE ON FIRM PRODUCTIVITY AND SURVIVAL

Sanjay Arora – Georgia Institute of Technology
Ernest Curtis – Wake Forest University

Clifford Lipscomb – Greenfield Advisors
Jan Youtie – Georgia Institute of Technology

This research seeks to increase knowledge about the determinants of manufacturing establishment performance. The project will link Census Bureau datasets to an external

establishment-level dataset of business assistance recipients, to assess the importance of business assistance in the productivity (and related outcomes) of small- and medium-sized

manufacturing establishments. The external dataset will also be used to validate and improve the quality of Census Bureau data.

THE MICROFOUNDATIONS OF TRADE IN INDUSTRIAL PRODUCTS

Nathaniel Aden – University of California, Berkeley
Meredith Fowlie – University of California, Berkeley
Louis Preonas – University of California, Berkeley

Mar Reguant – Stanford University
Matthew Woerman – University of California, Berkeley

Complex trade relationships and sourcing strategies in industrial manufacturing complicates the classification and measurement of domestic industrial activity. Imprecise measurement of outsourcing-related activities can lead to imprecise measures of industry contributions to economic growth and productivity in manufacturing. This research will improve the quality

and understanding of microdata on domestic imports of industrial commodities. The Census Bureau maintains a rich dataset of the universe of transaction-level import data linked to firm-level data. These data, along with establishment-level data collected from the industrial sector, are used to characterize the structure of imports in the industrial commodities sector.

The descriptive statistics and regression estimates generated will document structural changes in import flows over time and across industries. This research will also identify determinants of domestic firms' sourcing decisions. These statistics will provide a richer portrait of trade patterns in these important sectors.

FIRM DYNAMICS IN THE AGRICULTURAL SERVICES SECTOR: EVIDENCE FROM THE LONGITUDINAL BUSINESS DATABASE

Richard Dunn – Texas A&M University

This project will study firm dynamics in the agricultural services sector. The research will determine the rate of establishment entry and exit, the size distribution of entrants and exiters, the age distribution of exiters, and the distribution of wages paid to workers in this

sector. Because the agricultural sector of the U.S. economy has been subject to significant structural changes in the past three decades, the project will also consider whether establishment dynamics in the agricultural services sector have been changing systematically

over time. This research will also examine changes in the structure of in the agricultural services sector and compare whether establishment dynamics differ between single- and multi-establishment firms.

INNOVATION IN THE BUSINESS RESEARCH AND DEVELOPMENT AND INNOVATION SURVEY

Juana Sanchez – University of California, Los Angeles

With the changes in the nature and concept of innovation that the present economic scenario entails, analysis and modeling of the economics of innovation done in the past need re-evaluating. Microdata analysis provides the opportunity to address the relevant issues surrounding innovation with a new metric for innovation, and to learn more

about the issue about which we know less: organization of research collaboration strategies among companies and their ability to utilize results of externally performed research. This will shed new light on the variability in innovation across firms. This research will (1) characterize innovation modes of companies in the U.S. and their

missing data patterns, (2) model econometrically the relative contribution of organization and collaboration to the industrial differences in innovation rates under alternative scenarios, and (3) study the sensitivity of population estimates to different missing data adjustments and weighting methods.

EFFECTS OF ORGANIZATIONAL STRUCTURE AND GOVERNANCE ON RETAIL ESTABLISHMENT PRODUCTIVITY

Matthew Sveum – University of Missouri

Michael Sykuta – University of Missouri

This project uses data from the Survey of Business Owners and the Census of Retail Trade (CRT), augmented with other federal and enterprise data, to analyze

the relationship between franchising and establishment productivity. Focusing on establishments that indicated a franchise connection on the CRT, this

study compares franchisee-run establishments with franchisor-run establishments and investigates the productivity effects of franchising.

THE TRANSFORMATION OF THE U.S. MANUFACTURING SECTOR

*Christopher Kurz – Federal Reserve Board
of Governors*

*Paul Lengermann – Federal Reserve Board
of Governors*

*Justin Pierce – Federal Reserve Board
of Governors*

*Mine Senses – Johns Hopkins University
Dominic Smith – University of Minnesota*

This project documents the recent employment and productivity dynamics within the manufacturing sector and analyzes the factors driving these

dynamics. This research establishes basic facts about changing dynamics, empirically tests explanations for the change in manufacturing dynamics, and

analyzes the factors behind the changing manufacturing landscape with a focus on production fragmentation and innovation.

FIRM PRODUCTION STRUCTURE

Rong Huang – Baruch College

Lucas Threinen – Temple University

This project seeks to describe which production structures firms select from among the various alternatives, their reasons for doing so, and how the

production structures selected change over time when firms face external shocks such as technological advances or regulatory changes. The project

focuses on the service sector but will also examine the manufacturing sector.

CROSS-SECTIONAL AND TIME SERIES ANALYSIS OF PRODUCTION AND ENERGY EFFICIENCY IN MANUFACTURING

Gale Boyd – Duke University

Earnest Curtis – Wake Forest University

Nicole Dalzell – Duke University

Yifang Guo – Duke University

Tatyana Kuzmenko – College of William & Mary

Jonathan Lee – East Carolina University

Jerome Reiter – Duke University

Andrew Steck – Duke University

Kirk White – U.S. Census Bureau

Su Zhang – Duke University

This research continues work conducted under prior projects, conducting both cross-sectional and time series analyses of the underlying causes of changes

in the distributions of production and energy efficiency. The principal analytic approach will be the application of frontier production functions and related

procedures. Prior projects have successfully implemented these methods for selected industrial sectors.

HOW DOES COMPETITION AFFECT FIRMS' DECISIONS OF BUYING OR PRODUCING THEIR INTERMEDIATE INPUTS?

Ildiko Magyari – Columbia University

This project investigates how local competition among suppliers within geographically segmented markets drives manufacturing firms' decisions of whether to integrate

or outsource the production of their intermediate inputs, and if they outsource, whether to buy the input from domestic producers or import it from abroad. Using Census of Manufactures,

Commodity Flow Survey, and foreign trade data, this research examines market outcomes such as mark-ups, prices, and quantities supplied, as well as consumers' welfare.

UNDERSTANDING THE RELATIONSHIPS BETWEEN THE SCHOOL BREAKFAST PROGRAM AND FOOD INSECURITY

Jason Fletcher – University of Wisconsin

David Frisvold – University of Iowa

The main objective of this project is to produce new causal evidence of the importance of the School Breakfast Program (SBP) in reducing food insecurity

in school-aged children. This research also examines whether the SBP cushions the impacts of high food prices on food insecurity in families and whether the

SBP has been effective in dampening the rise in food insecurity during the recent recession.

FIRM DYNAMICS AND THE COMPOSITION OF EXTERNAL FINANCE

Nicolas Crouzet – Northwestern University

This project studies the link between firm-level growth and the structure of firms' debt, using the Quarterly Financial Report (QFR) of manufacturing

firms. Benefits to the Census Bureau include the construction of time series moments of QFR variables that address issues raised by firm reclassification

across asset size bins, as well as tabulations of the QFR using an alternative size criterion (sales).

LOCAL CREDIT AVAILABILITY AND THE PERFORMANCE OF SMALL AND YOUNG BUSINESSES

Frederick Mencken – Baylor University

Lynn Riggs – Baylor University

Charles Tolbert – Baylor University

This project investigates the role credit availability plays in the development and growth of small and young businesses in different geographical areas. This role will be moderated

by the availability of credit for these ventures, whether it is for start-up capital or for expansion capital. By examining these issues for different geographic areas and by using different

measures of geographic areas, this project will also establish the role geography can play in economic modeling.

INTERNAL RESOURCE REALLOCATION OVER THE BUSINESS CYCLE

Xavier Giroud – Massachusetts Institute of Technology

This project examines how firms internally reallocate resources (e.g., labor, capital) over the business cycle, with emphasis on the recent financial and

economic crisis of 2007-2009 (the "Great Recession"). This research assesses capital stock imputation from Census Bureau data, assesses the geographical

classification of establishments, and builds a bridge among several establishment- and employee-level datasets.

HOW LONG WILL THEY STAY? FOREIGN-BORN OUTMIGRATION FROM U.S. DESTINATIONS

Jack DeWaard – University of Minnesota

This project develops and analyzes a set of new summary measures of foreign-born internal migration and settlement within the United States, providing new information on the growing foreign-born populations and their characteristics. Prior research has examined whether and why foreign-born populations migrate internally within the United States, as well as documented to where foreign-born populations go if they

do migrate. However, the existing research has not addressed the question of exactly how long foreign-born populations can be expected to settle in U.S. locations. The temporal dynamics and stability of foreign-born populations in the United States have direct implications for local labor markets, education, health, and social services. They are likewise implicated in a number of social and political processes, including intergroup

relations and civic participation. Using both publicly available data and restricted access data from the Decennial Censuses and American Community Survey multiyear file, the project develops a set of multiregional population estimates summarizing the expected (average) duration of settlement for 12 foreign-born groups.

MEASURING INCOME AND POVERTY FROM A MULTI-YEAR PERSPECTIVE

Sarena Goodman – Columbia University
Jeffrey Liebman – Harvard University

Joshua Mitchell – U.S. Census Bureau
Clara Zverina – Harvard University

This project examines the value of supplementing official Census Bureau measures of poverty, income, and the income distribution with measures based on multiple years of income, potentially up to an individual's entire lifetime. The research studies how perspectives of income inequality and the career paths of low-wage workers differ, when viewed from an annual and a lifetime perspective. It

also analyzes how the distributional impacts of the Social Security system and the tax system (including the Earned Income Tax Credit) differ when viewed from a lifetime perspective rather than from an annual perspective. This research aims to produce a comprehensive analysis of the impact of government tax and transfer programs on the lifetime income distribution, incorporating components

such as TANF and SSI not yet modeled from a lifetime perspective. This research will also analyze how a multi-year approach alters measures of poverty among the elderly. Finally, this research extends a micro-simulation model of the Social Security system to incorporate some limited behavioral responses.

IMMIGRANT ENTREPRENEURSHIP WITH A FOCUS ON LATINO ENTREPRENEURSHIP

Craig Carpenter – Michigan State University
Myriam Quispe-Agnoli – University of Georgia
Anil Rupasingha – Federal Reserve Bank of Atlanta

This research investigates the factors associated with the location and dynamics of Latino-owned businesses (LOB) and the effects of LOB on local economic performance, with comparisons to businesses owned by Asians,

blacks, and native whites. Using data from the 2002 and 2007 Survey of Business Owners, this study examines the dynamics of LOB, measured in terms of business start-ups, growth, and closure using firm/establishments

and employment, and examines the effects of LOB on income growth, employment growth, changes in poverty, and population growth in local communities in the United States.

Appendix 3-B.

ABSTRACTS OF PROJECTS STARTED IN 2014: AGENCY FOR HEALTHCARE RESEARCH AND QUALITY (AHRQ) DATA OR NATIONAL CENTER FOR HEALTH STATISTICS (NCHS) DATA

Projects in this portion of the appendix use data provided by the Agency for Healthcare Research and Quality (AHRQ) or data provided by the National Center for Health Statistics (NCHS). Under authority of the Economy Act, the Center for Economic Studies hosts projects in Research Data Centers using data provided by AHRQ or NCHS. AHRQ or NCHS is solely responsible for selecting projects and for conducting disclosure avoidance review.

PHYSICAL DISABILITY AND DISPARITIES IN HEALTH CARE SYSTEM (AHRQ)

Elham Mahmoudi – University of Michigan

The U.S. health care system is confronted with numerous problems, including lack of access to health care for large segments of the population, rapidly escalating health care costs, and

insufficient effort in the promotion of clinical and community-based prevention and population health. These issues are more pronounced for individuals with physical disabilities, primarily

because those without functional limitations often overlook barriers to health care. This study investigates factors associated with disability-related disparities in health care.

HEALTH CARE ACCESS AT THE CROSSROADS: ANALYSES OF STATES AS THEY PREPARE FOR IMPLEMENTING THE PPACA (NCHS)

*Michel Boudreaux – University of Minnesota
Heather Dahlen – University of Minnesota
Donna Spencer – University of Minnesota*

*Joanna Turner – University of Minnesota
Karen Turner – University of Minnesota*

The Affordable Care Act of 2010 (ACA) makes significant changes in health insurance coverage and health care systems across the United States, with states responsible for many of the key elements of reform. This research conducts a series of analyses using the National Health Interview Survey (NHIS) to aid states in their preparation for and implementation of ACA and to expand the role of the NHIS in monitoring the impacts

of health reform in the states. The research includes descriptive and multivariate analyses examining: (1) eligibility for and enrollment in state Medicaid and Children's Health Insurance Programs (CHIP), (2) insurance coverage and uninsurance, (3) access to and use of health care, (4) the affordability of care, and (5) state and community health care markets. Analyses are carried out for the overall population as well as for key

population subgroups, including subgroups defined by age (e.g., children and non-elderly adults), income, and health status. The project will examine differences across regions and, where possible, across states. These analyses will provide baseline data for the evaluation of the impacts of health reform in the states as elements of ACA are implemented between now and 2014.

ACCESS TO HEALTHCARE AMONG ASIAN SUBGROUPS IN THE UNITED STATES: EXAMINING THE INTERACTION BETWEEN COMMUNITY- AND INDIVIDUAL-LEVEL CHARACTERISTICS USING MULTILEVEL MODELING (NCHS)

Sunha Choi – University of Tennessee, Knoxville

Asian Americans are one of the least studied minority populations in the United States. Specifically, due to small sample sizes and data limitations, the subgroup differences have often been overlooked by using aggregated data for all Asian groups. Additionally, although the effects of contextual factors on individuals' health service utilization are important considerations,

few studies have focused on Asian subgroups. Thus, the goal of this study is to inform program development and implementation to promote the health of Asian subgroups by filling this gap in the literature. To achieve this goal, the specific aims of the proposed study are: (1) to examine whether healthcare utilization and health behaviors differ by ethnicity among Asian

Americans after controlling for individual-level covariates (predisposing, enabling, and need factors) and the effects of geographic clustering, and (2) to examine whether county- and state-level contextual factors affect the relationships between ethnicity and other individual-level characteristics and health care behaviors among Asian Americans (interaction effects).

INVESTIGATING THE HEALTH OF IMMIGRANTS AND REFUGEES (NCHS)

Holly Reed – Queens College, CUNY

Although much health disparities research focuses on race and ethnicity, nativity has proved crucial in explaining the “epidemiological paradox,” whereby Latinos have been found to be healthier than their non-Latino counterparts despite their lower socioeconomic status. The majority of this literature focuses on Latino immigrants' “health advantage” over native-born Americans, but there is a lack of research comparing immigrant groups from other regions. This project aims to disaggregate nativity into

geographic sub-groups (Africa vs. Latin America) and into visa category sub-groups (refugees vs. non-refugee immigrants). The research seeks to “unpack” the influence of nativity and visa status on a broad array of health outcomes — including self-reported health status, chronic conditions, functional limitations, obesity and body mass index — using multivariate statistical analyses of two nationally representative datasets: the National Health Interview Survey (NHIS) and the New Immigrant Survey (NIS). The specific aim

of this part of the project is to determine if refugees in general — and African refugees in particular — have a health disadvantage relative to other groups and examine potential explanations for this disadvantage. The research examines the effects of migrant selection and socioeconomic status, acculturation, health behaviors, co-ethnic community, and access to care on the health outcomes of these geographic and visa category sub-groups.

FOOD ALLERGEN LABELING MANDATES: OPTIMAL DESIGN OF RISK INFORMATION POLICIES (NCHS)

*Maria Aslam – Emory University
David Frisvold – University of Iowa*

This project analyzes the provision of risk information programs on consumers, and investigates consumers' response to the hazard information. The efficacy of risk information campaigns is assessed with examples of industry, federal, and state-level food allergen labeling regulation. The industry

guidelines stress the need for voluntary disclosure of product's risk characteristics. The federal legislation sets uniform criteria for determining how to display risk information, while the state-level regulation varies in the soundness of their warning messages. This project focuses on non-addictive goods, which

allow consumers to be less constrained in their reaction to products' hazardous characteristics. The policy outcome of this study is to suggest guidelines for designing information provision policies that ensure the optimal mode of expressing risk information.

THE IMPACT OF HEAT AND COLD WAVES ON CAUSE-SPECIFIC MORTALITY IN THE UNITED STATES (NCHS)

*Igor Akushevich – Duke University
Julia Krauchanka – Duke University*

This study evaluates the associations between cause-specific mortality for a wide spectrum of diseases (which includes both diseases that are ICD-coded as heat/cold-related and diseases that are not coded as heat/cold-related) and weather characteristics such as temperature, humidity, wind, and air pollution. These associations will

be analyzed by age, sex, and race for three U.S. states at the county level: North Carolina, California, and New York. The evidence of time trends in evaluated effects will be investigated over four decades of observation. Analyses will include the regression analyses, time-series analyses, and evaluation of the lag period for effects of

temperature on cause-specific mortality, and the estimation of the thresholds for the high and low temperatures effects on mortality for each studied state. The comprehensive model of association of cause-specific mortality and temperature patterns will be developed.

ADD AND SEXUAL RESPONSIBILITY IN MINORS (NCHS)

Steven Thomas – Duke University

Using 2001-2004 National Health and Nutrition Examination Survey (NHANES) data, previous research has established that Attention Deficit Disorders (ADD) are prevalent among teenagers in the United States. Of 3,082 children and adolescents aged 6 to 15 years old, 8.7 percent met diagnosis classification codes as defined

in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DMS-IV). An increased prevalence of risk-taking behaviors is well established for teenagers and young adults with ADD. The relationship between ADD and risk-taking behaviors in teenagers and adults is not as well studied as the prevalence of associations

between ADD and other risk-taking behaviors. This research uses NHANES data to study the relationship between ADD and high-risk sexual behaviors, and the relationship between ADD and the adverse consequences of high-risk (irresponsible) sexual behaviors.

HOW DO REFERENCE GROUPS AFFECT PERCEPTIONS OF OVERWEIGHT STATUS? (NCHS)

Mary Burke – Federal Reserve Bank of Boston
Arman Khachiyani – Federal Reserve Bank of Boston

Evidence from NHANES and other surveys indicates that individuals tend to understate their body weight and overstate their height and that many fail to perceive that they are overweight. The tendency to misreport physical characteristics varies systematically with the individual's true characteristics and with demographic factors. However, understanding of the underlying mechanisms is lacking. This research investigates whether misreporting of weight and height depend on the characteristics of an individual's peers,

defined by geographic location. Such a relationship might arise if, as suggested by previous evidence, individuals define "normal" physiques in relation to the distribution of physical types in a local peer or reference group. If demographic factors in a local reference group are associated with misreporting of weight and height, a possible implication is that individuals disregard medical standards in setting weight goals and related behaviors. Assessment of the nature and scale of peer influences on self-reporting behaviors will be

done by a comparison of the strength of effects at different geographic levels of aggregation, in addition to assessing the relative importance of different demographic factors. The effects will be identified using cross-sectional variation in local reference group characteristics as well as inter-temporal changes in demographics within a location. In addition, the data permit an investigation of the relationship between misreporting of weight and misperception of overweight status.

AMERICAN FERTILITY IN THE GREAT RECESSION (NCHS)

Daniel Schneider – University of California, Berkeley

The effects of the Great Recession on the fertility of American women are examined to understand an array of economic conditions that may affect the likelihood of birth in a given month. This project investigates whether macro-economic conditions affect fertility, for whom these effects are most pronounced, and the pathways by which any such effects might operate. The National Survey of Family Growth, 2006-2010 calendar-month data, and other data sources will be used to determine how unemployment, mortgage delinquency and

foreclosure, and consumer confidence as well as media coverage of the recession are linked to the likelihood of birth in a given month. Data on birth intentions will be employed to provide some insight into whether the recession has reduced plans for future births, suggesting lasting effects, or not, suggesting more temporary effects. A set of socio-demographic individual characteristics and data on attitudes and family background are used to examine variation in the effects of the recession on fertility. Calendar months of conceptions, contraceptive use,

sexual inactivity, and romantic relationship status derived from the public-use file are used to examine the mechanisms connecting the macro-economy to fertility. The use of restricted variables (region, state, county, and CBSA) for Place of Residence at Interview, combined with macro-economic data at several levels of aggregation to the individual level NSFG data, will allow for examination of exogenous variation in economic condition on both spatial and temporal dimensions.

ASSOCIATION OF ACCELEROMETRY-ASSESSED AND SELF-REPORTED PHYSICAL ACTIVITY AND MORTALITY AMONG A NATIONAL SAMPLE OF THE UNITED STATES (NCHS)

Fang Wen – University of North Carolina at Chapel Hill

Using the adult sample of participants enrolled in the National Health and Nutrition Examination Survey (NHANES) from 2003-2006, this project will determine the associations of objectively assessed physical activity and sedentary behavior with the risk of all-cause and cardiovascular disease CVD mortality. Secondary aims include (1) using latent class analysis to determine patterns of objectively assessed physical activity

and determine the association of these patterns with the risk of all cause and CVD mortality, and (2) determining the association of self-reported physical activity with the risk of all-cause and CVD mortality, and contrast the resulting associations with those found using objectively-measured physical activity. For the NHANES cohort, physical activity was determined using both a self-reported assessment and an objective measure, the

ActiGraph accelerometer. The accelerometer accurately detects movement that can be translated into sedentary, light, moderate, and vigorous physical activity. Participant files are linked with mortality through 2011 using the National Death Index. Results can provide evidence towards the national physical activity guidelines with more specificity related to physical activity and sedentary behavior and greater generalizability.

DISPARITIES IN HEALTH AND MORTALITY BY NATIVITY AND IMMIGRANT STATUS (NCHS)

Deborah Graefe – Pennsylvania State University

Isaac Sasson – University of Texas

Jennifer Van Hook – Pennsylvania State University

This project explores how immigration and immigrant legal status contribute to racial/ethnic disparities in health and mortality. This research uses restricted-use data on immigration, work, and place of residence, combined with public-use data on health behaviors and outcomes and social and economic circumstances for respondents from eight different years of the National Health Interview Survey (NHIS), to estimate health and mortality disparities by nativity

and immigrant status. The project will also estimate the likely range of these differentials given uncertainty in the accuracy of immigrant status estimates. The restricted-use data will enable assessment of a wide array of child and adult risk behaviors and health and mortality outcomes for the U.S. population and numerous national-origin groups by nativity and immigrant status (including categories such as native-born, naturalized citizen, non-citizen

Legal Permanent Resident (LPR), non-citizen refugee, legal non-immigrant (i.e., foreign-born residents with temporary visas), and other). Such critical descriptive information will provide a detailed profile of immigrant health and mortality and stimulate the kinds of path-breaking research necessary for advancing scientific knowledge about the origins of U.S. racial/ethnic health and mortality disparities.

EVALUATING THE IMPACT OF ENVIRONMENTAL CONTAMINANTS ON NEUROCOGNITIVE FUNCTIONING IN SCHOOLCHILDREN: A NOVEL GEOGRAPHICAL ANALYSIS OF NHANES AND SABINS DATA (NCHS)

David Van Riper – University of Minnesota

Chemicals used in food or household applications can accumulate in children after exposure in utero, as well as via dietary and environmental exposures. Current understanding of the potentially deleterious effects of such exposure on neurocognitive development and functioning in children, while suggested in the literature, remains inconclusive. It is also unclear whether this exposure may affect the overall functioning of whole populations, for example children who live in the

same area and attend the same school. The primary objective of this research is to explore the links between levels of four groups of environmental contaminants in children and prenatal exposure levels (as indicated by levels in women of childbearing age in the appropriate time frame) on school test scores, a proxy for neurocognitive functioning, while controlling for confounding factors such as socioeconomic status. The application of geographic overlay and statistical techniques

allows for a novel linkage of existing datasets that monitor environmental exposure levels in the U.S. population and that aggregate student test scores to individual school catchment areas. Results from this study will provide the first spatially explicit indication of the relationship between exposure to contaminants and neurocognitive performance using a statistically representative sample of U.S. children and of women of childbearing age in the appropriate time period.

ASSOCIATION OF EXPOSURE TO TRAFFIC AND PAHS AND CHILD NEUROBEHAVIOR (NCHS)

Aimin Chen – University of Cincinnati

Stephani Kim – University of Cincinnati

Polycyclic aromatic hydrocarbons (PAHs) are identified as carcinogenic to humans, and recent evidence suggests that it may have additional adverse health effects, including reproductive and developmental toxicity. Traffic is one of major sources of PAH emission in the air in the United States. Pre- and postnatal

exposure to PAHs may be related to adverse neurodevelopment outcomes. This project, therefore, links data from the National Highway Planning Network (NHPN) and CDISC for children aged 8 to 15 years to investigate the association between urinary PAH metabolites and neurobehavioral deficits, in particular

attention deficit hyperactivity disorder (ADHD) and conduct disorder (CD). Data on the PAH metabolites in urine, blood lead, urine creatinine, and serum cotinine levels are publicly available through NHANES 2001-2004. Data on ADHD and CD are available in the restricted-use NHPN.

EXAMINING RELATIONS BETWEEN RESIDENTIAL SEGREGATIONS, POLITICAL EMPOWERMENT, AND ADVERSE BIRTH OUTCOMES AMONG U.S. BIRTHS FROM 2008-2010 (NCHS)

Claire Margerison-Zilko – University of Texas at Austin
Maria Perez-Patron – Texas A&M University

The objectives of this project are to (1) use U.S. vital statistics data from 2008-2010 to comprehensively examine the associations between residential segregation and risk of pre-term birth and low birth weight in U.S. cities among black/

non-Hispanic, Hispanic/Latino, and white/non-Hispanic women, and (2) to determine whether increased minority political empowerment can counteract any negative effects of segregation on birth outcomes. The research links data on all U.S.

births from 2008-2010 from the National Center for Health Statistics Vital Statistics natality data to data on residential segregation from the American Communities Project and data on political empowerment collected by the research team.

THE EFFECT OF REIMBURSEMENTS ON PHYSICIAN SUPPLY (NCHS)

Alice Chen – University of Chicago

Although Medicaid is the nation's largest health program in terms of the number of recipients, recent studies have shown that nearly a third of doctors do not accept new Medicaid patients. This study examines how responsive physicians

are to changes in the Medicaid reimbursement rate by first estimating the own-price supply elasticity for Medicaid holding constant state-specific changes in demand for Medicaid and then by showing that Medicaid and Medicare supply are

complements, Medicaid and charity care are substitutes, and private care supply is unaffected by Medicaid reimbursement changes. This study may be one of the first to consider effects of physician payment changes on substitutable insurance margins.

VARIABILITY OF MORTALITY LEVELS AND TRENDS BY STATE IN THE UNITED STATES (NCHS)

Celeste Winant – University of California, Berkeley

The purpose of the project is to promote research on historical trends and, in particular, interstate variations in the mortality of the United States since the 1930s. The project constructs a publicly-accessible collection of mortality data series by state. The new data series will include indicators of both total (i.e., all

causes of death) and cause-specific mortality. It will contain state-level estimates of all-cause mortality by age, sex, and year for the period from 1933 to 2012. The project also creates annual state-specific estimates of mortality by age, sex, and cause of death for 1959-2012 (possibly, 1950-1958 as well).

The project tabulates individual records from Mortality Detailed Files, for years from 1959 to the latest available, by age, year of birth, sex, state of residence, state of occurrence and by cause of death. Availability of these variables varies by year.

THE INTERACTION OF DIET, AIR POLLUTION, AND CARDIOVASCULAR DISEASE IN NHANES III (NCHS)

Ryan Shanley – New York University

This research investigates the relationships between air pollution, diet, neighborhood characteristics, and health in the NHANES III study cohort. Long-term and short-term exposures to ambient air pollutants have been linked to cardiovascular disease (CVD). A number of factors, such as age and pre-existing disease, exacerbate the adverse cardiovascular effects of PM. Yet, it remains unclear whether the adverse cardiovascular effects of air pollution

could be modified by diet and lifestyle factors. Obesity and high saturated fat intake are well-established dietary risk factors for CVD, and are associated with metabolic syndrome. Recent studies suggest that air pollution exposure is associated with increased levels of intermediate biomarkers of CVD, and the relationship is modified by metabolic syndrome. The research calculates strata-specific risk estimates of the relationship between PM and

CVD mortality for each category of adiposity and saturated fat intake. In addition, it has become clear that functional single nucleotide polymorphisms (SNPs) in genes relevant to lipid metabolism and transport are associated with increases in obesity and type 2 diabetes. The researcher also calculates strata-specific risk estimates of the relationship between PM and CVD biomarkers according to each genotype.

STRUCTURAL DISCRIMINATION AND BIRTH OUTCOMES AMONG AFRICAN AMERICAN WOMEN IN THE UNITED STATES (NCHS)

Alicia Lukachko – Columbia University

African Americans, compared with Whites, are at increased risk of poor birth outcomes, including low birth weight and preterm birth. Exposure to discrimination is one hypothesized mechanism for these health disparities. However, epidemiologic studies have not consistently found an association between discrimination and birth outcomes. One potential explanation for these discrepancies is that studies have relied almost exclusively on self-reported measures of discrimination, which have multiple limitations. Importantly, psychological

factors that influence whether experiences are attributed to discrimination (e.g., coping style) are themselves risk factors for negative birth outcomes, which may create a negative bias in studies. Consequently, researchers have recently begun to investigate objective exposures of discrimination that do not rely on self-report. The current study will expand this work by conducting an ecologic analysis of the relationship between structural discrimination and poor birth outcomes among African American women. Employing a composite index of

black/white disparities utilizing state-level data derived from the U.S. Census and other publicly available sources, the researcher will link this measure to data on birth outcomes and individual-level risk factors, which will be obtained from the National Survey of Family Growth. The project examines whether structural discrimination predicts poor birth outcomes among African American women and explains disparities in these outcomes between African American and white women.

RENAL LIVING DONORS EVALUATION STUDY (RELIVE): ESRD AND LONG-TERM OUTCOMES (NCHS)

Brenda Gillespie – University of Michigan

Emily Messersmith – Arbor Research Collaborative for Health

Robert Weyant – Arbor Research Collaborative for Health

Based on limited long-term data available through registries and individual centers, there is no clear evidence that kidney donors are at increased risk for adverse long-term medical outcomes. To quantify the actual effect of renal donation on donor health, it is necessary to compare event rates in donors to those of a healthy control population. This study seeks to determine if living kidney donor uninephrectomy is associated with increased end stage renal disease (ESRD) and cardiovascular or other morbidities.

This goal will be achieved by studying all kidney donors who underwent donor uninephrectomy at any time from June 1963 through December 2007 at each of 3 clinical centers as part of the Renal and Lung Living Donors Evaluation (RELIVE) study consortium. Donor renal failure events are identified by retrospective chart review at the centers and by matching donors to data from the Centers for Medicare and Medicaid Services (CMS), the Scientific Registry of Transplant Recipients (SRTR), the Social Security Death Master

File (SSDMF) and the National Death Index (NDI). Incidence of ESRD and other morbidities in these live kidney donors will be compared to incidence of ESRD and other morbidities in NHANES participants. The occurrence of each of the study endpoints will be similar in kidney donors as in healthy matched NHANES control subjects, or only age and sex. The third strategy will compare RELIVE donors to NHANES control subjects using their covariate-adjusted propensity to be a donor.

EXPLORING POST-MILLENNIAL BEVERAGE TRENDS AND THE EFFECT OF PRICE ELASTICITY ON REPORTED BEVERAGE INTAKE IN U.S. PRESCHOOL CHILDREN (NCHS)

Christopher Ford – University of North Carolina at Chapel Hill

Beverages are key contributors to excess caloric intake in children, which over time can lead to obesity. The prevalence of obesity in U.S. children increases with age, thereby prompting many to focus on the diets of preschool children (ages 2–5 years). Notably, many long-term dietary behaviors develop during the preschool years, thus exploring beverage trends in preschoolers may yield important insights for emerging

trends among older children. Substantial changes in dietary intake among U.S. children may have occurred between 2003 and 2012. Major economic and price changes also occurred during this period, but few studies have explored the relationship between these changes and beverage intake among children ages 2–5 years. Data from the Nielsen Homescan panel, which contains market-level beverage price data, can

be linked to geographic identifiers in the National Health and Nutrition Examination Surveys. By combining these data, the researchers explore changes in county-level beverage prices and reported beverage intake among U.S. children ages 2–5 years who participated in the National Health and Nutrition Examination Survey (NHANES) between 2003 and 2012.

TRENDS IN PREVALENCE OF ORAL AND VAGINAL HPV INFECTION IN THE UNITED STATES (NCHS)

Andrew Brouwer – University of Michigan

The Human Papillomavirus (HPV) infects the epithelial layer at several anatomical sites in the human body, and certain HPV genotypes can lead to the development of cancer. This project aims to characterize

both the prevalence of HPV by anatomical site as well as the prevalence of concurrent infection. This research has developed a mathematical model of HPV transmission and infection that will be calibrated by this

prevalence data. The research will additionally develop an age-period-cohort model to characterize trends of HPV infection at genital sites.

THE EFFECTS OF PEDIATRIC PNEUMONIA ON LATER LIFE HEALTH (NCHS)

Andrew Jordan – Federal Reserve Bank of Chicago

Bhashkar Mazumder – Federal Reserve Bank of Chicago

This project exploits the introduction of sulfonamide (sulfa) drugs in 1937 in order to identify the impact of pneumonia exposure in infancy on later life health. The hypothesis that infectious disease in early childhood may contribute to chronic disease in adulthood has attracted considerable interest in epidemiology and the biomedical sciences. However, there is little, if any, causal evidence of this link. The proposed use of the NHIS data will permit a focus on a rich set of very specific health outcomes, such as cardio-respiratory health, in order

to document the pathways by which pediatric pneumonia compromises later life health. The confidential version of the NHIS data provides the geographic data (state of birth, state of residence) required to link measures of pneumonia exposure at birth to health conditions in late adulthood. Pneumonia is still prevalent in the United States and, on the global stage, is the leading cause of (child) death. The analysis focuses on individuals born between 1930 and 1943 and uses the entire range of available NHIS data (1963-2011) to maximize statistical

power and to be able to identify the age of onset and trajectory of health problems associated with infant infections. Previous work by the researchers, using a similar research design, has established large and significant effects of childhood pneumonia exposure on later life schooling, income, employment and disability using the 1980, 1990, and 2000 Census data and implementing a differences-in-differences approach.

END-OF-LIFE MEDICARE COSTS BY DISABILITY STATUS (NCHS)

Kimberly Ault – RTI International

This study will estimate the effects of disability on end-of-life Medicare reimbursement using the 1994 and 1995 National Health Interview Survey-Disability Supplement (NHIS-D) linked to the NHIS Linked Mortality Restricted-use Files and the 1994-2007 Summary Medicare Enrollment and Claims (SMEC) Files. The NHIS-D data will provide detailed information on disability in terms of its type and severity, and the National

Death Index will provide detailed death dates over more than a decade (1994-2006). The SMEC files include, in addition to date of death, total Medicare reimbursement for inpatient, nursing home, home health, hospice, outpatient, physician, and durable medical equipment that will be used to create a variable for each year in the study period representing total Medicare reimbursement — the study's cost measure. The analytic approach

will estimate the additional end-of-life Medicare reimbursement associated with disability (and disability type) compared to no disability using a panel design controlling for demographic and socioeconomic characteristics as well as NHIS current weight category and self-reported health status. It will also identify rates of use of various service types (e.g. inpatient, nursing home) for people by disability status.

GEOSPATIAL FACTORS AND IMPACTS II (NCHS)

Tzy-Mey Kuo – University of North Carolina at Chapel Hill

Lee Mobley – Georgia State University

Geographic disparities in breast cancer (BC) and colorectal cancer (CRC) prevention and outcomes have existed for decades. Their persistence may indicate inefficient or ineffectual use of healthcare resources due to factors that differ between geographic areas. This project uses advanced statistical and spatial analytical software and multivariate modeling methods, merging the newly available NPCR data

with other public, private, and protected data describing local, state, and regional contexts. Multilevel modeling will comprehensively assess factors associated with geographic disparities in cancer stage at diagnosis. To do this will require linking persons in NPCR Registries who have been diagnosed with breast or colorectal cancer to their county, state, and regional characteristics. The methods will

allow for the proper incorporation of both spatial heterogeneity and spatial dependence in modeling the complex multilevel factors influencing these geographic disparities. Data will be analyzed for all available states, aggregated across two panels: 2000-2005 and 2006-2010, to enable assessment of changes in geographic disparities over time, which may help, evaluate ongoing cancer control efforts.

UNDERSTANDING THE RELATIONSHIP BETWEEN THE SCHOOL BREAKFAST PROGRAM AND FOOD INSECURITY AND WEIGHT (NCHS)

Jason Fletcher – University of Wisconsin

David Frisvold – University of Iowa

Food insecurity in the United States is an important and growing issue that has become more acute during the recent Great Recession, and food insecurity has been associated with a wide range of cognitive, health, behavioral, and social difficulties. This project examines the effect of the availability of the School Breakfast Program (SBP) on food insecurity, food consumption, and obesity during

the Great Recession, and examines whether this program cushions the impacts of high food prices. A student's school must participate in the SBP program in order for the student to be able to receive breakfast. This project uses information about state mandates and the specific thresholds to determine the impact of the SBP using a difference-in-differences specification and a regression

discontinuity design. Restricted-use geocoded NHANES data containing information on food insecurity, food consumption, and obesity are merged with the percentage of free and reduced-price eligible students in a school from the Common Core of Data (CCD) to determine if the schools attended by children in the NHANES are required to participate in the SBP based on state thresholds.

ALLOWING FOR NON-RANDOMLY MISSING DATA IN NHANES TO GUIDE LEAD POISONING PREVENTION EFFORTS (NCHS)

Eric Roberts – California Department of Public Health

In lieu of universal blood lead screening, most states target their lead surveillance efforts based on a combination of eligibility for government assistance programs and known risk factors such as child race/ethnicity, household poverty, and residence in housing built prior to the U.S. ban on lead-based paint in 1978. Given that the prevalence of concerning blood lead levels has fallen dramatically, states have little

guidance regarding the current relevance of these risk factors or how they may have changed over time. Obstacles to conducting such analysis using NHANES include the increasing paucity of respondents with BLL > 10.0 mcg/dl (which limits statistical power), and the prevalence of missing data describing the age of respondents' housing in the survey (approximately 35% of respondents for children aged 1 to 5 years during 1999-2010).

Utilization of NHANES data therefore requires relatively new protocols that take advantage of recent developments in the epidemiology and biostatistics literature that account for this circumstance with no compromises in validity. This project employs new protocols within a Bayesian framework and employs a generalized linear mixed model with random intercept terms to account for the stratified survey design of the NHANES data.

NEIGHBORHOOD CONTEXT, WEIGHT, AND WEIGHT-RELATED BEHAVIORS AMONG MEXICAN AMERICAN CHILDREN (NCHS)

Megan Lemmon – Pennsylvania State University Susana Sanchez Quiros – Pennsylvania State University
Molly Dondero – Pennsylvania State University Jennifer Van Hook – Pennsylvania State University

Poor nutrition, physical inactivity, and obesity have reached alarming levels in the United States, and children of immigrants are especially vulnerable to these serious health problems. Mexican-origin boys in immigrant households have particularly high obesity rates relative to all other children, including Hispanic boys in native households, but how immigration to and settlement in the U.S. contribute to such high levels of obesity is unclear. We theorize that community

factors contribute to the risk of obesity for children of Mexican immigrants and that the influence of community contexts are likely to vary by household socioeconomic status and level of exposure to the United States. This project focuses on three specific research questions: (1) How is community context related to Mexican children's weight and weight-related behaviors? (2) How do the associations of community context with children's weight and weight-related behaviors vary by

household socioeconomic status and household weight-related characteristics? (3) How do the associations of community context with children's weight and weight-related behaviors vary by indicators of householder members' and children's exposure to the United States? Using the 1999-2009 continuous NHANES the researchers link community characteristics, socioeconomic disadvantage, racial-ethnic composition, and size and maturity of the Latino community to children's records in the NHANES.

FOSTER CARE PLACEMENT AND CHILDHOOD INEQUALITIES: EVIDENCE FROM THE NATIONAL SURVEY OF CHILDREN'S HEALTH (NSCH)

Kristin Turney – University of California, Irvine

Children in foster care have been exposed to a host of disadvantages prior to placement that, when combined with the abuse and neglect in their homes of origin, makes them an extremely vulnerable and marginalized group. Although the number of children in foster care on any given day is small — ranging from slightly more than 0.5% in 2011 to 0.8% in 2000 — approximately 6% of American children will ever

be placed in foster care. This project uses restricted data from the 2011-2012 National Survey of Children's Health (NSCH) to answer two research questions. First, to what extent do children placed in foster care experience mental health problems, physical health problems, severe deprivation, and family functioning relative to other groups of American children (e.g., the general population of American children, children in other types

of complex families)? Second, among children in foster care, how does state variation in foster care payments explain variation in wellbeing? Taken together, these analyses will provide insight into the lives of foster care children and provide broad insight into the how foster care placement may exacerbate or ameliorate the intergenerational transmission of poverty.

Appendix 4.

CENTER FOR ECONOMIC STUDIES (CES) DISCUSSION PAPERS: 2014

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

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|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14-01 | “New Evidence on Employer Price-Sensitivity of Offering Health Insurance,” by Jean M. Abraham, Roger Feldman, and Peter Graven, January 2014. | 14-09 | “Who Do Unions Target? Unionization over the Life-Cycle of U.S. Businesses,” by Emin Dinlersoz, Jeremy Greenwood, and Henry Hyatt, revised June 2014. |
| 14-02 | “How Will the Affordable Care Act Change Employers’ Incentives to Offer Insurance?” by Jean M. Abraham, Roger Feldman, and Peter Graven, January 2014. | 14-10 | “Expanding the Role of Synthetic Data at the U.S. Census Bureau,” by Ron S. Jarmin, Thomas A. Louis, and Javier Miranda, February 2014. |
| 14-03 | “The Tradability of Services: Geographic Concentration and Trade Costs,” by Antoine Gervais and J. Bradford Jensen, January 2014. | 14-11 | “Looking Back on Three Years of Using the Synthetic LBD Beta,” by Javier Miranda and Lars Vilhuber, February 2014. |
| 14-04 | “The Influences of Foreign Direct Investments, Intrafirm Trading, and Currency Undervaluation on U.S. Firm Trade Disputes,” by J. Bradford Jensen, Dennis P. Quinn, and Stephen Weymouth, January 2014. | 14-12 | “Improving the Synthetic Longitudinal Business Database,” by Satkartar K. Kinney, Jerome P. Reiter, and Javier Miranda, February 2014. |
| 14-05 | “Randomized Safety Inspections and Risk Exposure on the Job: Quasi-Experimental Estimates of the Value of a Statistical Life,” by Jonathan M. Lee and Laura O. Taylor, January 2014. | 14-13 | “A First Step towards a German SynLBD: Constructing a German Longitudinal Business Database,” by Jorg Drechsler and Lars Vilhuber, February 2014. |
| 14-06 | “The Option to Quit: The Effect of Employee Stock Options on Turnover,” by Serdar Aldatmaz, Paige Ouimet, and Edward D. Van Wesep, January 2014. | 14-14 | “Residential Mobility across Local Areas in the United States and the Geographic Distribution of the Healthy Population,” by Arline T. Geronimus, John Bound, and Annie Ro, February 2014. |
| 14-07 | “Globalization and Top Income Shares,” by Lin Ma, February 2014. | 14-15 | “Fifty Years of Family Planning: New Evidence on the Long-Run Effects of Increasing Access to Contraception,” by Martha J. Bailey, February 2014. |
| 14-08 | “‘It’s Not You, It’s Me’: Breakups in U.S.-China Trade Relationships,” by Ryan Monarch, February 2014. | 14-16 | “Firm Age and Size in the Longitudinal Employer-Household Dynamics Data,” by John Haltiwanger, Henry Hyatt, Erika McEntarfer, Liliana Sousa, and Stephen Tibbets, March 2014. |

14-17	“Fluctuations in Uncertainty,” by Nicholas Bloom, March 2014.	14-28	“International Patenting Strategies with Heterogeneous Firms,” by Nikolas J. Zolas, August 2014.
14-18	“Really Uncertain Business Cycles,” by Nicholas Bloom, Max Floetotto, Nir Jaimovich, Itay Saporta-Eksten, and Stephen J. Terry, March 2014.	14-29	“Hires, Separations, and the Job Tenure Distribution in Administrative Earnings Records,” by Henry R. Hyatt and James R. Spletzer, September 2014.
14-19	“Examining the Long Term Mortality Effects of Early Health Shocks,” by Jason M. Fletcher, March 2014.	14-30	“Noise Infusion as a Confidentiality Protection Measure for Graph-Based Statistics,” by John M. Abowd and Kevin L. McKinney, September 2014.
14-20	“Taken by Storm: Business Survival in the Aftermath of Hurricane Katrina,” by Emek Basker and Javier Miranda, April 2014.	14-31	“How Important Are Sectoral Shocks,” by Enghin Atalay, September 2014.
14-21	“Using the Pareto Distribution to Improve Estimates of Topcoded Earnings,” by Philip Armour, Richard V. Burkhauser, and Jeff Larrimore, April 2014.	14-32	“Do Public Tuition Subsidies Promote College Enrollment? Evidence from Community College Taxing Districts in Texas,” by Paco Martorell, Brian McCall, and Isaac McFarlin, September 2014.
14-22	“The Effect of Employer Health Insurance Offering on the Growth and Survival of Small Business Prior to the Affordable Care Act,” by C. J. Krizan, Adela Luque, and Alice Zawacki, April 2014.	14-33	“It’s Where You Work: Increases in Earnings Dispersion across Establishments and Individuals in the U.S.,” by Erling Barth, Alex Bryson, James C. Davis, and Richard Freeman, September 2014.
14-23	“The Aggregate Impact of Online Retail,” by Allen Tran, May 2014.	14-34	“JOB-TO-JOB (J2J) Flows: New Labor Market Statistics from Linked Employer-Employee Data,” by Henry Hyatt, Erika McEntarfer, Kevin McKinney, Stephen Tibbets, and Doug Walton, September 2014.
14-24	“Trade Liberalization and Labor Shares in China,” by Fariha Kamal, Mary E. Lovely, and Devashish Mitra, May 2014.	14-35	“Non-Technological and Mixed Modes of Innovation in the United States: Evidence from the Business Research and Development and Innovation Survey, 2008-2011,” by Juana Sanchez, September 2014.
14-25	“Firm Dynamics and Assortative Matching,” by Leland D. Crane, May 2014.	14-36	“Owner Characteristics and Firm Performance during the Great Recession,” by Ron Jarmin, C.J. Krizan, and Adela Luque, September 2014.
14-26	“LEHD Infrastructure Files in the Census RDC: Overview,” by Lars Vilhuber and Kevin McKinney, June 2014.		
14-27	“Enforcing Covenants Not to Compete: The Life-Cycle Impact on New Firms,” by Evan Starr, Natarajan Balasubramanian, and Mariko Sakakibara, June 2014.		

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| 14-37 | “Recovering the Item-Level Edit and Imputation Flags in the 1977–1997 Censuses of Manufactures,” by T. Kirk White, September 2014. | 14-43 | “The Urban Density Premium across Establishments,” by R. Jason Faberman and Matthew Freedman, October 2014. |
| 14-38 | “Design Comparison of LODES and ACS Commuting Data Products,” by Matthew R. Graham, Mark J. Kutzbach, and Brian McKenzie, September 2014. | 14-44 | “Buyer-Seller Relationships in International Trade: Do Your Neighbors Matter?” by Fariha Kamal and Asha Sundaram, October 2014. |
| 14-39 | “From Common Ground to Breaking New Ground: Founding Team’s Prior Shared Experience and Start-Up Performance,” by Florence Honore, September 2014. | 14-45 | “The Role of Industry Classification in the Estimation of Research and Development Expenditures,” by Christian Awuku-Budu and Carol A. Robbins, November 2014. |
| 14-40 | “Using Imputation Techniques to Evaluate Stopping Rules In Adaptive Survey Design,” by Thais Paiva and Jerry Reiter, September 2014. | 14-46 | “Employer-Sim Microsimulation Model: Model Development and Application to Estimation of Tax Subsidies to Health Insurance,” by G. Edward Miller, Thomas M. Selden, and Jessica S. Banthin, December 2014. |
| 14-41 | “Unemployment Duration and Geographic Mobility: Do Movers Fare Better Than Stayers?” by Christopher Goetz, September 2014. | 14-47 | “The Margins of Global Sourcing: Theory and Evidence from U.S. Firms,” by Pol Antras, Teresa C. Fort, and Felix Tintlenot, December 2014. |
| 14-42 | “Innovation Output Choices and Characteristics of Firms in the U.S.,” by Juana Sanchez, September 2014. | | |

Appendix 5.

NEW CENSUS DATA AVAILABLE THROUGH RESEARCH DATA CENTERS (RDCs) IN 2014¹

BUSINESS DATA

Data product	Description	New or updated years
Annual Capital Expenditures Survey (ACES) and Information and Communication Technology (ICT) Survey	The Annual Capital Expenditures Survey (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. Beginning in 2003, the Information and Communication Technology (ICT) supplement to the ACES collects data on noncapitalized and capitalized expenditure on ICT equipment and computer software. All nonfarm sectors of the economy are covered by these surveys.	2011–2012
Annual Retail Trade Survey	The Annual Retail Trade Survey (ARTS) provides estimates of total annual sales, e-commerce sales, end-of-year inventories, inventory-to-sales ratios, purchases, total operating expenses, inventories held outside the United States, gross margins, and end-of-year accounts receivable for retail businesses and annual sales and e-commerce sales for accommodation and food service firms located in the United States.	2011–2012
Annual Wholesale Trade Survey	The Annual Wholesale Trade Survey (AWTS) provides data on sales and inventories for wholesale trade activities. Merchant wholesalers and manufacturers' sales branches and offices (MSBOs) provide estimates on annual sales, end-of-year inventories, inventory valuation, purchases, operating expenses, and e-commerce sales. The AWTS also began collecting sales, commissions, and operating expenses data for agents, brokers, and electronic markets (AGBRs) in 2005.	2011–2012
Business Research and Development and Innovation Survey (BRDIS)	The Business Research and Development and Innovation Survey (BRDIS) collects a broad range of 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.	2010–2012
Census of Finance, Insurance, and Real Estate	The Census of Finance, Insurance, and Real Estate (CFI) is conducted every 5 years as part of the Census Bureau's Economic Census program. In 2012, the CFI includes NAICS sectors 52 and 53. Data collected include employment, payroll, detailed industry, and the amount of revenue by detailed source. The files also include responses to special inquiries included on the forms for certain detailed industries.	2012

¹These 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.

Data product	Description	New or updated years
Census of Manufactures	The Census of Manufactures (CMF) is conducted every 5 years as part of the Census Bureau's Economic Census program. The CMF provides data on manufacturers including employment, payroll, workers' hours, payroll supplements, cost of materials, value added by manufacturing, capital expenditures, inventories, and energy consumption. It also provides data on the value of shipments by product class and materials consumed by material code.	2012
Longitudinal Business Database	The Longitudinal Business Database (LBD) is a research dataset 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 2012. 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.	2012
Manufacturers' Shipments, Inventories, and Orders	The Manufacturers' Shipments, Inventories, and Orders (M3) survey provides monthly data on current economic conditions and indications of future production commitments in the manufacturing sector. The M3 contains data on manufacturers' value of shipments, new orders (net of cancellations), end-of-month order backlog (unfilled orders), end-of-month total inventory, materials and supplies, work-in-process, and finished goods inventories (at current cost or market value). The sample consists of manufacturing establishments with \$500 million or more in annual shipments.	2012
Manufacturing Energy Consumption Survey	The Manufacturing Energy Consumption Survey (MECS) collects detailed data on the consumption of electricity and other types of fuel by the manufacturing sector. Data is also collected on end uses, fuel-switching capability, energy technologies, and energy-management activities. The survey is conducted approximately every four years.	2006
Medical Expenditure Panel Survey (MEPS)—Insurance Component (IC)	The Medical Expenditure Panel Survey-Insurance Component (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., percent of workers female, earn low/medium/high wage) characteristics.	2013
Quarterly Financial Report	The Quarterly Financial Report (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.	2011–2014

Data product	Description	New or updated years
Quarterly Survey of Plant Capacity Utilization	The Quarterly Survey of Plant Capacity Utilization (QPC) provides data on the rates of capacity utilization for the U.S. manufacturing and publishing sectors on a quarterly basis. Data collected include actual production, number of days, hours, and weeks in operation, full production capability, and production achievable under national emergency conditions. Additional items include reasons why the plant operated at less than full production, reasons why full production capability changed from the previous quarter, and how quickly the plant can reach national emergency levels of production. In 2007, the QPC replaced the annual Survey of Plant Capacity Utilization, which collected data for the fourth quarter of the survey year.	2011–2013
Services Annual Survey	The Services Annual Survey (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.	1999–2001, 2011–2012

HOUSEHOLD DATA¹

Data product	Description	New or updated years
American Community Survey	The American Community Survey (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.	2013 (Single- and multi-year files) 2006, 2007, 2012, 2013 (Master Address File extract files)
Current Population Survey	The Current Population Survey (CPS) is the primary source of labor force statistics for the population of the United States. The Annual Social and Economic (ASEC, or “March”) supplement of CPS collects data on work experience, several sources of income, migration, household composition, health insurance coverage, and receipt of noncash benefits. The Food Security (“December”) supplement of the CPS collects data on food security, food expenditures, and use of food and nutrition assistance programs.	2013 (ASEC/ March) 1991–2011 (Master Earnings File extract files)
Decennial Census – Content Reinterview Survey	The Content Reinterview Survey (CRS) was designed to provide estimates of response bias and simple response variance associated with many of the questions asked in the 1990 decennial census. The survey involves second interviews with a sample of households using a more detailed questioning sequence than in the original enumeration. Comparisons of data items are made to identify erroneous or unreliable reporting, resulting in the assignment of a housing unit or a person an incorrect category. The 1990 CRS contains about 28,000 individuals in 11,000 households.	1990
Decennial Census – Island Areas	The decennial census collected data on the age, sex, race, and the relationship of individuals in the household, and whether the housing unit was owned (with or without a mortgage) or rented. Stateside, in 2010, no long form was used, with additional detail now collected by the American Community Survey. In contrast, the censuses of the Island Areas, which includes American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands, entailed longer questionnaires of about 75 questions. In addition to questions on age, sex, race, and household structure, the four Island Areas censuses collected data on education, language, migration, disability status, fertility, veteran status, work, commuting, and income. Detailed information on housing unit characteristics was also collected.	2010

¹ These demographic or decennial files maintained at the Center for Economic Studies and for the RDCs are the internal versions, and they provide researchers with variables and detailed information that are not available in the corresponding public-use files.

Data product	Description	New or updated years
National Survey of College Graduates	The National Survey of College Graduates (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.	2010
Survey of Income and Program Participation	The Survey of Income and Program Participation (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: Final waves

LEHD DATA

Data product	Description	New or updated years
Business Register Bridge	The Business Register Bridge (BRB) is a link between LEHD employer microdata and Business Register (BR) firms and establishment microdata. Since the concepts of “firm” and “establishment” differ between the LEHD employer microdata and the BR, the BRB provides a crosswalk at various levels of business-unit aggregation. The most detailed crosswalk is at the level of Employer Identification Number (EIN)—State-four-digit Standard Industry Classification (SIC) Industry—County. The bridge includes the full list of establishments in the LEHD data and in the BR that are associated with the business units (e.g., EIN-four-digit SIC-State-County) in the crosswalk and measures of activity (e.g., employment, sales).	1990–2011
Employer Characteristics File	The Employer Characteristics File (ECF) consolidates most firm-level information (size, location, industry, age, etc.) into two easily accessible files. The firm-level file has one record for every year and quarter in which a firm is present in either the covered Employment and Wages (ES-202) program data or the unemployment insurance system (UI) wage records. Firms are identified by the LEHD State Employer Identification Number (SEIN) and FIRMID. The data in the firm-level file is aggregated from the core establishment-level file, where establishments are identified by reporting unit number within SEIN, called SEINUNIT.	1989–2011
Employment History File	The Employment History File (EHF) provides a full time series of earnings at all within-state jobs for all quarters covered by the LEHD system and provided by the state. It also provides activity calendars at a job, firm and sub-firm reporting unit level. It can be linked to other Census Bureau files through the Protected Identity Key (PIK) and the LEHD SEIN.	1985–2011
Geocoded Address List	The Geocoded Address List (GAL) is a dataset containing unique commercial and residential addresses in a state geocoded to the census block and latitude/longitude coordinates. It consists of the GAL and a crosswalk for each processed file-year. The GAL contains each unique address, a GAL identifier, its geocodes, a flag for each file-year in which it appears, data quality indicators, and data processing information. The GAL Crosswalk contains the GAL identifier and other identifiers, allowing linkage to other files in the LEHD infrastructure.	1990–2011
Individual Characteristics File	The Individual Characteristics File (ICF) contains a record for every person ever employed in the states and periods spanned by the LEHD infrastructure. It consolidates information from multiple input sources on gender, age, citizenship, point-in-time residence, and education. Information on gender, education, and age are imputed ten times when missing and all implicates are provided. The ICF can be linked to other Census Bureau files through the Protected Identity Key (PIK).	1985–2011

Data product	Description	New or updated years
Quarterly Workforce Indicator	The Quarterly Workforce Indicators (QWI) establishment file contains quarterly measures of workforce composition and worker turnover at the establishment level for selected states. The LEHD establishment-level measures are created from longitudinally integrated person and establishment-level data. Establishment-level measures include: (1) Worker and job flows—accessions, separations, job creation, job destruction by age and gender of workforce; (2) Worker composition by gender, age, education, race, and ethnicity; (3) Worker compensation for stocks and flows by gender and age; and (4) Dynamic worker compensation summary statistics for stocks and flows by gender and age. The LEHD-QWI may be used in combination with the LEHD BRB to match to other Census Bureau micro business databases and can be matched by SEIN and SEINUNIT to other LEHD infrastructure files.	1990–2011
Unit-to-Worker Impute	The unemployment insurance records underlying the LEHD infrastructure files provide neither establishment identifiers (except for Minnesota) nor industry or geographic detail of the establishment—only a firm identifier. Between 60 and 70 percent of state-level employment is in single-unit employers (employers with only one establishment) for which a link through the firm identifier is sufficient to provide such detail. For the remaining 30 to 40 percent of employment, such links have to be imputed. The Unit-to-Worker Impute (U2W) file contains 10 imputed establishments for each employee of a multiunit employer. The file can be linked to other Census Bureau datasets through the PIK and the LEHD SEIN-SEINUNIT.	1990–2011
Federal Workforce Data (beta)	Data from the Office of Personnel Management (OPM) on the federal workforce are now available in an early-release version. The data are structured in the same way as the other LEHD infrastructure files (ECF, EHF, etc.).	2000–2011

Appendix 6.

FEDERAL STATISTICAL RESEARCH DATA CENTER (RDC) PARTNERS

Atlanta RDC

Julie Hotchkiss, Executive Director

Centers for Disease Control and Prevention
Clemson University
Emory University
Federal Reserve Bank of Atlanta
Florida State University
Georgia Institute of Technology
Georgia State University
University of Alabama at Birmingham
University of Georgia
University of Tennessee, Knoxville

Boston RDC

Wayne Gray, Executive Director

National Bureau of Economic Research

California RDC (Berkeley)

Jon Stiles, Executive Director

University of California, Berkeley

California RDC (Irvine)

Marianne Bitler, Executive Director

University of California, Irvine

California RDC (Stanford)

Matthew Snipp, Executive Director

Stanford University

California RDC (UCLA)

Gary Gates, Executive Director

University of California, Los Angeles

California RDC (USC)

Gordon Phillips, Executive Director

University of Southern California

Census Bureau Headquarters RDC (CES)

Shawn Klimek, Director of Research, CES

Chicago RDC

Bhash Mazumder, Executive Director

Federal Reserve Bank of Chicago
Northwestern University
University of Chicago
University of Illinois
University of Notre Dame

Michigan RDC (Ann Arbor)

Margaret Levenstein, Executive Director

University of Michigan
Inter-university Consortium for Political and Social
Research (ICPSR)

Minnesota RDC (Minneapolis)

Catherine Fitch, Co-Executive Director

J. Michael Oakes, Co-Executive Director

University of Minnesota

New York RDC (Baruch)

Diane Gibson, Executive Director

Baruch College
City University of New York
Columbia University
Cornell University
Federal Reserve Bank of New York
National Bureau of Economic Research
New York University
Princeton University
Russell Sage Foundation
Syracuse University
University at Albany, State University of New York
Yale University

New York RDC (Cornell)

William Block, Executive Director

Baruch College
City University of New York
Columbia University
Cornell University
Federal Reserve Bank of New York
National Bureau of Economic Research
New York University
Princeton University
Russell Sage Foundation
Syracuse University
University at Albany, State University of New York
Yale University

Northwest RDC (Seattle)

Mark Ellis, Executive Director

University of Washington
State of Washington, Office of Financial
Management

Pennsylvania State University RDC

Mark Roberts, Executive Director

The Pennsylvania State University

Texas RDC (College Station)

Mark Fossett, Executive Director

Pat Goldsmith, Associate Director

Texas A&M University
Texas A&M University System
Baylor University
Rice University
University of Texas at Austin
University of Texas at San Antonio

Triangle RDC (Duke and RTI)

Gale Boyd, Executive Director

Duke University
North Carolina State University
RTI International
University of North Carolina at Chapel Hill

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 2015.

New England (*Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont*)

Bruce DeMay
Economic and Labor Market Information Bureau
New Hampshire Employment Security

New York/New Jersey

Leonard Preston
Labor Market Information
New Jersey Department of Labor and Workforce
Development

Mid-Atlantic (*Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia*)

Sue Mukherjee
Center for Workforce Information and Analysis
Pennsylvania Department of Labor and Industry

Southeast (*Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee*)

Warren May
Labor Market Statistics Center
Florida Department of Economic Opportunity

Midwest (*Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin*)

Coretta Pettway
Bureau of Labor Market Information
Ohio Department of Job and Family Services

Mountain-Plains (*Colorado, Kansas, Missouri, Utah, Wyoming*)

Carrie Mayne
Workforce Analysis and Research
Utah Department of Workforce Services

Southwest (*Arkansas, Louisiana, New Mexico, Oklahoma, Texas*)

Raj Jindal, Director
Information Technology
Louisiana Workforce Commission

Western (*Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon, Washington*)

Bill Anderson
Research and Analysis Bureau
Nevada Department of Employment, Training,
and Rehabilitation

FEDERAL PARTNERS

U.S. Department of Agriculture
U.S. Department of Commerce, National Oceanic
and Atmospheric Administration
U.S. Department of Homeland Security, Federal
Emergency Management Agency
U.S. Department of the Interior
U.S. Office of Personnel Management

STATE PARTNERS

As of November 2014.

Alabama

Jim Henry, Chief
Labor Market Information
Alabama Department of Labor

Alaska

Dan Robinson, Chief
Research and Analysis Section
Alaska Department of Labor and Workforce
Development

Arizona

Paul Shannon, Assistant Director
Budget and Resource Planning
Arizona Department of Administration

Arkansas

Robert S. Marek, Administrative Services Manager
Employment and Training Program Operations
Arkansas Department of Workforce Services

California

Spencer Wong, Chief
Labor Market Information Division
California Employment Development Department

Colorado

Alexandra Hall, Director
Labor Market Information
Colorado Department of Labor and Employment

Connecticut

Andrew Condon, Ph.D., Director
Office of Research
Connecticut Department of Labor

Delaware

George Sharpley, Ph.D., Economist and Chief
Office of Occupational and Labor Market
Information
Delaware Department of Labor

District of Columbia

Saikou Diallo, Associate Director
Office of Labor Market Research and Information
District of Columbia Department of Employment
Services

Florida

Rebecca Rust, Chief
Bureau of Labor Market Statistics
Florida Department of Economic Opportunity

Georgia

Mark Watson, Director
Workforce Statistics and Economic Research
Georgia Department of Labor

Guam

Gary Hiles, Chief Economist
Bureau of Labor Statistics
Guam Department of Labor

Hawaii

Phyllis A. Dayao, Chief
Research and Statistics Office
Hawaii Department of Labor and Industrial
Relations

Idaho

Bob Uhlenkott, Bureau Chief
Research and Analysis
Idaho Department of Labor

Illinois

Evelina Tainer Loescher, Ph.D., Division Manager
Economic Information and Analysis
Illinois Department of Employment Security

Indiana

Allison Leeuw, Director
Research and Analysis
Indiana Department of Workforce Development

Iowa

Kerry Koonce, Division Administrator
Labor Market and Workforce Information Division
Iowa Department of Workforce Development

Kansas

Justin McFarland, Director
Labor Market Information Services
Kansas Department of Labor

Kentucky

Lori Collins, Director
Division of Workforce and Employment Services
Kentucky Office of Employment and Training

Louisiana

Raj Jindal, Director
Information Technology
Louisiana Workforce Commission

Maine

Chris Boudreau, Director
Center for Workforce Research and Information
Maine Department of Labor

Maryland

Carolyn J. Mitchell, Director
Office of Workforce Information and Performance
Maryland Department of Labor, Licensing
and Regulation

Massachusetts

Rena Kottcamp, Director
Economic Research
Massachusetts Division of Unemployment
Assistance

Michigan

Jason Palmer, Director
Labor Market Information and Strategic Initiatives
Michigan Department of Technology, Management,
and Budget

Minnesota

Steve Hine, Ph.D., Research Director
Minnesota Department of Employment and
Economic Development

Mississippi

Mary Willoughby, Bureau Director
Mississippi Department of Employment Security

Missouri

William C. Niblack, Labor Market Information
Manager
Missouri Economic Research and Information
Center
Missouri Department of Economic Development

Montana

Todd Younkin, Chief
Research and Analysis Bureau
Montana Department of Labor and Industry

Nebraska

Phil Baker, Labor Market Information
Administrator
Nebraska Department of Labor

Nevada

Bill Anderson, Chief Economist
Research and Analysis Bureau
Nevada Department of Employment, Training,
and Rehabilitation

New Hampshire

Bruce DeMay, Director
Economic and Labor Market Information Bureau
New Hampshire Department of Employment
Security

New Jersey

Chester S. Chinsky, Labor Market Information
Director
Labor Market and Demographic Research
New Jersey Department of Labor and Workforce
Development

New Mexico

Rachel Moskowitz, Chief
Economic Research and Analysis Bureau
New Mexico Department of Workforce Solutions

New York

Bohdan Wynnyk, Deputy Director
Research and Statistics Division
New York State Department of Labor

North Carolina

Jacqueline Keener, Interim Director
Labor and Economic Analysis Division
North Carolina Department of Commerce

North Dakota

Michael Ziesch, Labor Market Information Contact
Labor Market Information Center
Job Service North Dakota

Ohio

Coretta Pettway, Chief
Bureau of Labor Market Information
Ohio Department of Job and Family Services

Oklahoma

Lynn Gray, Director
Economic Research and Analysis
Oklahoma Employment Security Commission

Oregon

Graham Slater, Administrator for Research
Oregon Employment Department

Pennsylvania

Sue Mukherjee, Director
Center for Workforce Information and Analysis
Pennsylvania Department of Labor and Industry

Puerto Rico

Fernando Sulsona, Director
Labor Market Information/Bureau of Labor
Statistics
Puerto Rico Department of Labor

Rhode Island

Donna Murray, Director
Labor Market Information
Rhode Island Department of Labor and Training

South Carolina

Brenda Lisbon, Director
Labor Market Information
South Carolina Department of Employment
and Workforce

South Dakota

Bernie Moran, Director
Labor Market Information Center
South Dakota Department of Labor and Regulation

Tennessee

Mattie S. Miller, Director
Labor Market Information
Tennessee Department of Labor and Workforce
Development

Texas

Vacant, Director
Labor Market Information
Texas Workforce Commission

Utah

Carrie Mayne, Director
Workforce Analysis and Research
Utah Department of Workforce Services

Vermont

Mathew J. Barewicz, Labor Market Information
Director
Economic and Labor Market Information Section
Vermont Department of Employment and Training

Virgin Islands

Gary Halyard, Director of Survey and Systems
Bureau of Labor Statistics
U.S. Virgin Islands Department of Labor

Virginia

Donald P. Lillywhite, Director
Economic Information Services
Virginia Employment Commission

Washington

Cynthia L. Forland, Director
Labor Market and Performance Analysis
Washington Employment Security Department

West Virginia

Jeffrey A. Green, Director
Research, Information and Analysis Division
Workforce West Virginia

Wisconsin

Dennis Winters, Director
Bureau of Workforce Training
Wisconsin Department of Workforce Development

Wyoming

Thomas N. Gallagher, Manager
Research and Planning
Wyoming Department of Workforce Services

Appendix 8. CENTER FOR ECONOMIC STUDIES (CES) ORGANIZATIONAL CHART (December 2014)

