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Harnessing Administrative Records for Official Statistics on People and Households

Misty L. Heggeness US Census Bureau

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Harnessing Administrative Records for Official Statistics on People and Households

Abstract

The availability and excessiveness of alternative (non-survey) data sources, collected on a daily, hourly, and sometimes second-by-second basis, has challenged the federal statistical system to update existing protocol for developing official statistics. Federal statistical agencies collect data primarily through survey methodologies built on frames constructed from administrative records. They compute survey weights to adjust for non-response and unequal sampling probabilities, impute answers for nonresponse, and report official statistics via tabulations from these survey. The U.S. federal government has rigorously developed these methodologies since the advent of surveys -- an innovation produced by the urgent desire of Congress and the President to estimate annual unemployment rates of working age men during the Great Depression.

In the 1930s, Twitter did not exist; high-scale computing facilities were not abundant let alone cheap, and the ease of the ether was just a storyline from the imagination of fiction writers. Today we do have the technology, and an abundance of data, record markers, and alternative sources, which, if curated and examined properly, can help enhance official statistics. Researchers at the Census Bureau have been experimenting with administrative records in an effort to understand how these alternative data sources can improve our understanding of official statistics. Innovative projects like these have advanced our knowledge of the limitations of survey data in estimating official statistics. This paper will discuss advances made in linking administrative records to survey data to-date and will summarize the research on the impact of administrative records on official statistics.

Comments

DOI https://doi.org/10.23889/ijpds.v3i5.1056

Harnessing Administrative Records for Official Statistics on People and Households

Misty L. Heggeness, PhD, MPP, MSW

ADRF Conference

November 13-14, 2018



Disclaimer

This presentation was prepared for the 2018 ADRF Conference in Washington, DC.

It was developed to promote research and advancements in our understanding of the use of administrative records in household and person-level statistics. In that spirit and to encourage discussion and thoughtful feedback at early stages of our work, this presentation has undergone a more limited review than official Census Bureau reports. All views and any errors are solely those of the author and do not necessarily reflect any official position of the Bureau.

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Motivation

Nonresponse on the rise; people less willing to share data

 Innovation of household surveys is necessary in the world of big data we live in today

 Can we produce better, improved statistics more efficiently with already existing resources?

First Question: Are Administrative Records and Census/Survey Data Really So Different?











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U.S. Department of Commerce Economics and Statistics Administration U.S. CENSUS BUREAU census.gov

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	THIS IS TO CERTIFY, that the undersigned, a frustice of the Tease
by	authority of a License bearing date the 6th day of July A. D. 1943
and	issued by the Sounty Auditor of the County of Sierce, To did, on the day of
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and	ce of birth Annan Country of Acceptable State of Age last birthday 20 th their mutual assent, in the presence of Julia Lesmick Mitnesses. IN TESTIMONY WHEREOF, Witness the signatures of the parties to said ceremony, the witnesses and myself, this 7th of July A. D. 1948
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	The person performing the ceremony must fill out this Certificate within 30 days thereafter, and file the same with the County Clerk of the County wherein the ceremony is performed; under penalty of a fine of not less with the County Clerk of the County Clerk's Fee for filing was paid at the time the license was issued; than \$25.00 or more than \$300.00. The County Clerk's Fee for filing was paid at the time the license was issued;
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Second Question: Does the Household Survey of Yester Year Meet Today's Needs?



History of Surveys

• 1930s: "Enumerative Check Census"

- First attempt to use national sampling to measure unemployment
- Develops into the monthly Sample
 Survey of Unemployment in March 1940
- Primary Sampling Units (PSU) developed in 1943 and evolved into 230 PSUs (from 58) by 1954...what is now...

Current Population Survey (CPS)

- Monthly survey; rotational (4-8-4)
- Historically we have versions of the surveys from 1962 to present





Today the Census Bureau administers more than 130 surveys every year!





NCES National Center for Education Statistics



National Household Education Surveys Program (NHES)

The National Survey of Fishing, Hunting, & Wildlife-Associated Recreation is sponsored by the U.S. F

and Wildlife Service and provides information on individuals involved in fishing, hunting, and other

American Time Use Survey Re







National Center for Health Statistics







Ambulatory Hea

About

CDC > NCHS > Ambulatory Health Care Data

Welcome NAMCS Participar

National Survey of Fishing, Hunting, & Wildlife-Associated Recreation

Publications & Products | Data Products | Staff

About this Survey Data Library Technical

NHES

Documentation

Sponsored By:





wildlife-associated recreation



Latest



Status: Active Frequency: Ongoing from 1973 Latest data available: 2016



Criminal Justice Data

Improvement Program



History of Statistical Reporting

Table 1.
Income and Earnings Summary Measures by Selected Characteristics: 2015 and 2016

(Income in 2016 dollars. Households and people as of March of the following year. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/programs-surveys/cps/techdocs/cpsmar17.pdf)

		2015			2016	Percentage change* in real median income (2016 less 2015)		
Characteristic		Median (doll			Median income (dollars)			
	Number (thousands)	Estimate	Margin of error ¹ (±)	Number (thousands)	Estimate	Margin of error ¹ (±)	Estimate	Margin of error ¹ (±)
HOUSEHOLDS All households	125,819	57,230	534	126,224	59,039	717	*3.2	1.56
Type of Household Family households. Married-couple. Female householder, no husband present. Male householder, no wife present Nonfamily households Female householder Male householder	60,251 15,622 6,310 43,635	73,077 85,696 38,275 56,567 34,232 29,389 41,278	615 995 1,008 1,615 786 832 755	82,827 60,804 15,572 6,452 43,396 22,858 20,539	75,062 87,057 41,027 58,051 35,761 30,572 41,749	692 695 871 2,172 467 603 701	*2.7 *1.6 *7.2 2.6 *4.5 *4.0	1.14 1.36 3.51 4.34 2.70 3.56 2.34



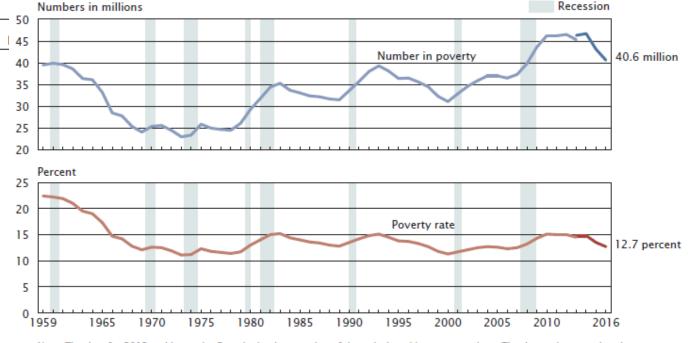
History of Statistical Reporting

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		2015			
Characteristic		Median (doll			
	Number		Margin of	Number	
	(thousands)	Estimate	_	(thousands)	
HOUSEHOLDS All households	125,819	57,230	534	126,224	
Type of Household					
Family households	82,184	73.077	615	82.827	
Married-couple	60,251	85,696	995	60,804	
Female householder, no husband present	15,622	38,275	1,008	15,572	
Male householder, no wife present	6,310	56,567	1,615	6,452	
Nonfamily households	43,635	34,232	786	43,396	
Female householder	23,093	29,389	832	22,858	
Male householder	20,542	41,278	755	20,539	







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Economics and Statistics Administration
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Note: The data for 2013 and beyond reflect the implementation of the redesigned income questions. The data points are placed at the midpoints of the respective years. For information on recessions, see Appendix A. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see <www.2census.gov/programs-surveys/cps/techdocs/cpsmar17.pdf>.
Source: U.S. Census Bureau, Current Population Survey, 1960 to 2017 Annual Social and Economic Supplements.

History of Statistical Reporting from Surveys

Table 1.

Income and Earnings Sui
(Income in 2016 dollars, Household

error, nonsampling error, and defin

Characteristic

HOUSEHOLDS All households

Type of Household

Basic Monthly CPS⁴

File	Size	Compression	on Type (Siz	ze in Bytes)	Record	
rne	(in Bytes)	DOS/Windows	GNU gzip	Standard Unix	Count	
Jan 2017 to Present						
Data Dictionary	104,678					
Nov 2017	147,948,801	12,856,829	12,856,704	NA ¹¹	147,801	Recession
Oct 2017	147,765,618	12,868,963	12,868,838	NA ¹¹	147,618	erty 40.6 million
Sep 2017	147,415,268	12,895,444	12,895,319	NA ¹¹	147,268	40.6 million
Aug 2017	147,172,025	12,871,940	12,871,815	NA ¹¹	147,025	
Jul 2017	147,776,629	12,877,463	12,877,338	NA ¹¹	147,629	
Jun 2017	148,202,054	12,869,109	12,868,984	NA ¹¹	148,054	
May 2017	148,771,623	12,869,690	12,869,565	NA ¹¹	148,623	
Apr 2017	149,754,605	13,019,893	13,019,768	NA ¹¹	149,605	
Mar 2017	149,480,331	13,020,660	13,020,535	NA ¹¹	149,331	12.7 percent
Feb 2017	150,504,354	13,126,718	13,126,593	NA ¹¹	150,354	12.7 percent
Jan 2017	150,613,463	13,129,352	13,129,227	NA ¹¹	150,463	
	0 1959	1965 1970 19	975 1980	1985 1990	1995 2	2000 2005 2010 2016



Note: The data for 2013 and beyond reflect the implementation of the redesigned income questions. The data points are placed at the midpoints of the respective years. For information on recessions, see Appendix A. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see <www.2census.gov/programs-surveys/cps/techdocs/cpsmar17.pdf>.
Source: U.S. Census Bureau, Current Population Survey, 1960 to 2017 Annual Social and Economic Supplements.

Everything Revolves around the Survey-Year

- Historically, this makes sense.
 - Sampling (and therefore national estimates) based on survey-year
 - Interested in changes and trends over time:
 - For example, income, poverty, the number of college graduates by year
 - Back end seems fine, however...
- What are we missing?
 - We are in an age of big data "data, data, everywhere!"
 - Integrating data from multiple sources on the front end can:
 - Enhance and improve national statistics
 - Strengthen statistics on small populations



Challenges

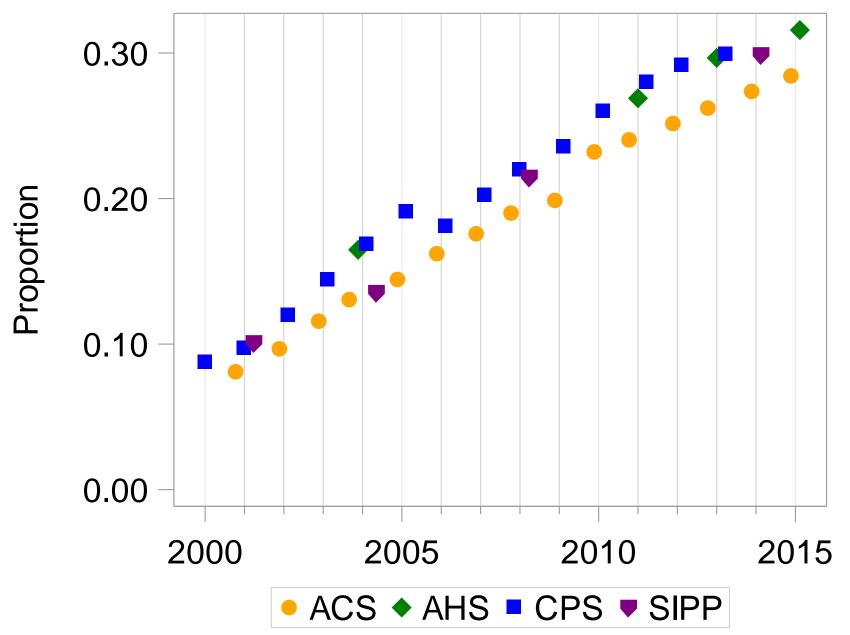
- Updating infrastructure and protocol
 - Editing and storing data
 - Can we get away from manual data curation?
 - Statistical methods to handle generating statistical properties from multisource data
 - Skillsets & human capital
- Policy and data privacy issues
 - Other topic areas are more advanced in figuring out these issues
 - Business Register
 - Master Address File



Opportunities?

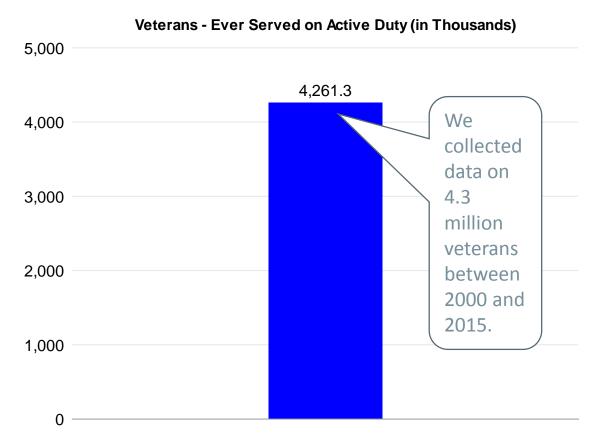


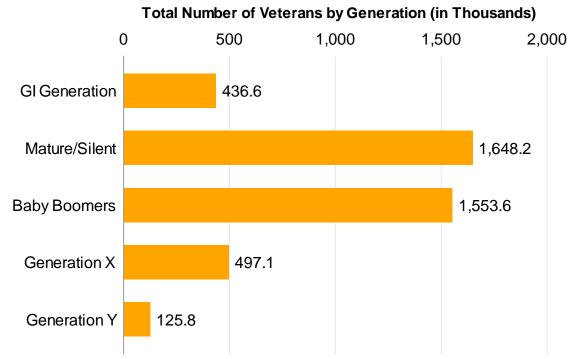
How many uniquely new respondents we have interviewed post the 2000 decennial?





How many total veterans we have data on? What generation those veterans come from?





Source: American Community Survey 2001-2015; American Housing Survey 2015; Current Population Survey 2000-2013; Survey of Income and Program Participation 2001, 2004, 2008, 2014



TheUpshot

When Wives Earn More Than Husbands, Neither Partner Likes to Admit It

Deceiving the census: New research suggests that social attitudes are lagging behind both workplace progress and how people actually live their lives.



Claire Cain Miller



A study shows that when a wife outearns her husband, she downplays her income while he exaggerates his

By Drew Kann, CNN

Updated 1:45 PM ET, Fri July 20, 2018









What's Next?

- Are administrative data and survey data so different?
 - In terms of data collection, perhaps not.
 - In terms of policy and quality, variability exists.
- Does the Household Survey of Yester Year Meet Today's Needs?
 - Maybe, but it shouldn't limit us
 - Can we do better?
 - Only engage the survey when we cannot find the information via any other source?
- Need a system for improved data integration at the front end that connects, cleans, and harmonizes multisource data
 - The system should also feed into new surveys (pre-populate)
 - The system should be updated regularly
 - The integrated data should be available under updated data privacy and protection rules to statistical agencies for production and to researchers



Thank you

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