

Statistics are Evidence; Evidence is Statistics

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Abstract

The use of statistics to inform policy in the Federal Government has more history than the casual observer may realize. From "classic" cases such as the removal of lead from paint and gasoline, to more "modern" examples, there is longstanding and more recent evidence that statistics are at the heart of many Government policy, regulatory, and benefit decisions. In a seemingly "new" era of "evidence-based policymaking," this paper will highlight the continuous and continuing use of statistics to inform Federal Government policies and programs.

Key Words: evidence, government, policies

Our democracy and economy demand that public and private leaders have unbiased, relevant, accurate, and timely information on which to base their decisions. Statistics produced by the Federal Government inform public and private decision makers in shaping policies, managing and monitoring programs, identifying problems and opportunities for improvement, tracking progress, and monitoring change. The programs of our statistical system furnish key information to guide decision makers as they respond to pressing challenges, including those associated with the economy, agriculture, crime, education, the environment, health, science, and transportation. In a very real sense, these statistics provide data users with a lens to focus the myriad activities of our society into a more coherent picture of the status, progress, and trends in our Nation.

Our economy's complexity, growth, and rapid structural changes require that public and private leaders have unbiased, relevant information on which to base their decisions. As characterized by our recent Commissioner of Labor Statistics Erica Groshen, Federal statistics are the heart -- or more specifically the AORTA -- of evidence-based decision making; they must be Accurate, Objective, Relevant, Timely, and Accessible. Data on real Gross Domestic Product (GDP), the Consumer Price Index (CPI), and the trade deficit, for example, guide government spending, budget projections, and the allocation of public funds. They are also essential inputs to monetary, fiscal, trade, and regulatory policy. Economic data, such as measures of price change, have as well a significant influence on interest rates and cost-of-living adjustments that affect every American who runs a business, saves for retirement, or mortgages a home. Taken together, official statistics on demographic, economic, and social conditions and trends are essential to inform decisions that are made by virtually every organization and household.

Among the most influential statistics produced by our Federal Government is the Consumer Price Index, or CPI, which measures the average change in prices over time for a fixed market basket of goods and services. As an economic indicator, the CPI is used by the Executive Branch, the Congress, and the Federal Reserve Board to determine and evaluate government economic policy. For example, reports of monthly changes in the CPI are a major input for Federal Reserve Board decisions in setting short-term interest rates and annual changes in the CPI affect components of the Federal income tax code.

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As a consequence of statutory requirements, the CPI directly affects the incomes of millions of our citizens through Federal programs that deliver benefits to individuals. These include more than 100 million Social Security beneficiaries, food stamp recipients, and military and Federal Civil Service retirees and survivors. (For example, Social Security provided \$74.7 billion in benefits to 60.5 million people in May 2016; the entire BLS budget for FY 2016 -- including the resources to produce the CPI -- was \$213.5 million.) Changes in the CPI also affect children through adjustments to the School Lunch program, and private sector workers whose wages are tied to the CPI under collective bargaining agreements.

Similarly, information from our Decennial Census of Population and Housing and its component American Community Survey affects Americans every day. Data on the number and characteristics of the population are used by State and local governments to plan schools and highways, by the Federal Government to distribute hundreds of billions of dollars annually for health care and other programs, and by businesses in making their economic plans. According to Andrew Reamer's most recent assessment, "several hundred Federal financial assistance programs rely on data derived from the Decennial Census." His preliminary findings indicate that in Fiscal Year 2015, the 50 States plus the District of Columbia received \$589.7 billion from the 16 largest 'census-guided' programs. By 'census-guided', Reamer means that the Decennial Census count is not used directly, but rather that data sets *derived* from the most recent decennial count are required or authorized by the Congress to be used for allocating the program funds. These data sets included, most notably, Core-based Statistical Areas, Urban/Rural Classification, Population Estimates, American Community Survey, Current Population Survey, Per Capita Income, and Poverty Guidelines. In total, these programs distributed \$401.4 billion to States and \$162.0 billion directly to individuals. The Reamer study ultimately expects to find that there were about 300 Federal programs using census-guided allocation distributions with outlays totaling approximately \$700 billion in fiscal year 2015.²

To address ever-growing demands for information about small geographic areas that can be used to administer Federal grant programs, statisticians at the Census Bureau use statistical modeling and advanced statistical methods to integrate data from the decennial census and current surveys with administrative records from Federal benefit and regulatory programs; through these efforts, estimates are produced for the number of poor, school-aged children for each of the Nation's [14,000] school districts, and for health insurance coverage for various demographic groups at the county level.

And of course Census data have been used since 1790 initially to reapportion congressional (House of Representatives) seats among the States, and since the passage of P.L. 94-171 in 1975, to draw legislative districts within States.

A handful of examples illustrates the wide-ranging role of official statistics produced by the Federal Government in informing policies and decisions at every level and sector of our society:

- Monetary Policy Decisions: The Federal Reserve determines monetary policy based on monthly economic indicator data, such as economic growth and unemployment rates produced by the Bureau of Economic Analysis and the Bureau of Labor Statistics.

² Andrew Reamer, *Counting for Dollars: The Role of the Decennial Census in the Geographic Distribution of Federal Funds* (2017)

- State Budget Decisions: Nearly all States use Bureau of Economic Analysis state personal income statistics to project state budget revenues; 20 States have established constitutional or statutory limits on state government revenue and spending that are tied to these statistics.
- Federal Program Funding Allocations: As highlighted above, Federal programs allocate hundreds of billions annually to states and localities based on Bureau of Economic Analysis and Census Bureau statistics on income and population. These include most notably Medicaid, Supplemental Nutrition Assistance (SNAP), Medicare Part B, Highway Planning and Construction, Section 8 Housing Choice Vouchers, Title I grants to Local Education Agencies, and a number of others related primarily to education, nutrition, healthcare, and housing.
- Federal Program Administration: The Social Security Administration provides statistical analyses to help policymakers understand the potential distributional effects of alternative policy changes on social security beneficiaries and on the larger economy. To respond to a policy initiative to reduce class size, the National Center for Education Statistics used data from ongoing collections to model different scenarios to provide an analysis of the funding that would be needed to reduce class size to a series of targets; the information was used by policy makers in the Department of Education, the White House, and the Congress to set the parameters of the law.
- Federal Regulation: To determine whether there should be a recall of vehicles, a statistician at the Environmental Protection Agency designed a procedure to sample the vehicles for their carbon monoxide value; using a model, the statistician concluded that at least 74 percent of the fleet in question would fail to meet the emissions standards, and successfully testified in a court case that resulted in the recall of 208,000 cars.
- Private Sector Investment Decisions: The private sector uses Federal statistics, such as agricultural production and workforce availability from the National Agricultural Statistics Service, to determine optimal locations for industries such as ethanol and slaughter plants.

What are likely less well known -- or understood as “statistics as evidence” -- are an array of initiatives already operational or very actively in development that are underway in virtually every area of domestic policy concern. For example:

- Job Training Programs

Labor market statistics, typically from Bureau of Labor Statistics (BLS) surveys and sometimes supplemented with administrative data, create a foundation for research and policy-making. Within the workforce development field, there is also a rich history of Federal and State partnerships to combine administrative and survey data to generate new evidence. A key example is the Longitudinal Employer-Household Dynamics (LEHD) program, in which the Census Bureau combines Federal and State administrative and survey data on employers and employees with data from various programs, to produce new, cost-effective, public-use statistics on employment, earnings, and job flows at detailed levels of geography and industry, and for different demographic groups, that fill critical gaps in knowledge and provide indicators needed by State and local authorities.

Statistics informing the area of workforce development and job training have resulted in many studies that influence program and policy directions, providing evidence on the returns to education and training; the importance of closely relating training to specific jobs

and occupations; the extent to which providing reemployment services to Unemployment Insurance claimants speeds reemployment and reduces benefit payments; the importance of tailoring job training approaches to individual needs; the advantages of work-based training, particularly subsidized on-the-job training and registered apprenticeships; and the benefits of coordinating strategies for workers (or future workers) facing many barriers to work.

The rich portfolio of evidence based on statistical resources helped inform the development of the Workforce Innovation and Opportunity Act (WIOA), which reauthorized the Nation's employment, training, adult education, and vocational rehabilitation programs. WIOA incorporates data use and evidence-building in a variety of ways, at the Federal and State levels; for example, it requires the measurement of States' performance on a set of common indicators of performance. WIOA also requires the targets for the indicators of performance to be set (and actual performance adjusted) using a statistical adjustment model, which itself incorporates a variety of administrative and statistical survey data on attributes like participant demographics and the State unemployment rate.

- Education

Throughout the several levels of our education system, data play an integral role in tracking needs and progress. For example, statewide longitudinal data systems that record the progress of children from kindergarten through college are being developed from administrative data sources. These resources have been used for research on topics ranging from disparities in educational outcomes by family income to the effects of universal prekindergarten, charter schools, intensive tutoring programs, and community college remediation programs. Similarly, the National Postsecondary Student Aid Study, which integrates student aid administrative data with robust survey data on demographics and student experiences, is a primary source of information used by the Federal Government, researchers, and higher education associations to analyze student college financing and debt, and to inform public policy on programs, such as the Pell Grant program and Stafford loans.

A particularly salient example of how data and evidence played a key role in improving services is in the simplification of the Free Application for Federal Student Aid (FAFSA) process. Essentially, using a combination of tax return data from H&R Block, college enrollment and degree data from the National Student Clearinghouse, and student aid data from the National Student Loan Data System at the Department of Education, evidence indicated that making the financial aid application process simpler could increase rates of applying for aid and enrolling in college. The online FAFSA form was simplified by allowing applicants to skip questions that are not relevant and by automatically retrieving needed tax information. These changes have helped reduce FAFSA completion time by two-thirds over the last eight years, to about 20 minutes.

- Food Assistance

The Food and Nutrition Service (FNS) uses administrative data — specifically, a sample of certification data -- to examine in depth the participants it serves in the Supplemental Nutrition Assistance Programs (SNAP). The latest annual SNAP Characteristics report developed with these data shows that well over half of the benefits (58 percent) go to households at or below 50 percent of the poverty line, and almost all of the benefits (93 percent) are going to households at or below 100 percent of the poverty line.

While these data provide a national picture, other efforts that link administrative data with the Census Bureau's American Community Survey (ACS) data allow for smaller area estimates. For example, researchers at the Economic Research Service found that 27 percent of SNAP recipients in New York live in deep poverty (less than half of the poverty threshold); these recipients garnered 32 percent of SNAP benefits. These results allow FNS to consider operational and policy changes that improve access to SNAP benefits for those in greatest need.

Several studies have linked administrative and survey data to assess the effect of SNAP on food insecurity and have found a strong association between program participation and reductions in food insecurity. Census Bureau data have also been used to demonstrate the positive effects of SNAP in reducing poverty. Other studies have used both cross-sectional and longitudinal data to show how food insecurity affects learning and childhood development. This evidence helped inform the Summer Electronic Benefits Transfer for Children (SEBTC) demonstration, which provided benefits on an electronic debit card to children eligible for free and reduced-price school meals to purchase food during the summer months when away from school.

In addition to FNS' use of administrative data and primary data collection in its own research, it also partners with the Economic Research Service for example to examine SNAP participants' food purchasing patterns using data from the National Household Food Acquisition and Purchase Survey (FoodAPS). FoodAPS is the first nationally representative survey of American households to collect unique and comprehensive data about household food purchases and acquisitions. SNAP administrative data were used to construct the FoodAPS sample frame for SNAP participants, enabling the survey to collect information on a hard-to-reach population at a lower cost with greater accuracy. In addition, administrative records were used to obtain data on SNAP benefits, SNAP purchases, and locations of SNAP-authorized food retailers, reducing respondent burden.

- Criminal Justice

The majority of funding and program operation in criminal justice is at the State and local levels, typically with little Federal oversight. Consequently, the Federal role is more to encourage and facilitate the building and use of evidence, rather than to directly integrate evidence into program operations. One of the important ways that the Federal Government facilitates the building of evidence in the area of criminal justice is by helping make large survey and administrative data sets available to researchers, evaluators, and programs. One such survey is the National Crime Victimization Survey (NCVS) administered by the Bureau of Justice Statistics (BJS). Participating States can use these data as well as Uniform Crime Report incident-based crime data from the FBI's National Incident-Based Reporting System (NIBRS) to measure the effects of policy and legislative changes on crime rates.

Since 1995, BJS has administered the National Criminal History Improvement Program that, among other accomplishments, helped all States achieve full participation in the FBI's Interstate Identification Index. This critical operational network allows criminal justice agencies in the U.S. to exchange automated criminal history records (records that chronicle offenders' contacts with the justice system, i.e. "rap sheets"). Recently, BJS constructed an automated process that standardizes these variable Federal and State records and creates unified databases that can support a variety of research and evaluation of recidivism patterns and sentencing. In the future, BJS will seek to integrate its survey and

administrative data into a unified system, leveraging existing criminal justice system record management systems. This system will permit several valuable analyses, for example, to determine which crime prevention programs correlate with changes or reduction in the incidence and types of crime.

As these examples and numerous others attest, evidence-building relies not only on “traditional” survey-based data, but also, importantly, on administrative data sets often in conjunction with survey data. These data also “sit behind” some of the Apps and smart disclosure efforts to repackage data in new ways that have immediate relevance to individual consumers. For example, the **College Navigator** allows students and their parents to build personalized lists of post-secondary school options on 16 parameters across over 7,000 educational institutions nationwide. The associated “College Affordability and Transparency Center” allows data users to browse lists of institutions by tuition, fees and net price. And a linked BLS data source, the online “Occupational Outlook Handbook,” provides job demand and expected earnings by career field and degree. The **Hospital Compare** tool analyzes data about the quality of care at more than 4,700 hospitals across the country. By simply typing in a zip code or city and State, the user can access a wealth of information, including data on 44 quality measures such as how well local hospitals handle conditions like heart attacks and diabetes. These examples show the incredible demand for relevant, flexible data/statistics/evidence for decision-making. Relevance, practical utility, quality, wide dissemination, credibility, and public trust remain top data principles. Determining how we best implement these principles in light of this ever-broadening user base is our opportunity and challenge.

Now, as we find ourselves at the center of growing attention to “Evidence-Based Policymaking” – Statistics are, I believe, the heart of Evidence – other challenges that had been emerging are coming to us with increasing acceleration -- or as my former colleague once noted, “we are not experiencing life in the fast lane, but life in the oncoming lane...” Chief among these are calls for more finely-grained demographic and economic data at more discrete levels of physical and political geography, desires for internationally comparable statistics, and demands for greater and quicker access to data in more modern and creative forms and venues.

The guiding principles are timeless and can still serve us well: Recall the AORTA (Accurate, Objective, Relevant, Timely, and Accessible). And essential to guiding the agencies as they address the challenges is adherence to the fundamental principles that underlie their work: in addition to relevance, they must be credible, trustworthy, and free from political or other undue external influence.

- For federal statistical programs to effectively benefit their wide range of public and private sector users, the underlying data systems must be viewed as credible. As the collectors and providers of these basic data, Federal statistical agencies are data stewards -- balancing public and private decision makers’ needs for information with legal and ethical obligations to minimize reporting burden, respect respondents’ privacy, and protect the confidentiality of the data provided to the government. To further underscore the credibility of our Nation’s official statistics, the agencies responsible for these products disseminate their results under strict guidelines that reinforce both the reality and the perception of their freedom from policy perspectives.
- A growing challenge concerns the ability to attract the politically powerful, but avoid their interference. As former Census Bureau Director Ken Prewitt has

offered, “political interference is the attempt to gain partisan or regional advantage by shaping the production of a statistical product against the judgment of a non-partisan and apolitical statistical agency.” Interference could include the politically-motivated suppression of an agency’s responsibility to offer its best judgment on how to most accurately and reliably measure a given phenomenon, a decision to prevent an agency from using the state-of-the-art science, or the insistence on pre-clearance of a major statistical product. Political interference can also be indicated when agency personnel are fired or reassigned because they are known to favor statistical methodologies their political supervisors fear will produce politically unwelcome results.³ The fact that statistical series have become so important to the development and implementation of social and economic policies inevitably creates a temptation to manipulate the numbers for political gain. By refraining from participating in political discussion, and following careful, objective procedures for compiling our official statistics, our professional colleagues are assuring the continued avoidance of political interference in our Nation’s statistics.

- Last -- but perhaps far from least -- is the principle of trust. Though initially framed as a principle related to our compact with data providers, it seems today that we have at least as great a challenge in gaining the trust of those who might use our data. Consider OMB Director Mick Mulvaney’s recent comments on the BLS unemployment numbers -- that the Obama Administration was “manipulating” the numbers (noting that an explanation of said manipulation might “bore people”).

The question is, how can we harness what is going on around us to meet information needs in new and perhaps better ways despite a host of challenges? I am reminded of the title of almost every Government Accountability Office study I encountered: “Much Progress, But Challenges Remain.” Playing on those words, I suggest “Challenges Continue, but Opportunities Abound.”

The ever increasing desires for access to our data and more flexibility in how and where the data can be accessed must be balanced with increasing public concerns about confidentiality and privacy. Witness the strongly supported establishment of the Commission on Evidence-Based Policymaking; but witness as well that its second meeting was devoted in full to issues of privacy and confidentiality inherent in considering the call for a central clearinghouse for data to be used in building evidence. Personally, I find it somewhat perplexing that the public continues to display rather contradictory behavior by putting personal information on Facebook but worrying about private sector data breaches and the intrusiveness of government. Our citizens encounter statistics at every turn in their daily lives. Yet our recent surveys suggest that many are distrustful of the system and unequipped with the statistical literacy required to evaluate the information presented to them. And of course I would be remiss -- or dubbed an ostrich -- if I failed to recognize that entrepreneurs (enabled largely by the presence of our arguably staid official statistics as benchmarks) are releasing statistics that *look* “just as good” but are available much faster and with more easily accessible means of presentation.

Rather than focusing our energies on trying to point out the fragility of their methodology and the flaws of these pseudo-official statistics, maybe we need to tap into increasing demands for more detailed and timely data in flexible, accessible formats. Perhaps we need

³ Kenneth Prewitt, *The Federal Statistical System: Its Vulnerability Matters More Than You Think* (2010)

to think differently about the data and our role. Indeed, our entrepreneurial colleagues are the first to tell us that they need us to play a role in order to enable them to do what they do. We need to listen and learn more—and think openly and creatively about how we might collaborate rather than withdraw.

We have always thought of our role as:

- developing the most rigorous statistical and scientific methods available, for use in censuses and surveys, with well understood and documented data quality characteristics; and
- designing data access for trained professionals who offer their interpretations (often) through a peer review process and who are often the translators via the media to a broader public.

If, instead, data are thought of as a product from and for the general public to use to make personal, business, and public policy decisions, what would that mean for the Federal statistical system in practice?

It is not our principles that need re-examination; it is the way in which we apply them. To me this means that we need to take a step back so that we are in a position to challenge long-held assumptions on how we do what we do. There are likely more configurations of methods, tools, and roles that allow us to streamline our operations while still being true to our underlying principles.

Information quality cannot be determined in a vacuum. We may not actually need the most robust sampling design or the highest response rate to achieve a given goal – we need to challenge ourselves by asking when the gold standard is appropriate and when the balance of the trade-offs might actually be in favor of alternative methods. We need to ask “what is good enough for a given purpose?” For instance, pushing the boundaries of how we measure and adjust for nonresponse bias can help us make better trade-offs in our survey designs especially in ways that help us manage costs.

We need to be more open to leveraging administrative data in new ways – whether they are resident in a Federal statistical agency, housed in Federal or local program agencies, or collected by the private sector. If such data can help us generate new and useful statistics, we need to think about how we might best use them.

Again, we come back to assessing data quality in the context of “fitness for use,” as administrative data rarely meet the same standards for quality as one might design in a collection actually intended for analytic purposes rather than administering programs or benefits. But done thoughtfully, incorporating administrative data can be consistent with our principles, including relevance, without tarnishing our products. Pushing forward on how to measure the quality of administrative records is another important frontier.

Transparency—a very popular theme of late -- is not new to us. In fact, at times, we may appear to some to be “over-transparent” as we document, for example, the uncertainty of our estimates. But transparency enhances the credibility and trust of our data providers and users. We should make datasets more readily accessible to users, even knowing that many will use those data sets differently than we would – “mashing” them with sources that we’d never have considered due to our more narrow view of the world.

Rather than fearing that non-statisticians will use the data incorrectly, we should empower them by ensuring that we provide sufficient metadata so that they can educate themselves regarding the fitness of the data for their use.

Wide dissemination arguably means something much more than it did in years past, given the increasing demand and capacity. It doesn't diminish our commitment to confidentiality or make the task of releasing detailed microdata any easier.

Challenges Continue; But Opportunities Abound.

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