Federal Committee on Statistical Methodology Research Conference

Final Program and Abstracts

Walter E. Washington Convention Center
December 1-3, 2015

Major Sponsors:
Bureau of Economic Analysis
Bureau of Justice Statistics
Economic Research Service
Energy Information Administration
National Agricultural Statistics Service
National Center for Education Statistics
Statistics of Income Division, Internal Revenue Service
U.S. Census Bureau
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2015 FCSM Research Conference

The 2015 Federal Committee on Statistical Methodology (FCSM) Research Conference is one of the activities of the FCSM. The FCSM is a federal statistical interagency committee organized under the auspices of the Office of Management and Budget's Statistical and Science Policy Office and is dedicated to improving the quality of federal statistics. The committee's major goals are to:

- Communicate and disseminate information on statistical practice among all federal statistical agencies.
- Recommend the introduction of new methodologies in federal statistical programs to improve data quality.
- Provide a mechanism for statisticians in different federal agencies to meet and exchange ideas.

The 2015 FCSM Research Conference provides a forum for experts from around the world to discuss and exchange current research and methodological topics relevant to federal government statistical programs. Each day of the conference will offer papers on a wide range of topics including: adaptive survey design, address-based sampling, administrative records, Bayesian statistical methods, coding, confidentiality and disclosure, crowdsourcing, data quality, economic statistics, editing, frame development, imputation, mobile devices, multi-mode and web data collection, nonresponse and measurement error, paradata and metadata, questionnaire and survey design, record linkage, small area estimation, survey redesign, variance estimation, and weighting.

Technical demonstrations run concurrently on the second day of the conference during the first morning session. This session includes demonstrations on "Data Visualization and Metadata Systems."

Sessions feature papers and demonstrations by government, private sector, and academic researchers from three countries. All paper sessions include an open discussion; some sessions include a formal discussion. Papers will be made available on the FCSM Web site (http://fcsm.sites.usa.gov/) and presentations will be on the site of the Council of Professional Associations on Federal Statistics (http://copafs@copafs.org) following the conference.

KEYNOTE SPEAKER

Raj Chetty, Ph.D. is the keynote speaker in the opening plenary session.

Raj Chetty is a Professor of Economics at Stanford University, currently on leave as a Visiting Professor at Harvard University. Chetty's research combines empirical evidence and economic theory to help design more effective government policies. His work on tax policy, unemployment insurance, and education has been widely cited in media outlets and Congressional testimony. His current research focuses on equality of opportunity: how can we give children from disadvantaged backgrounds better chances of succeeding?

Chetty is a recipient of a MacArthur "Genius" Fellowship and the John Bates Clark medal, given by the American Economic Association to the best American economist under age 40. He received his Ph.D. from Harvard University in 2003 at the age of 23 and was a professor at UC-Berkeley until 2009, when he returned to Harvard as one of the youngest tenured professors in Harvard's history.

Final Program

Federal Committee on Statistical Methodology Research Conference
Washington, DC – December 1-3, 2015

Tuesday, December 1

7:30 a.m.
Registration
(Concourse)

Continental Breakfast
(Concourse)

8:30 - 9:40 a.m.
Welcoming Remarks and
PLENARY SESSION
(Rooms 146A/B)

9:40 - 10:00 a.m.
Break
(Concourse)

10:00 - 11:45 a.m.
CONCURRENT SESSION
A-1: Room 146A
A-2: Room 146B
A-3: Room 146C
A-4: Room 147B

11:45 a.m. - 1:15 p.m.
Lunch on Your Own

1:15 - 3:00 p.m.
CONCURRENT SESSION
B-1: Room 146A
B-2: Room 146B
B-3: Room 146C
B-4: Room 147B

3:00 – 3:15 p.m.
Break
(Concourse)

3:15 - 5:00 p.m.
CONCURRENT SESSION
C-1: Room 146A
C-2: Room 146B
C-3: Room 146C
C-4: Room 147B

Wednesday, December 2

7:30 a.m.
Registration
(Concourse)

Continental Breakfast
(Concourse)

8:30 - 10:15 a.m.
CONCURRENT SESSION
D-1: Room 146A
D-2: Room 146B
D-3: Room 146C
D-4: Room 147B

10:15 - 10:30 a.m.
Break
(Concourse)

10:30 a.m. - 12:15 p.m.
CONCURRENT SESSION
E-1: Room 146A
E-2: Room 146B
E-3: Room 146C
E-4: Room 147B

12:15 p.m. - 1:45 p.m.
Lunch on Your Own

1:45 - 3:30 p.m.
CONCURRENT SESSION
F-1: Room 146A
F-2: Room 146B
F-3: Room 146C
F-4: Room 147B

3:30 - 3:45 p.m.
Break
(Concourse)

3:45 - 5:30 p.m.
CONCURRENT SESSION
G-1: Room 146A
G-2: Room 146B
G-3: Room 146C
G-4 Room 147B

Thursday, December 3

7:30 a.m.
Registration
(Concourse)

Continental Breakfast
(Concourse)

8:30 - 10:15 a.m.
CONCURRENT SESSION
H-1: Room 146A
H-2: Room 146B
H-3: Room 146C
H-4: Room 147B

10:15 - 10:30 a.m.
Break
(Concourse)

10:30 a.m. - 12:15 p.m.
CONCURRENT SESSION
I-1: Room 146A
I-2: Room 146B
I-3: Room 146C
I-4: Room 147B

12:15 p.m. - 1:45 p.m.
Lunch on Your Own

1:45 - 3:30 p.m.
CONCURRENT SESSION
J-1: Room 146A
J-2: Room 146B
J-3: Room 146C
J-4 Room 147B

Meeting Rooms:
All rooms located on the L Street side of the Convention Center on the first floor.

Medical Assistance available in Room 149A/B.

TUESDAY, DECEMBER 1

7:30 a.m. - 5:00 p.m.
Registration
(Concourse)

7:30 - 8:30 a.m.
Continental Breakfast
(Concourse)

8:30 - 8:40 a.m.
Welcoming Remarks
Location: Rooms 146A and 146B

8:40 - 9:40 a.m.
PLENARY SESSION
Location: Rooms 146A and 146B
Keynote Speaker: Raj Chetty (Bloomberg Professor of Economics at Harvard University)
Using Federal Administrative Data to Evaluate and Improve Economic Policy

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9:40 - 10:00 a.m.
Break
(Concourse)

10:00 - 11:45 a.m.
CONCURRENT SESSION A-1:
LINKING ADMINISTRATIVE RECORDS TO ENHANCE DATA
Location: Room 146A
Organizer and Chair: Lynn Langton (Bureau of Justice Statistics)

Linking Administrative BJS Data: Understanding Jail Mortality Through the Communities They Serve
Margaret Noonan (Bureau of Justice Statistics)
Susan Brumbaugh (RTI International)
Chris Ellis (RTI International)

Linking Administrative BJS Data: Better Understanding Prisoners' Personal Histories by Linking the National Corrections Reporting Program and CARRA Data
E. Ann Carson (Bureau of Justice Statistics)

Linking Administrative BJS Data: Linking the National Death Index and the Deaths in Custody Reporting Program to Better Understand Correctional Mortality
Zhen Zeng (Bureau of Justice Statistics)
Margaret Noonan (Bureau of Justice Statistics)

Discussant: William Sabol (Bureau of Justice Statistics)

10:00 - 11:45 a.m.
CONCURRENT SESSION A-2:
DESIGNING WEB SURVEYS
Location: Room 146B
Organizer and Chair: Kenneth Steve (Bureau of Transportation Statistics)

Internet and Smartphone Coverage in a National Health Survey: Implications for Alternative Modes
Mick Couper (University of Michigan)
Jennifer Kelley (University of Michigan)
William Axinn (University of Michigan)
Heidi Guyer (University of Michigan)
James Wagner (University of Michigan)
Brady West (University of Michigan)

Designing Web Surveys for Different Screen Sizes and Operating Systems: What Respondents are Using
Robert Tortora (ICF International)

Characteristics of the Population of Internet Panel Members
John Boyle (ICF International)
Naomi Freedner (ICF International)
Tala Fakhouri (ICF International)

Discussant: Chuck Shuttles (Symphony Advanced Media)

TUESDAY, DECEMBER 1

10:00 - 11:45 a.m.

CONCURRENT SESSION A-3:
NONRESPONSE ADJUSTMENT AND VARIANCE ESTIMATION

Location: Room 146C

Organizer: Julie Gershunskaya (Bureau of Labor Statistics)

Chair: Vladislav Beresovsky (National Center for Health Statistics)

JOLTS Variance Estimation to Account for JOLTS-CES Alignment
Mark Crankshaw (Bureau of Labor Statistics)
Michael Sverchkov (Bureau of Labor Statistics)

Linearization Variance Estimators for Mixed-mode Survey Data When Response Indicators are Modeled as Discrete-time Survival
Abdellatif Demnati (Independent Consultant)

Weighting and Variance Estimation Plans for the 2016 National Household Survey
François Verret (Statistics Canada)
Arthur Goussanou (Statistics Canada)
Nancy Devin (Statistics Canada)

Discussant: Phillip Kott (RTI International)

10:00 - 11:45 a.m.

CONCURRENT SESSION A-4:
IMPUTATION AND THE IMPACT OF NON-RESPONSE

Location: Room 147B

Organizer: Jesse Bricker (Federal Reserve Board)

Chair: Gary Benedetto (U.S. Census Bureau)

Bias From Unit Non-Response in the Measurement of Income in Household Surveys
C. Adam Bee (U.S. Census Bureau)
Graton Gathright (U.S. Census Bureau)
Bruce Meyer (University of Chicago)

Do Imputed Earnings Earn Their Keep? Evaluating SIPP Earnings and Non-Response With Administrative Records
Mark Klee (U.S. Census Bureau)
Rebecca Chenevert (U.S. Census Bureau)
Kelly Wilkin (U.S. Census Bureau)

Bridging a Survey Redesign Using Multiple Imputation: An Application to the 2014 CPS ASEC
Jonathan Rothbaum (U.S. Census Bureau)

Discussant: John Czajka (Mathematica Policy Research)

11:45 a.m. - 1:15 p.m.
Lunch on Your Own

1:15 - 3:00 p.m.

CONCURRENT SESSION B-1:
ABSTRACTION TO EXTRACTION: EXPERIENCES FROM THE NATIONAL HOSPITAL CARE SURVEY IN USING ADMINISTRATIVE CLAIMS AND ELECTRONIC HEALTH RECORD DATA

Location: Room 146A

Organizer: Erica Smith (Bureau of Justice Statistics)

Chair: Carol DeFrances (National Center for Health Statistics)

Using Uniform Bill (UB)-04 Administrative Claims Data to Describe Hospital-Based Care
Sonja Williams (National Center for Health Statistics)
Naga Shanmugam (National Center for Health Statistics)
Amy Brown (National Center for Health Statistics)
Carol DeFrances (National Center for Health Statistics)

Acquiring Survey Data From Electronic Health Record Systems: Experiences From the National Hospital Care Survey (NHCS)
Kristi Eckerson (Emory University IPA to National Center for Health Statistics)
Brian Gugerty (National Center for Health Statistics)
Anita Bercovitz (National Center for Health Statistics)
Carol DeFrances (National Center for Health Statistics)

Matching the National Hospital Care Survey Records Across Settings and With Outside Data Sources
Shaleah Levant (National Center for Health Statistics)
Monica Wolford (National Center for Health Statistics)

Discussant: J. Neil Russell (Substance Abuse and Mental Health Services Administration)

1:15 - 3:00 p.m.

CONCURRENT SESSION B-2: STUDYING NON-PROBABILITY STUDIES

Location: Room 146B
Organizer: Andrew Zukerberg (National Center for Education Statistics)
Chair: Sarah Grady (National Center for Education Statistics)

Evaluation of Strategies to Improve Utility of Estimates From a Non-probability Based Survey
Benmei Liu (National Cancer Institute)
Sadeq Chowdhury (Agency for Healthcare Research and Quality)
Janet deMoor (National Cancer Institute)
Erin Kent (National Cancer Institute)
Steven Machlin (Agency for Healthcare Research and Quality)
Stephanie Nutt (LIVESTRONG Foundation)
Anita Soni (Agency for Healthcare Research and Quality)
Katherine Virgo (Emory University)
Gordon Willis (National Cancer Institute)
Maggie Wilson (National Cancer Institute)
K. Robin Yabroff (National Cancer Institute)
Interagency Consortium to Promote Health Economics Research on Cancer (HEROIC)

Response Rates and Response Bias in Web Panel Surveys
John Boyle (ICF International)
Lew Berman (ICF International)
Jamie Dayton (ICF International)
Tala Fakhouri (ICF International)
Ronaldo Iachan (ICF International)
Melanie Courtright (Research Now)
Kartik Pashupati (Research Now)

Prediction-Enhanced Generalized Regression for Estimation from Purposive Supplements to Probability Samples
Avinash Singh (NORC at the University of Chicago)
Yongheng Lin (NORC at the University of Chicago)

Discussant: Jill Dever (RTI International)

1:15 - 3:00 p.m.

CONCURRENT SESSION B-3: IMPROVEMENTS IN SURVEY ESTIMATION METHODOLOGY

Location: Room 146C
Organizer: Wendy Barboza
Chair: Tyler Wilson (National Agricultural Statistics Service)

Some Thoughts on Fitting Regression Models to Complex Survey Data
Phillip Kott (RTI International)

Comparative Study of Confidence Intervals for Proportions in Complex Sample Surveys
Carolina Franco (U.S. Census Bureau)
Roderick Little (University of Michigan)
Thomas Louis (U.S. Census Bureau and John Hopkins University)
Eric Slud (U.S. Census Bureau and University of Maryland)

Total Variability Measures for Selected Quarterly Workforce Indicators and LEHD Origin Destination Employment Statistics in OnTheMap
Kevin McKinney (U.S. Census Bureau)
Andrew Green (Cornell University and U.S. Census Bureau)
Lars Vilhuber (Cornell University and U.S. Census Bureau) John Abowd (Cornell University and U.S. Census Bureau)

Discussant: Carol Crawford (National Agricultural Statistics Service)

1:15 - 3:00 p.m.

CONCURRENT SESSION B-4: ECONOMIC STATISTICS

Location: Room 147B

Organizer: John Cromartie (Economic Research Service)

Chair: Jeffrey M. Gonzalez (Bureau of Labor Statistics)

Characteristics of Special Purpose Entities in Measures of U.S. Direct Investment Abroad

Dylan Rassier (U.S. Bureau of Economic Analysis)

Building a Taxonomy and Lexicon of Terms and Concepts at BLS

Daniel Gillman (Bureau of Labor Statistics)
Elizabeth Ashack (Bureau of Labor Statistics)
Daniel Chow (Bureau of Labor Statistics)
Ronald Johnson (Bureau of Labor Statistics)
Karen Kosanovich (Bureau of Labor Statistics)
Nicole Nestoriak (Bureau of Labor Statistics)
Ann Norris (Bureau of Labor Statistics)
Garrett Schmitt (Bureau of Labor Statistics)
Clayton Waring (Bureau of Labor Statistics)

New Technology Indicator for Technological Progress

Wendy Li (U.S. Bureau of Economic Analysis)

Discussant: Nikolas Zolas (U.S. Census Bureau)

3:00 - 3:15 p.m.
Break Hosted by (Concourse)

3:15 - 5:00 p.m.

CONCURRENT SESSION C-1: LINKING DATA TO GENERATE NEW STATISTICS: JOBS, PATENTS, AND FDI

Location: Room 146A

Organizer and Chair: Rachel Lipari (Substance Abuse and Mental Health Services Administration)

Two Perspectives on Commuting and Workplace: A Microdata Comparison of Home to Work Flows Across Linked Survey and Administrative Files

Andrew Green (U.S. Census Bureau, Cornell University)
Mark Kutzbach (U.S. Census Bureau)
Lars Vilhuber (U.S. Census Bureau, Cornell University)

An 'Algorithmic Links with Probabilities' Crosswalk for USPC Codes

Nikolas Zolas (U.S. Census Bureau)
Nathan Goldschlag (U.S. Census Bureau)
Travis Lybbert (University of California, Davis)

Linking BEA Surveys of Foreign Direct Investment in the United States with BLS Register and Survey Data: Twenty First Century Methods and Preliminary Findings

Elizabeth Weber Handwerker (Bureau of Labor Statistics)
Mina Kim (Bureau of Labor Statistics)
Lowell Mason (Bureau of Labor Statistics)
David Talan (Bureau of Labor Statistics)

Discussant: Asrat Tesfayesus (U.S. Patent and Trademark Office)

3:15 - 5:00 p.m.

CONCURRENT SESSION C-2: EVALUATION OF SURVEYS THROUGH PRETESTING AND OTHER COGNITIVE METHODS

Location: Room 146B

Organizer: Jeffrey M. Gonzalez (Bureau of Labor Statistics)

Chair: Jennifer Edgar (Bureau of Labor Statistics)

Retrieval of Autobiographical Information

Erica Yu (Bureau of Labor Statistics)
Scott Fricker (Bureau of Labor Statistics)

The Science of Usability Testing

Jean Fox (Bureau of Labor Statistics)

Using Graphics to Convey Complex Survey Concepts

Heidi St.Onge (U.S. Census Bureau)
Rebecca Morrison (National Science Foundation)

Using Eye-tracking to Understand how Fourth Grade Students Answer Matrix Items

Aaron Maitland (Westat)
Hanyu Sun (Westat)
Andrew Caporaso (Westat)
Roger Tourangeau (Westat)
Jonas Bertling (Educational Testing Service)
Debby Almonte (Educational Testing Service)

Reliability Testing of the Walking Environment Module
Stephanie Fowler (National Cancer Institute)
Gordon Willis (National Cancer Institute)
Rebecca Ferrer (National Cancer Institute)
David Berrigan (National Cancer Institute)

3:15 - 5:00 p.m.

CONCURRENT SESSION C-3:

APPLICATION OF BAYESIAN METHODS

Location: Room 146C
Organizer: Yan Liu (Statistics of Income Division, Internal Revenue Service)
Chair: Kimberly Henry (Statistics of Income Division, Internal Revenue Service)

Evaluating the Alignment of Grant Allocation and Community Need Using Bayesian Spatial Probit Models: A Case Study of AmeriCorps
Robin Ghertner (Corporation for National and Community Service)
Katie Seely-Gant (Corporation for National and Community Service)

Bayesian Estimation Under Informative Sampling
Terrance Savitsky (Bureau of Labor Statistics)
Daniel Toth (Bureau of Labor Statistics)

Statistical Considerations in Validating Clinical Quality Measures
Derekh Cornwell (Mathematica Policy Research)
Fei Zing (Mathematica Policy Research)
Juan-Diego Astudillo (Mathematica Policy Research)
Michael Sinclair (Mathematica Policy Research)
Nancy Sonnenfeld (Centers for Medicare and Medicaid Services)
Mihir Patel (Centers for Medicare and Medicaid Services)

A Bayesian Hierarchical Model for Combining Several Crop Yield Indications
Nathan Cruze (National Agricultural Statistics Service)

3:15 - 5:00 p.m.

CONCURRENT SESSION C-4:

ADAPTIVE DESIGN I

Location: Room 147B
Organizer: Steve Klement (U.S. Census Bureau)
Chair: Peter Miller (U.S. Census Bureau)

2015 National Survey of College Graduates: Enhancing the Use of Adaptive Design
John Finamore (National Science Foundation)
Stephanie Coffey (U.S. Census Bureau)
Benjamin Reist (U.S. Census Bureau)

Investigating Nonresponse Subsampling in an Establishment Survey Through Embedded Experiments
Katherine Jenny Thompson (U.S. Census Bureau)
Stephen Kaputa (U.S. Census Bureau)

Adept Adaptations: Developing Alternative Strategies in Adaptive Survey Designs
Jaki McCarthy (National Agricultural Statistical Service)
Tyler Wilson (National Agricultural Statistical Service)

Adaptive Design Experimentation in the High School Longitudinal Study of 2009 Second Follow-up Field Test: Investigating Incentive Treatments
Elise Christopher (National Center for Education Statistics)

WEDNESDAY, DECEMBER 2

7:30 a.m. – 5:00 p.m.
Registration
(Concourse)

7:30 - 8:30 a.m.
Continental Breakfast
(Concourse)

8:30 - 10:15 a.m.

CONCURRENT SESSION D-1: IMPUTATION, MULTIPLE IMPUTATION AND ADMINISTRATIVE RECORDS

Location: Room 146A
Organizer: Maria Garcia (U.S. Census Bureau)
Chair: Darcy Steeg Morris (U.S. Census Bureau)

Treatment of Missing Data in Hierarchically-Structured Administrative Records: A Case Study in the Bakken Region Using FBI's National Incident Based Reporting System
Dan Liao (RTI International)
Marcus Berzofsky (RTI International)
David Heller (RTI International)
Kelle Barrick (RTI International)
Matthew DeMichele (RTI International)
Kim Martin (Bureau of Justice Statistics)
Alexia Cooper (Bureau of Justice Statistics)

Introducing Parametric Models and Administrative Records Into 2014 SIPP Imputations
Gary Benedetto (U.S. Census Bureau)
Joanna Motro (U.S. Census Bureau)
Martha Stinson (U.S. Census Bureau)

Comparison of Modern Imputation Methodologies on Complex Data from Agricultural Operations
Darcy Miller (National Agricultural Statistics Service)
Andrew Dau (National Agricultural Statistics Service)

Discussant: Joseph Schafer (U.S. Census Bureau)

8:30 - 10:15 a.m.

CONCURRENT SESSION D-2: DEMONSTRATIONS ON DATA VISUALIZATION AND METADATA SYSTEMS

Location: Room 146B
Organizer: Wendy Barboza (National Agricultural Statistics Service)
Chair: Michael Gerling (National Agricultural Statistics Service)

Census Bureau's Microdata Analysis System (MAS) Pilot for the American Community Survey
Tiffany Julian (U.S. Census Bureau)
Amy Lauger (U.S. Census Bureau)
William Hazard (U.S. Census Bureau)

Crowdsourcing Codebook Enhancements: A DDI-based Approach
Lars Vilhuber (Cornell University)
Benjamin Perry (Cornell University)
Venkata Kambhampaty (Cornell University)
Kyle Brumsted (McGill University)
William Block (Cornell University)

Visualization of BLS Geospatial Data Using R/Shiny
Elizabeth Cross (Bureau of Labor Statistics)
Kenneth Cho (Bureau of Labor Statistics)
Randall Powers (Bureau of Labor Statistics)
Jeffrey M. Gonzalez (Bureau of Labor Statistics)
Wendy Martinez (Bureau of Labor Statistics))

Interactive Web Visualization of Birth and Pregnancy Trends by Maternal Age, Race/Ethnicity, and Marital Status: United States, 1909-2013
Li Lu (National Center for Health Statistics)
Yinong Chong (National Center for Health Statistics)
Sally Curtin (National Center for Health Statistics)
Betzaida Tejada Vera (National Center for Health Statistics)

WEDNESDAY, DECEMBER 2

8:30 - 10:15 a.m.

CONCURRENT SESSION D-3:

INNOVATIVE RECRUITING AND QUESTIONNAIRE TESTING METHODS

Location: Room 146C

Organizer and Chair: Darius Singpurwalla (National Science Foundation)

How Do We Bring Them In?: A Case Study in Using Non-Traditional Approaches to Recruiting Focus Group Participants
Ashley Schaad (ICF International)
Rikki Welch (ICF International)

A Multi-Method Approach to Survey Pretesting
Joe Murphy (RTI International)
Ashley Richards (RTI International)
David Roe (RTI International)
Danni Mayclin (Energy Information Administration)

Cognitive Interviewing for Surveys on Sexual Assault With College Students
Sarah Cook (RTI International)
Michael Planty (Bureau of Justice Statistics)
Jessica Stroop (Bureau of Justice Statistics)
Chris Krebs (RTI International)
Christine Lindquist (RTI International)

Modeling the Effect of Diverse Communication Strategies on Decennial Census Test Response Rates
Gina Walejko (U.S. Census Bureau)
Nancy Bates (U.S. Census Bureau)
Rachel Horwitz (U.S. Census Bureau)
Monica Vines (U.S. Census Bureau)

Respondent Driven Sampling With On-line Recruitment and Adaptive Follow-ups
Ronaldo Iachan (ICF International)
Naomi Freedner (ICF International)
Karen Trocki (Alcohol Research Group)

Discussant: Rebecca Morrison (National Science Foundation)

8:30 - 10:15 a.m.

CONCURRENT SESSION D-4:

TIME SERIES AND FORECASTING

Location: Room 147B

Organizer: Yan Liu (Statistics of Income Division, Internal Revenue Service)

Chair: Tamara Rib (Statistics of Income Division, Internal Revenue Service)

Structural Changes via Threshold Effects: Estimating U.S. Meat Demand Using Smooth Transition Functions
Nestor Rodriguez (Economic Research Service)
James Eales (Purdue University)

Measuring Single-Year Poverty Transitions: Opportunities and Limitations
Ashley Edwards (U.S. Census Bureau)

A Tale of Two Series: Examining Seasonality in Changing Time Series
John Stewart (Bureau of Labor Statistics)
Steve Mance (Bureau of Labor Statistics)

Improving NASS's Crop Yield Forecasts
Noemi Guindin-Garcia (National Agricultural Statistics Service)

10:15 - 10:30 a.m.
Break
(Concourse)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION E-1:

METHODS FOR MISSING DATA IMPUTATION

Location: Room 146A

Organizer and Chair: Maria Garcia (U.S. Census Bureau)

Patterns of Item Nonresponse for Income in the National Survey on Drug Use and Health
Peter Frechtel (RTI International)
Kristen Gulledge Brown (RTI International)
Jonaki Bose (Substance Abuse and Mental Health Services Administration)

Missing Data Methods for Regression Analysis
Susan Edwards (RTI International)
Phillip Kott (RTI International)
Rachel Harter (RTI International)
Peter Frechtel (RTI International)
Stephen Tueller (RTI International)
Jiantong Wang (RTI International)
Jonaki Bose (Substance Abuse and Mental Health Services Administration)
Sarra Hedden (Substance Abuse and Mental Health Services Administration)

Using Classification Trees to Recommend Hot Deck Imputation Methods: A Case Study
Laura Bechtel (U.S. Census Bureau)
Darcy Steeg Morris (U.S. Census Bureau)
Katherine Jenny Thompson (U.S. Census Bureau)

Within-Industry Productivity Dispersion and Imputation for Missing Data
T. Kirk White (U.S. Census Bureau)
Jerome P. Reiter (Duke University)
Amil Petrin (University of Minnesota and NBER)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION E-2: INNOVATIONS IN SAMPLE DESIGN

Location: Room 146B
Organizer and Chair: David Kashihara (Agency for Healthcare Research and Quality)

Optimal Stratification and Allocation for the June Area Survey
Jonathan Lisic (National Agricultural Statistics Service)
Hejian Sang (Iowa State University)
Zhengyuan Zhu (Iowa State University)
Stephanie Zimmer (Iowa State University)

NHTSA's Data Modernization Project
Fan Zhang (National Highway Traffic Safety Administration)
Chou-Lin Chen (National Highway Traffic Safety Administration)
Eun Young Noh (National Highway Traffic Safety Administration)
Rajesh.Subramanian (National Highway Traffic Safety Administration)

Discussant: Robert Baskin (Retired)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION E-3: INCREASING RESPONSE RATES

Location: Room 146C
Organizer and Chair: Kenneth Steve (U.S. Department of Transportation)

Getting a Boost: Improving Cooperation Rates in Youth and Young Adults
Jennifer Cantrell (Truth Initiative)
Randall Thomas (GfK Custom Research)
Elizabeth Hair (Truth Initiative)
Donna Vallone (Truth Initiative)

Designing a Multipurpose Longitudinal Incentives Experiment for the Survey of Income and Program Participation
Ashley Westra (U.S. Census Bureau)
Mahdi Sundukchi (U.S. Census Bureau)
Tracy Mattingly (U.S. Census Bureau)

Incentive Types and Amounts in a Web-based Survey of College Students
Chris Krebs (RTI International)
Michael Planty (Bureau of Justice Statistics)
Jessica Stroop (Bureau of Justice Statistics)
Marcus Berzofsky (RTI International)
Christine Lindquist (RTI International)

Efforts to Address Respondent Concerns in the American Community Survey
Todd Hughes (U.S. Census Bureau)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION E-4:

DEMOGRAPHICS IN LARGE-SCALE FEDERAL SURVEYS: THE IMPACT OF MEASUREMENT AND CLASSIFICATION CHOICES ON KEY SOCIAL INDICATORS

Location: Room 147B
Organizer and Chair: Erica Smith (Bureau of Justice Statistics)

As Time Goes By: How Period Data Influence the Estimates of Recently Arrived Immigrants in the American Community Survey
Elizabeth Grieco (U.S. Census Bureau)
Luke Larsen (U.S. Census Bureau)
Howard Hogan (U.S. Census Bureau)

Comparison of Migration Data: 2013 American Community Survey and Annual Social and Economic Supplement of the Current Population Survey
David Ihrke (U.S. Census Bureau)
William Koerber (U.S. Census Bureau)
Alison Fields (U.S. Census Bureau)

A New Approach to Classify and Analyze Changing Social Structure by Race/Ethnicity Across Censuses: Complex Households
Laurel Schwede (U.S. Census Bureau)

Creating the American Opportunity Study (AOS): A New Tool to Study Trends in Social Mobility
Carol House (National Academy of Sciences)
J. Trent Alexander (U.S. Census Bureau)
Jonathan Fisher (Stanford University)
David Grusky (Standord University)
Michael Hout (New York University)
Amy O'Hara (U.S. Census Bureau)
Aliya Saperstein (Stanford University)
Matthew Snipp (Stanford University)

Travel Time Use Over Five Decades
Chao Wei (George Washington University)
Chen Song (George Washington University)

12:15 - 1:45 p.m.
Lunch on Your Own

1:45 - 3:30 p.m.

CONCURRENT SESSION F-1:

COMPARING AND UNDERSTANDING DIFFERENCES IN ESTIMATES ACROSS SURVEYS

Location: Room 146A
Organizer : Jeffrey M. Gonzalez (Bureau of Labor Statistics)
Chair: Wendy Martinez (Bureau of Labor Statistics)

Health Care Use and Expenditure Data for Elderly Medicare Beneficiaries: A Comparison of Two Surveys
Lisa Mirel (Centers for Medicare and Medicaid Services)
Steven Machlin (Agency for Healthcare Research and Quality)

Comparability in Race Reporting Between Cancer Registry Data and the National Surveys: Results From SEER-NLMS Linked Data
Mandi Yu (National Cancer Institute)
Sean Altekruse (National Cancer Institute)
Kathleen Cronin (National Cancer Institute)

Self-Reported vs. Administrative Race/Ethnicity Data and Racial Disparities in Criminal Justice System
Zhen Zeng (Bureau of Justice Statistics)
E. Ann Carson (Bureau of Justice Statistics)

Discussant: Paul Guerino (Centers for Medicare and Medicaid Services)

1:45 - 3:30 p.m.

CONCURRENT SESSION F-2:
LINGUISTIC AND CULTURAL ISSUES IN SURVEY DESIGN AND EVALUATION RESEARCH

Location: Room 146B

Organizer: John Cromartie (Economic Research Service)

Chair: Susan Jenkins (U.S. Department of Health and Human Services)

Multilingual, Multicultural, Multi-mode Testing of Questions for U.S. Census 2020
Alisú Schoua-Glusberg (Research Support Services)
Patricia Goerman (U.S. Census Bureau)
Mandy Sha (RTI International)

Does a Spanish Translation of USDA's U.S. Household Food Security Survey Module Reduce Differential Item Functioning Between Hispanic and White non-Hispanic Households?
Matthew Rabbitt (Economic Research Service)
Alisha Coleman-Jensen (Economic Research Service)

Adapting the Medicine Wheel Model to Extend the Applicability of the Traditional Logic Model in Evaluation Research
Susan Jenkins (U.S. Department of Health and Human Services)
Kristen Robinson (Social & Scientific Systems, Inc.)

Discussant: Mark Nord (UN Food and Agriculture Organization)

1:45 - 3:30 p.m.

CONCURRENT SESSION F-3:
PREDICTIVE ANALYTICS IN A RANGE OF CIRCUMSTANCES

Location: Room 146C

Organizer: Margaret Conomos (U.S. Environmental Protection Agency)

Chair: Barry Nussbaum (U.S. Environmental Protection Agency)

A Predictive Model of Patient Readmission Using Combined ICD-9 Codes as Engineered Features
Robert P. Yerex (University of Virginia Medical System)

Predictive Analytics with Administrative Data from the Mine Safety and Health Administration
Yuwen Dai (Summit Consulting, LLC)
Natalie Patten (Summit Consulting, LLC)
Albert Lee (Summit Consulting, LLC)
George Cave (Summit Consulting, LLC)

Responsive Design in Suicide Prevention Program Data Collection
Aruna Rikhi (Headquarters Marine Corps Behavioral Health)
Jessica Jagger (Headquarters Marine Corps Behavioral Health)
Adam Walsh (Headquarters Marine Corps Behavioral Health)

Scenario Forecasting of Insurance Claims Based on the Representative Concentration Pathways (RCPs)
Vyacheslav Lyubchich (University of Maryland Center for Environmental Science)

Discussant: Michael Messner (U.S. Environmental Protection Agency)

1:45 - 3:30 p.m.

CONCURRENT SESSION F-4:
GEOSPATIAL TECHNIQUES

Location: Room 147B

Organizer and Chair: Darius Singpurwalla (National Science Foundation)

Spatial Data Analyses, Visualization, and Research Opportunities in the Division of Cancer Control and Populations Sciences at the US National Cancer Institute
Zaria Tatalovich (National Institute of Health)
Li Zhu (National Institute of Health)
David Berrigan (National Institute of Health)

Integrating Geospatial and Public Health Data: Examples Using National Center for Health Statistics Data Systems
Lauren Rossen (National Center for Health Statistics)
Patsy Lloyd (National Center for Health Statistics)

Geospatial Data for Statistical Use From the U.S. Department of Transportation
Edward Strocko (Bureau of Transportation Statistics)

Stratification of an Agricultural Area Sampling Frame Using Geospatial Cultivation and Crop Planting Frequency Data Layers
Claire Boryan (National Agricultural Statistics Service)
Zhengwei Yang (National Agricultural Statistics Service)
Patrick Willis (National Agricultural Statistics Service)

Discussant: Rolf Schmitt (Bureau of Transportation Statistics)

3:30 - 3:45 p.m.
Break
(Concourse)

3:45 - 5:30 p.m.

CONCURRENT SESSION G-1:
REDUCING MEASUREMENT ERROR: EDITING TECHNIQUES AND USE OF ADMINISTRATIVE DATA

Location: Room 146A

Organizer and Chair: Kristina Schafer (U.S. Department of Labor)

Editing Index – A New Methodology of Identifying Response Error
Chin-Fang Weng (U.S. Census Bureau)

Using Administrative Data to Ensure Data Quality in Anonymous Surveys
Marina Murray (Peace Corps)
Angel Velarde (Peace Corps)

Exploring the Use of External Data in the American Community Survey: Opportunities and Challenges
Amy O'Hara (U.S. Census Bureau)
Deborah Stempowski (U.S. Census Bureau)

What Do We Know About the Presence of Young Children in Administrative Records
William O'Hare (The Annie E. Casey Foundation)

3:45 - 5:30 p.m.

CONCURRENT SESSION G-2:
RESPONDENT CONTACT TECHNIQUES AND RESPONSE RATES

Location: Room 146B

Organizer and Chair: Lynn Langton (Bureau of Justice Statistics)

Mandatory Messaging in the American Community Survey
Elizabeth Poehler (U.S. Census Bureau)
Dorothy Barth (U.S. Census Bureau)
Todd Hughes (U.S. Census Bureau)

The Impact of Greeting Personalization on Estimates of Sexual Assault Victimization
Ashley Richards (RTI International)
Marcus Berzofsky (RTI International)
Kimberly Peterson (RTI International)
Christine Lindquist (RTI International)
Christopher Krebs (RTI International)
Michael Planty (Bureau of Justice Statistics)
Lynn Langton (Bureau of Justice Statistics)
Jessica Stroop (Bureau of Justice Statistics)

Testing a Model-Directed, Mixed Mode Protocol in the RECS Pilot Study
Stephanie Zimmer (RTI International)
Paul Biemer (RTI International)
Phillip Kott (RTI International)
Chip Berry (Energy Information Administration)

An Experiment Testing Alternative Email Contact Timing Strategies in a Web-Based Survey of Federal Personnel
Taylor Lewis (U.S. Office of Personnel Management)
Karl Hess (U.S. Office of Personnel Management)

3:45 - 5:30 p.m.

CONCURRENT SESSION G-3: HEALTH CARE: MEASURING QUALITY, SPENDING AND REFORM

Location: Room 146C
Organizer and Chair: Amy Branum (National Center for Health Statistics)

Adjusting the Measurement of the Output of the Medical Sector for Quality: A Review of the Literature
Anne Hall (Bureau of Economic Analysis)

What Medical Conditions Are Driving the Spending Slowdown? An Analysis Using the New Health Care Account from the Bureau of Economic Analysis
Abe Dunn (Bureau of Economic Analysis)
Lindsey Rittmueller (Bureau of Economic Analysis)
Bryn Whitmire (Bureau of Economic Analysis)

State-Level Estimates from the NHIS Restricted Data: Analysis to support states implementation and evaluation of the ACA
Joanna Turner (University of Minnesota - State Health Access Data Assistance Center)

Discussant: Anjel Vahratian (National Center for Health Statistics)

3:45 - 5:30 p.m.

CONCURRENT SESSION G-4: WHAT'S NEW WITH LONGITUDINAL SURVEYS?

Location: Room 147B
Organizer: Amy Branum (National Center for Health Statistics)
Chair: Sandra Decker (Agency for Healthcare Research and Quality)

An Early Look at the Consumer Expenditure Survey Gemini Redesign Proof of Concept Test
Laura Erhard (Bureau of Labor Statistics)
Jennifer Edgar (Bureau of Labor Statistics)
Nhien To (Bureau of Labor Statistics)

An Overview of the New Survey of Income and Program Participation
Jason Fields (U.S. Census Bureau)
Matthew Marlay (U.S. Census Bureau)
Patrick Campanello (U.S. Census Bureau)

Design of a National Longitudinal Survey of Small Businesses to Assess the Early Impact of Healthcare Reform
David Kashihara (Agency for Healthcare Research and Quality)
Robert Baskin (Retired)

Movement and Changing Environment on the National Children's Study: How can we Understand the Impact on a Longitudinal Population Survey
Ned English (National Opinion Research Center at the University of Chicago)
Edward Mulrow (National Opinion Research Center at the University of Chicago)
Jennifer Hasche (National Opinion Research Center at the University of Chicago)
Katie Dekker (National Opinion Research Center at the University of Chicago)
Christina Park (National Institutes of Health)

Discussant: Chris Chapman (National Center for Education Statistics)

THURSDAY, DECEMBER 3

7:30 a.m. - 3:30 p.m.
Registration
(Concourse)

7:30 - 8:30 a.m.
Continental Breakfast
(Concourse)

8:30 - 10:15 a.m.

CONCURRENT SESSION H-1: CHALLENGES AND BENEFITS FROM LINKING ADMINISTRATIVE AND SURVEY DATA

Location: Room 146A
Organizer: Pamela McGovern (National Agricultural Statistics Service)
Chair: Daniel Cork (Committee on National Statistics, The National Academies of Sciences, Engineering, and Medicine)

Creating Improved Survey Data Products Using Linked Administrative-Survey Data
Michael Davern (National Opinion Research Center at the University of Chicago)
Bruce Meyer (University of Chicago)

Developing a Residence Candidate File for Use With Employer-Employee Matched Data
Matthew Graham (U.S. Census Bureau)
Mark Kutzbach (U.S. Census Bureau)
Danielle Sandler (U.S. Census Bureau)

Using the Census to Evaluate Administrative Records and Vice Versa
J. David Brown (U.S. Census Bureau)
Jennifer Childs (U.S. Census Bureau)
Amy O'Hara (U.S. Census Bureau)

Discussant: Katharine Abraham (University of Maryland)

8:30 - 10:15 a.m.

CONCURRENT SESSION H-2: MULTIMODE DATA COLLECTION

Location: Room 146B
Organizer: Michael Planty (Bureau of Justice Statistics)
Chair: Cynthia Clark (Clark Survey Consulting)

Data-Driven Decision Making and the Design of Economic Census Data Collection Instruments
Eric Fink (U.S. Census Bureau)
Jennifer Beck (U.S. Census Bureau)
Diane Willimack (U.S. Census Bureau)

Integrated Management of Survey Modes
Jerome Wernimont (Westat)
Ray Snowden (Westat)

Evaluating Collection Mode Effect with Web Data Collection in the Canadian Labor Force Survey
Justin Francis (Statistics Canada)
Guy Laflamme (Statistics Canada)

Agreement Across Modes of Collection in the Occupational Requirements Survey: Results From a Pilot Job Observation Test
Kristen Monaco (Bureau of Labor Statistics)
Kristin Smyth (Bureau of Labor Statistics)
Tiffany Chang (Bureau of Labor Statistics)

8:30 - 10:15 a.m.

CONCURRENT SESSION H-3: FRAME DEVELOPMENT AND RESPONDENT SELECTION

Location: Room 146C
Organizer: Yan Liu (Statistics of Income Division, Internal Revenue Service)
Chair: Tracy Haines (Statistics of Income Division, Internal Revenue Service)

Vaping the Web: Crowdsourcing and Web Scraping for Establishment Survey Frame Generation
Bryan Rhodes (RTI International)
Annice Kim (RTI International)
Brett Loomis (RTI International)

Using a Mobile Mapping Instrument to Evaluate a Permanent Grid Sampling Frame
Denise Abreu (National Agricultural Statistics Service)
Linda Lawson (National Agricultural Statistics Service)
Claire Boryan (National Agricultural Statistics Service)
Michael Gerling (National Agricultural Statistics Service)
Rick Hardin (National Agricultural Statistics Service)

Quantifying Urban Agriculture: A Case Study from Baltimore
Linda Young (National Agricultural Statistics Service)

A Meta-analysis of Within-Household Respondent Selection Methods
Ting Yan (Westat)
Roger Tourangeau (Westat)
Rose McAloon (University of Maryland)

8:30 - 10:15 a.m.

CONCURRENT SESSION H-4: HEALTH INSURANCE ESTIMATES: ASSESSING THE IMPACT OF A REDESIGN

Location: Room 147B
Organizer and Chair: Stephen Blumberg (National Center for Health Statistics)

How Did the Method Change in the CPS ASEC Affect Health Insurance Estimates?
Carla Medalia (U.S. Census Bureau)
Brett O'Hara (U.S. Census Bureau)

Estimating a Time-Trend of the Uninsured Rate for the CPS Parallel ASEC
Brett O'Hara (U.S. Census Bureau)
Carla Medalia (U.S. Census Bureau)

Comparing 2014 SIPP and 2014 CPS ASEC Employer-Sponsored Insurance Offer and Take-up Rates
Joelle Abramowitz (U.S. Census Bureau)

Medicare Coverage and Reporting of the Elderly Population: A Comparison of CPS and Administrative Records
Renuka Bhaskar (U.S. Census Bureau)
James Noon (U.S. Census Bureau)
Sonya Rastogi (U.S. Census Bureau)
Brett O'Hara (U.S. Census Bureau)
Victoria Velkoff (U.S. Census Bureau)

10:15 - 10:30 a.m.
Break
(Concourse)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION I-1: EXPERIENCES AND EVALUATIONS IN USING RECORD LINKAGE TO IMPROVE THE QUALITY OF SURVEY PRODUCTS AND DATA

Location: Room 146A
Organizer: Pamela McGovern (National Agricultural Statistics Service)
Chair: Mark Gorsak (National Agricultural Statistics Service)

Simulated Versus Actual SNAP Unit Composition in Survey Households in Two States
Karen Cunnyngham (Mathematica Policy Research)
John Czajka (Mathematica Policy Research)
Randy Rosso (Mathematica Policy Research)

Program Confusion in the 2014 SIPP: Using Administrative Records to Correct False Positive SSI Reports
Katherine Giefer (U.S. Census Bureau)
Abby Williams (U.S. Census Bureau)
Gary Benedetto (U.S. Census Bureau)
Joanna Motro (U.S. Census Bureau)

Evaluation of Record Linkage for SEER Breast Cancer Registries to Oncotype DX Assays
Michael Larsen (George Washington University)
Will Howe (Information Management Services)
Nicola Schussler (Information Management Services)
Benmei Liu (National Cancer Institute)
Valentina Petkov (National Cancer Institute)
Mandi Yu (National Cancer Institute)

Discussant: Amy O'Hara (U.S. Census Bureau)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION I-2:
MOBILE SURVEY DESIGN

Location: Room 146B

Organizer and Chair: Stephen Blumberg (National Center for Health Statistics)

Optimizing the Decennial Census for Mobile – A Case Study
Elizabeth Nichols (U.S. Census Bureau)
Erica Olmsted Hawala (U.S. Census Bureau)
Rachel Horwitz (U.S. Census Bureau)
Michael Bentley (U.S. Census Bureau)

Testing the Feasibility of Collecting Expenditure Data via Individual Mobile and Web Diaries
Ian Elkin (Bureau of Labor Statistics)
Brett McBride (Bureau of Labor Statistics)
Lucilla Tan (Bureau of Labor Statistics)

Gridlock: Improving Questionnaire Design for Mobile Devices
Randall Thomas (GfK Custom Research)
Frances Barlas (GfK Custom Research)

Measurement on the Move: Designing Questionnaires for Mobile First
Frances Barlas (GfK Custom Research)
Randall Thomas (GfK Custom Research)
Patricia Graham (GfK Custom Research)

A Summary of Issues Associated With the Modernization of Data Collection
Linda Lawson (National Agricultural Statistics Service)
Denise Abreu (National Agricultural Statistics Service)
Claire Boryan (National Agricultural Statistics Service)
Michael Gerling (National Agricultural Statistics Service)
Rick Hardin (National Agricultural Statistics Service)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION I-3:
ISSUES WITH DISCLOSURE AND DATA CONFIDENTIALITY

Location: Room 146C

Organizer and Chair: Andrew White (National Center for Education Statistics)

Formal Privacy Protection for Data Products Combining Individual and Employer Frames
Ashwin Machanavajjhala (Duke University)
Samuel Haney (Duke University)
Matthew Graham (U.S. Census Bureau)
Mark Kutzbach (U.S. Census Bureau)
John Abowd (U.S. Census Bureau, Cornell University)

Methods of Selecting Variables in Data Disclosure
Charles Lin (Department of Veterans Affairs)
Hwai-Tai Lam (Department of Veterans Affairs)
Lijia Guo (Department of Veterans Affairs)
Tom Garin (Department of Veterans Affairs)

Considering the Usefulness of Standard FOIA Provisions in Interagency Agreements
Jennifer Goode, PhD (U.S. Census Bureau)
Michael Toland, PhD (U.S. Census Bureau)
Hampton Wilson (U.S. Census Bureau)
Rana Wahdan (U.S. Census Bureau)

Discussant: Alan Karr (RTI International)

10:30 a.m. - 12:15 p.m.

CONCURRENT SESSION I-4:
MODELING PRELIMINARY ESTIMATES

Location: Room 147B

Organizer: Benjamin Bridgman (Bureau of Economic Analysis)

Chair: Ryan Howley (Bureau of Economic Analysis)

Early Estimates of Annual Manufacturing Industry Output
Peter Meyer (Bureau of Labor Statistics)
Jason McClellan (Bureau of Labor Statistics)
Jennifer Price (Bureau of Labor Statistics)
Sam Rowe (Bureau of Labor Statistics)

Early Monthly Estimates for the Services Sector
Pieter Vlag (Statistics Netherlands)
Ton de Waal (Statistics Netherlands)
Cagan Kaya (Turkish National Statistical Institute)

Medicaid and CHIP Data Methodology for SAHIE Models
David Powers (U.S. Census Bureau)
Lauren Bowers (U.S. Census Bureau)
Wesley Basel (U.S. Census Bureau)
Samuel Szelepka (U.S. Census Bureau)

Discussant: Sarah Konya (U.S. Census Bureau)

12:15 p.m. - 1:45 p.m.
Lunch on Your Own

1:45 - 3:30 p.m.

CONCURRENT SESSION J-1:
ADAPTIVE DESIGN II

Location: Room 146A
Organizer and Chair: Steve Klement (U.S. Census Bureau)

Managing Survey Costs: Using Mobile Technology Coupled With Performance Dashboards to Improve Field Operations
Brad Edwards (Westat)
Richard Dulaney (Westat)
Abie Reifer (Westat)
Tamara Bruce (Westat)

Adaptive and Responsive Survey Designs: A Review and Assessment
Roger Tourangeau (Westat)
J. Michael Brick (Westat)
Sharon Lohr (Westat)
Jane Li (Westat)

Innovative Uses of Paradata in the Survey of Income and Program Participation
Matthew Marlay (U.S. Census Bureau)
Holly Fee (U.S. Census Bureau)
Jason Fields (U.S. Census Bureau)

Using Computer-Assisted Recorded Interviewing to Enhance Field Monitoring and Improve Data Quality
Holly Fee (U.S. Census Bureau)
Matthew Marlay (U.S. Census Bureau)
Jason Fields (U.S. Census Bureau)

1:45 - 3:30 p.m.

CONCURRENT SESSION J-2:
WEALTH DATA AND WEALTH DATA QUALITY

Location: Room 146B
Organizer: Jesse Bricker (Federal Reserve Board)
Chair: Mark Klee (U.S. Census Bureau)

Changes in the Distribution of After-Tax Wealth: Has Income Tax Policy Increased Wealth Inequality?
Kevin Moore (Federal Reserve Board)
Adam Looney (Brookings Institution)

Rounding in Household Financial Surveys: The Roles of Survey Design and Individual Characteristics
Michael Gideon (U.S. Census Bureau)
Joanne Hsu (Federal Reserve Board of Governors)
Brooke Helppie McFall (Institute for Social Research, University of Michigan)

Reassessing Wealth Data Quality in the Survey of Income and Program Participation
Jonathan Eggleston (U.S. Census Bureau)
Mark A. Klee (U.S. Census Bureau)

Measuring the Wealth of Hard-to-Find U.S. Minorities: Sampling, Recruiting and Weighting Issues
Thomas Guterbock (University of Virginia)
James Ellis (University of Virginia)
Deborah Rexrode (University of Virginia)
Casey Eggleston (U.S. Census Bureau)
Darrick Hamilton (The New School)
William Darity, Jr. (Duke University)

1:45 - 3:30 p.m.

CONCURRENT SESSION J-3: REMOTE ACCESS AND ANALYSIS TOOLS FOR WORKING WITH GOVERNMENT DATA

Location: Room 146C
Organizer: Michael Freiman (U.S. Census Bureau)
Chair: Bryan Schar (U.S. Census Bureau)

Education Data in the Cloud
Shelley Burns (National Center for Education Statistics)
Brian Taylor (National Center for Education Statistics)
Marilyn Seastrom (National Center for Education Statistics)
Ted Socha (National Center for Education Statistics)

Research Using Remote Access or Remote Execution Systems
Peter Meyer (National Center for Health Statistics)
Vijay Gambhir (National Center for Health Statistics)
Corey Decker (National Center for Health Statistics)
James Craver (National Center for Health Statistics)

SAMHSA Data Portal
Brooklyn Lupari (Substance Abuse and Mental Health Services Administration)

Developing and Testing the Microdata Analysis System at the US Census Bureau
Bryan Schar (U.S. Census Bureau)
Michael Freiman (U.S. Census Bureau)
Amy Lauger (U.S. Census Bureau)

1:45 - 3:30 p.m.

CONCURRENT SESSION J-4: JPSM SESSION AT 2015 FCSM CONFERENCE

Location: Room 147B
Organizer: Andrew Zukerberg (National Center for Education Statistics)
Chair: Richard Valliant (Joint Program on Survey Methodology)

New Developments at JPSM
Richard Valliant (Joint Program in Survey Methodology)
Frauke Kreuter (Joint Program in Survey Methodology)

A Comparison of Ex-Ante, Laboratory, and Field Methods for Evaluating Survey Questions
Aaron Maitland (Westat)

The Impact of Rapport on Data Quality in CAPI and Video-mediated Interviews: Disclosure of Sensitive Information and Item Nonresponse
Hanyu Sun (Westat)

Topics in Model-Assisted Point and Variance Estimation in Clustered Samples
Timothy Kennel (U.S. Census Bureau)

The Use of Responsive Split Questionnaires in a Panel Survey
Jeffrey M. Gonzalez (Bureau of Labor Statistics)

Testing the Relationship Between Social Integration and Nonresponse
Ashley Amaya (Joint Program in Survey Methodology)

Sample Design in Three-stage Household Surveys Supplemented by Commercial Address Lists
Alena Maze (Joint Program in Survey Methodology)

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Abstract Booklet

This section represents abstracts received as of September 1, 2015.

The following abstracts have not been edited for content.

CONCURRENT SESSION A-1
LINKING ADMINISTRATIVE RECORDS TO ENHANCE DATA

Linking Administrative BJS Data: Understanding Jail Mortality Through the Communities They Serve

Margaret Noonan (Bureau of Justice Statistics), Susan Brumbaugh (RTI International), and Chris Ellis (RTI International)

BJS has been collecting individual-level death data on jail inmates dying in custody through the Deaths in Custody Reporting Program (DCRP) since 2000. From the start of the collection, BJS has been interested in how the characteristics of the community a jail serves affects jail mortality outcomes. In addition to death data, the DCRP collects limited data, e.g. average daily population, annual admissions and a confinement count, on all jails in the United States via its annual summary form (ASF).

While the ASF data is sufficient to calculate jail mortality rates, it is by design limited in its scope. In order to fully understand the link between jail and community characteristics, BJS tasked its data collection agent, RTI International to merge the DCRP death files with the 2013 Census of Jails ('census'). Unlike the ASF, the infrequently fielded census collects data on the administration on jails and the inmates they serve.

The paper will discuss the process through which BJS and RTI identified more than a dozen potential community files eligible for linking to the merged jail death-census files. Measures included indicators of poverty, crime, social disorder, substance abuse, mental and physical health as well as demographic and economic information. Ultimately, nine community-level files, such as the American Community Survey, the Wide-ranging Online Data for Epidemiologic Research, the Uniform Crime Report and the Area Health Resource File among others, created a comprehensive community-level file that will allow BJS to group jails on community and jail characteristics, with the ultimate goal of understand how these factors affect jail inmate mortality.

Linking Administrative BJS Data: Better Understanding Prisoners' Personal Histories by Linking the National Corrections Reporting Program and CARRA Data

E. Ann Carson, Ph.D. (Bureau of Justice Statistics)

BJS is committed to leveraging administrative data to better understand external factors that could contribute to successful reentry into the community by former inmates. During 2014, BJS executed and funded an interagency agreement (IAA) with the Center for Administrative Records Research and Applications (CARRA) at the U.S. Census Bureau's Center for Economic Studies (CES). The main goal of this IAA is to link the NCRP data to the Social Security Administration's (SSA) Numident file behind the U.S. Census' secure firewall, which then allows analysts in the CARRA group to assign a personal identification key (PIK) to each inmate and delete all personal information.

The PIK lets the NCRP data to be linked to a number of federal datatsets including: data on receipt of supplemental security income; Temporary Assistance for Needy Families (TANF); public housing and rental assistance history; Department of Housing and Urban Development-insured mortgage loans; SSA's Death Master File; enrollment in Medicare; and any listing in Census' decennial census or American Community Survey (ACS). With additional approval, NCRP data could be PIK'd to unemployment insurance (UI) wage data collected by CES through the Longitudinal Employer-Household Dynamics (LEHD), as well as to tax returns from the Internal Revenue Service (IRS). Linking NCRP and CARRA data allows BJS to make statements about the experiences of inmates before and after imprisonment without adding additional burden to our respondents.

Linking Administrative BJS Data: Linking the National Death Index and the Deaths in Custody Reporting Program to Better Understand Correctional Mortality

Zhen Zeng, Ph.D. (Bureau of Justice Statistics) and Margaret Noonan (Bureau of Justice Statistics)

This report evaluates the quality of record matching between the Death in Custody Reporting Program (DCRP) and the National Death Index (NDI) database. The goal is to assess whether the NDI provides more complete and accurate information on cause of death (COD) than the DCRP data. The records of 17,358 inmates reported to have died in local jails and state prisons from 2007 to 2010 in the DCRP were matched to NDI database. Ninety-four percent of the death records found matches in the NDI. For matched records, the NDI provides significantly more International Classification Codes (ICD-10) per death record than DCRP data (2.5 vs. 1.1 codes per death). However, due to unmatched records, the overall rate of missing data on cause of death is higher in the NDI than in the DCRP (6.3% vs. 1.9%). Overall, 70% of matched records fall into the same broad categories of cause of death in NDI and DCRP, e.g. a DCRP cancer death was also listed as a cancer death in NDI. The agreement rate is higher for jail deaths than for prison deaths; for accidental deaths than for illness deaths, for single-cause deaths than for multiple-cause deaths; and for records with higher probabilistic match scores. Evidence suggests that differences in cause of death between the DCRP and NDI are due partly to record mismatches, partly to differences in COD categorization, as well as data and procedural differences between the DCRP and the NDI.

CONCURRENT SESSION A-2
DESIGNING WEB SURVEYS

Internet and Smartphone Coverage in a National Health Survey: Implications for Alternative Modes

Mick P. Couper, Jennifer Kelley, William Axinn, Heidi Guyer, James Wagner, and Brady West (Survey Research Center, University of Michigan)

The rise of Internet-enabled smartphones presents an opportunity to re-examine the issue of Internet coverage and its implications for coverage bias. While a number of papers have examined cell phone coverage and Internet coverage separately, few have looked at the possible compensatory effects of joint coverage. We added two interviewer observations (one on Internet access and the other on smartphone ownership among respondents) to the National Survey of Family Growth (NSFG) with a view to exploring the feasibility of Internet-based follow-up surveys. NSFG is a national probability survey of women and men age 15-44, using a continuous design. We examine 8 quarters (2 years) of data, from September 2012 to August 2014.

Overall, we find that 82.2% of respondent report Internet access and 76.1% report having a smartphone (estimates weighted for differential selection and nonresponse). Combined, this means that 89.4% have access to the Internet, either via traditional devices or via a smartphone. We also find some evidence of compensatory coverage when looking at key gender/race/age subgroups. For instance, while Black male teens (15-17) have the lowest rate of Internet access (74.9%) and the lowest rate of smartphone usage (58.9%), when combined 82.6% have some form of Internet access.

We propose to examine the socio-demographic correlates of Internet and smartphone (and combined) coverage (access) in this population. In addition, we propose to look at the effect of differential coverage on key estimates produced by the NSFG, related to fertility, family formation, and sexual activity. While this does not address nonresponse bias issues related to alternative modes, our paper has implications for possible coverage biases that may arise in switching to a Web-based mode of data collection, either for follow-up surveys or to replace the main face-to-face data collection.

Designing Web Surveys for Different Screen Sizes and Operating Systems: What Respondents are Using.

Robert D. Tortora (ICF International)

An overall principle of sound questionnaire design is to present the same stimulus to respondents to minimize the chance of introducing measurement error. With the increasing use of a variety of devices including Iphones, androids, tablets, and desktop and laptop computers that respondents can use to complete web surveys questionnaire designers face new challenges in designing web questionnaires to present the same stimulus. In order to make good design decisions ICF is collecting data on the frequency of use of these types of devices as well as on the type of operating system used. This data are collected for those that complete an ICF web survey and for those that login but either do not attempt the survey or breakoff before completing the web questionnaire. Paradata and metadata will be presented with the goal of aiding design decisions for web surveys to reduce potential measurement error.

Characteristics of the Population of Internet Panel Members

John M. Boyle, Naomi Freedner, and Tala Fakhouri (ICF International)

Despite concerns about the non-probability basis for web surveys, an increasing number of studies have found that sample estimates from web surveys compare favorably to those from probability surveys. Aside from the inability to apply probability statistics to these web surveys, potential users worry about how reliable are these estimates.

This paper examines one element that may contribute to the representativeness of web surveys, at least in certain circumstances. Who are the participants and non-participants of these now ubiquitous sources used in population estimates and how similar are they to the population they are meant to represent?

The purpose of this paper is to investigate the actual coverage of Internet panels, generally, among American adults. Rather than look at the composition of any one online survey, we consider the characteristics of the population who participate in any web based panel surveys. Since web panels frequently “partner” with other web panel organizations in order to generate samples that are larger, more diverse or more specific than what is available within their panel members, the population who participate in any web panels is more critical to evaluating coverage error and bias of this form of survey than specific coverage and bias errors in individual panels.

A national probability survey of adults was conducted using a dual frame, random digit dialing sample determined participation in Internet survey panels and frequency of participation. Using several classifications for web panelist, we compare the population characteristics of the universe of web panelists compared to the general public. These findings allow us to characterize the degree of coverage and bias associated with the general population of web panelists. We believe that this is the first step in understanding the issues associated with the representativeness and non-representativeness of web survey findings.

CONCURRENT SESSION A-3
NONRESPONSE ADJUSTMENT AND VARIANCE ESTIMATION

JOLTS Variance Estimation to Account for JOLTS-CES Alignment

Mark Crankshaw (Bureau of Labor Statistics) and Michael Sverchkov (Bureau of Labor Statistics)

The Bureau of Labor Statistics produces a monthly measure of labor demand and employment dynamics called the Job Opening and Labor Turnover survey (JOLTS). The JOLTS survey has aligned its implied employment change (hires minus separations) to the published CES employment change to enhance the reliability of JOLTS estimates. This change in estimation methodology, however, is not presently accounted for in JOLTS variance estimation.

To address this shortcoming, an extension of the current Balanced-Half Sample replication technique has been devised that will attempt to fully account for the JOLTS-CES alignment in JOLTS variance estimation. In essence, the extension consists of applying the JOLTS-CES alignment procedure to each replicate estimate and then building an estimate of variance from the aligned replicate estimates.

The proposed extension has been applied to historical JOLTS micro-data thus allowing a comparison to be made between the estimates of variation without accounting for JOLTS-CES alignment and the proposed extension of the balanced half sample that does.

Linearization Variance Estimators for Mixed-mode Survey Data when Response Indicators are Modeled as Discrete-time Survival

A. Demnati (Independent Consultant)

Collecting information from sampled units over the Internet or by mail is much more cost-efficient than conducting interviews. These methods make self-enumeration an attractive data-collection method for surveys and censuses. Despite the benefits associated with self-enumeration data collection— in particular Internet-based data collection— self-enumeration can produce low response rates compared to interviews. To increase response rates, non-respondents are subject to a mixed mode of follow-up treatments, which influence the resulting probability of response, to encourage them to participate. Because response occurrence is intrinsically conditional, I record response occurrence in discrete intervals, and I characterize the probability of response by a discrete time hazard. This approach facilitates examining when a response is most likely to occur and how the probability of responding varies over both time and follow-up treatments. I use regression analysis to investigate the effect of mixed-mode on the response probability. Factors and interactions are commonly treated in regression analyses, and have important implications for the interpretation of statistical models. The nonresponse bias can be avoided by multiplying the sampling weight of respondents by the inverse of an estimate of the response probability. Estimators and associated variance estimators of model parameters as well as of parameters of interest are studied. I take into account correlation over time for the same unit in variance estimation. As intensive follow-up is expensive, optimal resources allocation within stages of the survey design is a key issue. The proportion of resources that should be allocated to sampling, follow up, and data collection stages is determined by minimizing the variance subject to constraint on the survey global cost. Simulation results on the performance of the proposed estimators and associated variance estimators are also presented.

Weighting and Variance Estimation Plans for the 2016 National Household Survey

François Verret (Statistics Canada), Arthur Goussanou (Statistics Canada), and Nancy Devin (Statistics Canada)

In 2011, the quinquennial mandatory Canadian census long-form was replaced by the voluntary National Household Survey (NHS). As voluntary surveys typically have lower unit response rates than mandatory surveys, the census long-form methodologies were adapted in 2011 in order to reduce the risk of non-response bias. While every one in five household received the census long-form prior to 2011, one third of households are sampled in the NHS. To mitigate the risk of non-response bias the method of Hansen & Hurwitz (1946) for selecting a follow-up sub-sample of non-respondents is used.

The NHS will again be conducted in 2016. Methodologies will be adapted further, in particular estimation methodologies. The objectives in developing these are to improve upon the 2011 estimation methodologies, to adapt to the 2016 sample design and response/non-response patterns and to meet two new objectives related to variance estimation and dissemination. Planned research on the 2016 NHS estimation methodologies will be presented, as well as the foreseen methodologies at this stage of the research process. The following topics will be explored:
1. Handling departures from the Hansen & Hurwitz setting;
2. Calibration on a large number of census calibration totals without adversely affecting variance estimators;
3. Efficient estimation of the sampling and non-response variance while meeting the dissemination objectives and while respecting the operational constraints of this large-scale survey.

CONCURRENT SESSION A-4
IMPUTATION AND THE IMPACT OF NON-RESPONSE

Bias from Unit Non-Response in the Measurement of Income in Household Surveys

C. Adam Bee (U.S. Census Bureau), Graton M.R. Gathright (U.S. Census Bureau), and Bruce Meyer (University of Chicago)

Declining response rates to surveys is a widespread and troubling problem. Unit non-response (when a household is not interviewed at all) has been rising in most surveys. For example, unit non-response rates rose by 3-12 percentage points over the 1990s for six U.S. Census Bureau surveys (Atrostic et al. 2001). Many recent papers have raised the concern that this increased non-response has led to bias in key statistics. In light of this pattern, we propose a new method to evaluate and correct bias from unit non-response. Specifically, we use addresses to link the 2011 Current Population Survey Annual Social and Economic Supplement (CPS ASEC) to IRS Form 1040 records. This link allows us to compare several characteristics of respondents and non-respondents, including income, self-employment status, marital status, number of children, and the receipt of pensions and certain government benefits. We then compare our new methods of assessing bias to prior methods. Finally, we evaluate existing weighting methods and consider alternative weighting methods and other corrections.

Do Imputed Earnings Earn Their Keep? Evaluating SIPP Earnings and Non-Response with Administrative Records

Mark Klee (U.S. Census Bureau), Rebecca Chenevert (U.S. Census Bureau), and Kelly Wilkin (U.S. Census Bureau)

Recent evidence suggests that labor earnings reported in household surveys compare favorably with labor earnings in administrative records. On the other hand, imputed labor earnings in household surveys seem to match labor earnings in administrative records less closely. This finding has led many researchers to question the reliability of imputed labor earnings and to exclude these observations from wage analyses. However, this strategy might result in sample selection bias if labor earnings are not missing at random. In this paper, we compare reported and imputed labor earnings from the 2008 and 2014 panels of the Survey of Income and Program Participation (SIPP) to labor earnings from the Social Security Administration's Detailed Earnings Record. We examine how the relationship between survey data and administrative records varies across demographic groups. Finally, we characterize survey non-respondents in order to improve our understanding of whether and how individuals select out of response on observable dimensions.

Bridging a Survey Redesign Using Multiple Imputation: An Application to the 2014 CPS ASEC

Jonathan Rothbaum (U.S. Census Bureau)

The Current Population Survey Annual Social and Economic Supplement serves as the data source for income, inequality, and official source of poverty estimates in the United States. In 2014, the CPS ASEC questionnaire was redesigned to improve data quality and to reduce misreporting, item nonresponse, and errors resulting from respondent fatigue. The sample was split into two groups, with nearly 70% receiving the traditional instrument and 30% receiving the redesigned instrument. Due to the relatively small redesign sample, analyses of changes in income and poverty between this and future years may lack sufficient power. In this paper, I explore the possibility of using multiple imputation techniques to combine the two subsamples into a single sample that we can use to estimate income and poverty statistics with greater power and smaller standard errors. Multiple imputation is a general approach to analyzing data with missing values. I can treat the traditional sample as if the responses were missing for income sources targeted by the redesign and use multiple imputation to generate plausible responses. I use a flexible semiparametric imputation technique to place individuals into strata along two dimensions: 1) their probability of income recipiency and 2) their expected income conditional on recipiency for each income source. Within each stratum, I randomly select redesign individuals and donate their income recipiency, source, and value information to individuals in the traditional sample as the imputed data. By matching on these two dimensions this approach combines the ideas of propensity score matching (from the probability of recipiency strata) and predictive means matching (from expected income strata). In this paper, I implement this approach, use diagnostics to evaluate the matching models, and analyze the results.

CONCURRENT SESSION B-1

ABSTRACTION TO EXTRACTION: EXPERIENCES FROM THE NATIONAL HOSPITAL CARE SURVEY IN USING ADMINISTRATIVE CLAIMS AND ELECTRONIC HEALTH RECORD DATA

Using Uniform Bill (UB)-04 Administrative Claims Data to Describe Hospital-Based Care

Sonja Williams, Naga Shanmugam, Amy Brown, and Carol DeFrances (National Center for Health Statistics)

The National Hospital Care Survey (NHCS) is designed to describe national patterns of health care encounters in hospital-based settings. The goal of the NHCS is to move toward the collection of all inpatient and ambulatory data electronically over time. Hospitals can transmit either UB-04 administrative claims or electronic health record (EHR) data. Since EHR adoption and implementation is still in various stages, most hospitals participating in the NHCS send UB-04 claims data. This presentation focuses on the benefits and challenges encountered with the collection of UB-04 data. Benefits include the collection of personally identifiable information (PII) that allows for data linkages across hospital settings and to outside data sources such as the National Death Index; inclusion of data for outpatient settings that were previously excluded, and information on intensive care use and revisits. However, the collection of the UB-04 data has posed some challenges. Many hospitals could not send the UB-04 data in the desired file format so the data format specifications had to be expanded. Since more than one claim can be generated for a single episode of care, methods had to be developed to consolidate the data the multiple claims into one record. The identification of substance-involved emergency department visits from the UB-04 claims data has proved to be difficult so algorithms are being created utilizing diagnoses, procedure and symptom information to yield better results. In conclusion, session participants will gain an understanding of the benefits and challenges posed by the collection UB-04 administrative claims data from hospitals.

Acquiring survey data from Electronic Health Record Systems: Experiences from the National Hospital Care Survey (NHCS)

Kristi R. Eckerson (Emory University IPA to NCHS), Brian Gugerty, Anita Bercovitz, and Carol J. DeFrances (National Center for Health Statistics)

The NHCS provides accurate, objective, and timely data used to inform health policy and research about care provided by hospitals in inpatient, emergency, and outpatient departments. NHCS is designed to collect all data electronically. Initially, NCHS explored the use of hospital's UB-04 administrative claims, since it was felt the burden on hospitals would be minimal. More recently, hospitals are being asked to send EHR extracts as these data are expected to include clinical data which will present a more complete picture of health care utilization in the United States. This presentation discusses the multiple approaches that are being used to collect EHR-based data, including development of a standard for data reporting, working with hospitals and EHR vendors to extract data, and pulling data from existing hospital reports or discharge summaries. To achieve consistent and efficient acquisition of these data, NCHS developed an HL7 CDA® Implementation Guide which provides specifications for how each data element should be reported. NCHS is working directly with participating hospitals to create their own EHR extraction process and also working with leading EHR vendors to develop reusable software interfaces that extract the required data according to HL7 CDA standards. The variety of EHR approaches as well as the strengths and challenges posed by each will be presented and discussed.

Matching the National Hospital Care Survey records across settings and with outside data sources

Shaleah Levant and Monica L. Wolford (National Center for Health Statistics)

The collection of personally identifiable information (PII) in the National Hospital Care Survey (NHCS) allows for the creation of patient identifiers. NHCS employs a probability-based record linkage method to identify patients using incomplete, encounter-level PII. Using name (first, last, middle initial), date of birth, sex, hospital identifier, medical record number, and ZIP code, patients are identified and their records are linked. This presentation will explore two analyses that use the probability-based patient identifiers in order to begin to describe the continuum of care. First, we will describe the demographics of patients with multiple encounters, within and between inpatient, emergency department, and other outpatient department settings for the 2013 NHCS. Second, we will describe the preliminary 2011 NHCS data that have been linked to the National Death Index (NDI). A validation test has assessed a 94 percent match rate between NHCS in-hospital deaths and NDI death records. We will explore the demographics of patients with a 30-day post-discharge mortality. These analyses are a first step in describing the incredible potential that patient identifiers have to aid in the understanding of health care across hospital settings—emergency department, other outpatient departments, and inpatient care—as well as allow for the analysis of individual and provider characteristics associated with in-hospital and post-discharge mortality. The ability to match data across settings and with death records may be used to improve hospital care decisions in the future.

CONCURRENT SESSION B-2
STUDYING NON-PROBABILITY STUDIES

Evaluation of Strategies to Improve Utility of Estimates from a Non-probability Based Survey

Benmei Liu (National Cancer Institute), Sadeq R. Chowdhury (Agency for Healthcare Research and Quality), Janet deMoor (National Cancer Institute), Erin Kent (National Cancer Institute), Steven Machlin (Agency for Healthcare Research and Quality), Stephanie Nutt (LIVESTRONG Foundation), Anita Soni (Agency for Healthcare Research and Quality), Katherine S. Virgo (Emory University), Gordon B. Willis (National Cancer Institute), Maggie Wilson (National Cancer Institute), K. Robin Yabroff (National Cancer Institute), and the Interagency Consortium to Promote Health Economics Research on Cancer (HEROIC)

Response rates for probability-based sample surveys have been dropping precipitously. In addition, these surveys are generally expensive to conduct. These two facts have led to substantial interest in the use of non-probability-based surveys as an alternative. What is unclear, however, is the degree of bias and resultant effects on data quality introduced through use of a non-random selection approach. Poststratification/raking or propensity score adjustment weighting approaches are increasingly used in the literature as an attempt to reduce the bias of non-probability samples. Nonetheless, the findings are not consistent. In this research, we empirically examine the impact of applying weight adjustments to non-probability-based survey data and compare results to those obtained from a probability-based survey based on a similar questionnaire.

We compare the results obtained from a nationally representative probability-based mail survey: the 2011 Medical Expenditure Panel Survey (MEPS) *Experiences with Cancer* survey, with a non-probability-based opt-in internet survey: the 2012 LIVESTRONG Survey, in which the same questionnaire items were administered. We examine the extent to which the LIVESTRONG data, subsequent to the application of several different weighting strategies, are consistent with estimates obtained from the MEPS *Experiences with Cancer* survey with respect to population parameter estimation and measurement of key associations (through statistical regression analysis).

Results of both descriptive statistics and regression analyses for key outcomes obtained from both surveys will be compared. With appropriate caveats, the feasibility and implications of using non-probability-based surveys will be discussed. This research emerges concurrently with other ongoing research involving this topic. The findings from this study are expected to contribute to the survey methods field from a practical point of view, by indicating methods and conditions under which non-probability-based surveys may appropriately be utilized.

Response Rates and Response Bias in Web Panel Surveys

John M. Boyle (ICF International), Lew Berman (ICF International), Jamie Dayton (ICF International), Tala Fakhouri (ICF International), Ronaldo Iachan (ICF Interntional), Melanie Courtright (Research Now), and Kartik Pashupati (Research Now)

Non-probability samples, such as online panels, are increasingly accepted as “fit for purpose” for low incidence populations (e.g., pregnant women), difficult to reach populations (e.g., health care workers) and other special populations, particularly when time or cost make probability surveys infeasible. However, there is much less enthusiasm for the application of these methods in social science research for general populations. Aside from the issue of statistical generalizability, low response rates within the panel and demographic biases in the achieved samples are often cited (AAPOR 2010).

Are low response rates and demographic biases endemic to population surveys using web panels, or do they reflect the methods of particular surveys? Many web panel surveys are conducted in such a way that response rate cannot be calculated. In other cases, response rate is not reported. Further, most web surveys are not conducted to optimize response rate since sample is nearly unlimited and speed is often critically important to the client. In addition, biases in web surveys are usually identified by comparing the characteristics of the achieved sample to the population, which does not address the source of the error as the frame or the survey procedures.

This paper examines the application of two survey protocols in a general population survey conducted in the same community using a national web panel. Invitations will be sent to two Census balanced samples of 5,000 from the master panel, with the goal of achieving at least 500 completes in each sample. For the first protocol, invitations will be followed by a single reminder, an industry standard. For the second protocol, a robust reminder schedule including up to 4 reminders will be fielded over a three week period. Response rate is calculated as the proportion of invited respondents who complete the interview. Non-response bias is calculated by comparing the characteristics of responders and non-responders from their panel profile. Findings are compared across the two samples from the same community in the experiment.

Prediction-Enhanced Generalized Regression for Estimation from Purposive Supplements to Probability Samples

Avinash C. Singh (NORC at the University of Chicago) and Yongheng Lin (NORC at the University of Chicago)

With the growing demand for Fit-For-Purpose Surveys to save cost by not using rigorous data collection methods, old issues of whether suitable inferences can be made from purposive or nonprobability samples are again at the forefront. For purposive samples, design-based methods are clearly not suitable. There is, however, the possibility of using model-based methods but they assume the design to be non-informative; i.e., the model is assumed to hold for the sample so that an asymptotically optimal and consistent prediction of the unseen total from the seen can be made under the model. In addition to the above concern, a second concern with any model-based method is that it is subject to potential mis-specification of the model mean resulting in bias even if the design is non-informative. To overcome these concerns, an alternative approach termed Model-Over-Design (MOD)-Integration for a simplified problem is proposed under the joint design-model randomization where the availability of a core probability sample for which the purposive sample acts as a supplement is assumed. In MOD-Integration method, a regression model is first fit using the probability sample accounting for the possibility of an informative design. A design-based estimate such as GREG is constructed which uses a correction for model-error to the mean predictor (i.e., the synthetic estimator). Next, the above model-error correction is enhanced by using a supplementary prediction from the seen in the purposive sample assuming that the model mean is correctly specified and the model errors are uncorrelated with the conceptual selection probabilities of units from the population that could be selected in the purposive sample. Following the simulation experiment of Hansen, Madow and Tepping (1983), the proposed method is compared with alternative pure design and model-based methods. An application to real data from NORC Technology survey (ABS supplemented with email blast) is also considered.

CONCURRENT SESSION B-3
IMPROVEMENTS IN SURVEY ESTIMATION METHODOLOGY

Some Thoughts on Fitting Regression Models to Complex Survey Data

Phillip S. Kott (RTI International)

A question often asked when fitting a regression model to complex survey data is whether the sampling weights need to be incorporated into the estimation. A less often asked, but equally important, question is whether the model fits the data at all. To answer to second question, one need to define what “fitting the data” means. Survey statisticians conventionally *unask* that question by treating what would be the maximum-likelihood estimates were complete information from the full population available as the targets of estimation. They generally ignore the question of whether such estimates have any intrinsic meaning.

A more sensible approach begins by assuming some form of the *standard model* under which the expected difference between the model’s dependent variable and its predicted value in the population is zero no matter what values the model’s covariates take. No further assumption about the distributions of this difference need be made. Since this difference can depend on the weights, the weights – or some function of the weights – may need to be incorporated when estimating the parameters of the standard model with complex survey data.

The standard model, although quite general, may nonetheless fail. When it does, it can be replaced by an *extended model* in which the difference between the dependent variable and its predicted value need only be uncorrelated with the covariates. Assuming only an extended model produces the same estimates as the conventional quasi-maximum-likelihood approach when fitting a linear or binary logistical regression equation to complex survey data. The two method diverge, however, when fitting a cumulative logistic (proportional-odds) model. The repercussions of this divergence are explored. It turns out that most “design-based” software can fit and evaluate a generalized cumulative logistic model under the standard-model/extended-model framework. Tests for model and weight selection using such software are also discussed.

Comparative Study of Confidence Intervals for Proportions in Complex Sample Surveys

Carolina Franco (U.S. Census Bureau), Roderick J. A. Little (University of Michigan), Thomas A. Louis, (U.S. Census Bureau and John Hopkins University), and Eric V. Slud, (U.S. Census Bureau and University of Maryland).

Perhaps the most widely used method of computing confidence intervals in complex surveys is to add and subtract the margin of error (MOE) from the point estimator, where the MOE is computed as an estimate of the sampling error times the appropriate quantile of the normal distribution. Such a method is used, for instance, by the American Community Survey (ACS), the largest US household survey. For inference on proportions with moderate sample sizes this method often results in marked under-coverage. For example, the Wald interval is of this form and applies to the special case of a Simple Random Sample (SRS) with replacement. The erratic coverage properties of the Wald interval have been well documented in the literature (Brown et al, 2001, 2002). In the complex survey case, the problem is further compounded by possible dependence among observations and unequal weighting. A common strategy for constructing confidence intervals for proportions using data from complex surveys is to adjust intervals meant for simple binomial proportions by the design effect. We adopt this strategy and apply it to seven intervals, including the Wald interval. We design and implement a simulation that controls and measures the impact of many features thought to affect the performance of confidence intervals for proportions, including clustering, stratification, misspecification of variances, and patterns of variation of stratum sampling fractions and stratum survey-attribute proportions. We compare the intervals focusing on properties such as coverage, length and symmetry of coverage. Since the MOE-based interval so often under-covers, there is great potential for improved reporting of uncertainty in surveys like the ACS, which generates millions of estimates of proportions each year.

Total Variability Measures for Selected Quarterly Workforce Indicators and LEHD Origin Destination Employment Statistics in OnTheMap

Kevin L. McKinney (U.S. Census Bureau), Andrew S. Green (Cornell University and U.S. Census Bureau), Lars Vilhuber (Cornell University and U.S. Census Bureau), and John M. Abowd (Cornell University and U.S. Census Bureau)

We report results from the first comprehensive total quality evaluation of five major indicators in the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) Program Quarterly Workforce Indicators (QWI): beginning-of-quarter employment, full-quarter employment, average monthly earnings of full-quarter employees, total quarterly flow employment, and total quarterly payroll. Beginning-of-quarter employment is also the main tabulation variable in the LEHD Origin-Destination Employment Statistics (LODES) workplace reports as displayed in the Census Bureau's interactive data feature OnTheMap (OTM). The evaluation is conducted using the multiple threads (implicates) generated by the edit and imputation models used in the LEHD Infrastructure File System. These threads conform to the Rubin (1987) multiple imputation model. Each implicate is the output of formal probability models that address coverage, edit and imputation errors. Design-based sampling variability and finite population corrections are also included in the evaluation. We derive special formulas for the Rubin total variability and its components that are consistent with the disclosure avoidance system used for QWI and LODES/OTM workplace reports. These formulas allow us to publish the complete set of detailed total quality measures for QWI and LODES. The analysis reveals that the five publication variables under study are estimated very accurately for tabulations involving at least 10 jobs. Tabulations involving three to nine jobs have acceptable quality. Tabulations involving one or two jobs, which are generally suppressed in the QWI, have substantial total variability but their publication in LODES allows the formation of larger custom aggregations, which will in general have the accuracy estimated for tabulations in the QWI of similar magnitude.

CONCURRENT SESSION B-4
ECONOMIC STATISTICS

Characteristics of Special Purpose Entities in Measures of U.S. Direct Investment Abroad

Dylan G. Rassier (Bureau of Economic Analysis)

Under international guidelines, official statistics on international trade and investment include transactions and positions within multinational enterprises (MNEs). A complicating factor in the interpretation and understanding of the official statistics is the role of transactions and positions for MNEs structured with one or more special purpose entities (SPEs). SPEs generally have little or no physical presence and little or no economic activity. Examples include finance and holding companies, royalty and licensing companies, and leasing companies. The international guidelines recommend transactions with SPEs and positions in SPEs be included in official statistics, but the guidelines also recommend supplemental information be provided to better understand the role of SPEs.

While recent research explores the effects of SPEs on some U.S. statistics, very little is known about the underlying characteristics of SPEs included in transactions and positions on U.S. direct investment abroad (USDIA). Thus, this paper provides an empirical look at SPEs included in transactions and positions on USDIA. In particular, the paper presents financial and operating characteristics of non-resident SPEs that are sponsored by U.S. MNEs using data collected by the U.S. Bureau of Economic Analysis on U.S. parents and their foreign affiliates. The analysis includes mean comparison tests of non-resident SPEs with their non-resident, non-SPE counterparts and includes estimates of the dual cost functions for SPEs and non-SPEs based on reported sales as a proxy for costs and measured value-added as a proxy for output.

Preliminary results reveal a large number of non-resident SPEs sponsored by U.S. MNEs. In addition, preliminary results indicate significant differences between reported balance sheet components and reported income statement components of non-resident SPEs and their non-resident, non-SPE counterparts. Significant differences also result for measured value-added attributed to SPEs and non-SPEs. However, the effects of measured value-added on reported sales are mixed for SPEs and non-SPEs.

Building a Taxonomy and Lexicon of Terms and Concepts at BLS

Daniel Gillman (Bureau of Labor Statistics), Elizabeth Ashack (Bureau of Labor Statistics), Daniel Chow (Bureau of Labor Statistics), Ronald Johnson (Bureau of Labor Statistics), Karen Kosanovich (Bureau of Labor Statistics), Nicole Nestoriak (Bureau of Labor Statistics), Ann Norris (Bureau of Labor Statistics), Garrett Schmitt (Bureau of Labor Statistics), and Clayton Waring (Bureau of Labor Statistics)

The taxonomy and lexicon project at the U.S. Bureau of Labor Statistics was started in summer 2013 with the aim to provide consistent access to BLS data and documents. The goals are to ensure each search criterion provide data and documents that are related and to provide non-technical (plain) English words to less experienced users to help guide them to the data and documents that meet their needs. The taxonomy portion of the work aims to improve searching for data, and the lexicon portion is intended to improve tagging, cataloging, and searching for documents. The work has advanced significantly since it was initiated, through discrete phases. The third phase is ongoing.

Phase 1 was focused on requirements gathering, identification of useful plain English words, and collecting technical terms and definitions. In Phase 2, the work to identify plain English words was completed, and all terms and words were organized into a multi-hierarchy taxonomy. Phase 3 includes work to improve the quality of the taxonomy and produce the lexicon. Use of focus groups and other techniques for cognitive testing of the taxonomy is planned.

The taxonomy is divided into facets – separate, independent hierarchies – for both measures and characteristics (the classifications used as dimensions in cross-tabulated data). Every underlying series can be reached by paths through the hierarchies of each facet. Now, the taxonomy is being used to improve the user interface for the new DataFinder series dissemination tool under development. Other uses are planned.

As in any development project, the taxonomy produced so far is not error-free. Many areas for improvement were identified at the end of Phase 2. We anticipate the work on quality in Phase 3 will address these concerns.

The paper will contain descriptions of all the work so far and plans for the future.

New Technology Indicator for Technological Progress

Wendy Li (Bureau of Economic Analysis)

Technological progress is the main driver of long-run economic growth. Economists have relied on the growth accounting framework to measure the multifactor productivity (MFP) growth, which serves as an indicator of a country's pace of technology progress. However, Griliches (1996) argues that the measurement of MFP growth is just a measurement of ignorance and economists have criticized that the MFP measurement is just a point estimate without a robustness check (Manski, 2014). Furthermore, as OECD countries have started capitalizing research and development (R&D) in national accounts, the change of the MFP growth after capitalizing R&D may cause more puzzles than reflect the true nature of technological progress across countries and across industries. For example, the change of U.S. new MFP growth between the period of 1998 to 2007 and the period of 2009 to 2012 are -0.20% for information technology (IT) producing industries, 0.05% for IT using industries, 0.51% for non-IT industries (Rosenthal et al., 2014). The latest result from the U.S. indicates that during the period of 1998 to 2012, the non-IT industries have experienced a faster pace of technological growth than the IT industries, which contradicts the general consensus. As pointed out by OECD productivity measurement manual, there is no straightforward link between MFP and technical changes, and R&D investments only explain a small portion of overall annual movements in MFP.

This paper proposes a new technology indicator, the R&D depreciation rate by country and by industry. I conduct the study on four high-tech intensive industries over five different countries. The estimates of the R&D depreciate rates using these data provide several important results. First, in each industry, the country ranking in technological competitiveness, measured by industry-level R&D depreciation rate, is consistent to the country ranking on Forbes' global 2000 list. Second, when I compare the results between the U.S. and Japan for four industries, the country with a lower industry-level R&D depreciation rate has a higher industry-level MFP. Third, the information derived from the time-varying R&D depreciation rates for the motors and the computer, electronic, and optical products industries in Japan and the U.S. is consistent with the historic studies in these two industries over the decade of the 2000s. The importance of the R&D depreciation rate is beyond the calculation of capital service flow and the construction of capital stock. The R&D depreciation rate can provide valuable information about the pace of technological progress and relative technological competitiveness across countries.

CONCURRENT SESSION C-1
LINKING DATA TO GENERATE NEW STATISTICS: JOBS, PATENTS, AND FDI

Two Perspectives on Commuting and Workplace: A Microdata Comparison of Home to Work Flows Across Linked Survey and Administrative Files

Andrew Green (U.S. Census Bureau, Cornell University), Mark J. Kutzbach (U.S. Census Bureau), and Lars Vilhuber (U.S. Census Bureau, Cornell University)

Commuting flows and workplace employment data have a wide constituency of users including urban and regional planners, social science and transportation researchers, and businesses. The U.S. Census Bureau releases two, national data products that give the magnitude and characteristics of home to work flows. The American Community Survey (ACS) tabulates employment responses and commuting statistics. The Longitudinal Employer-Household Dynamics (LEHD) program tabulates job records in the LEHD Origin-Destination Employment Statistics (LODES). Differences in the domains, job definitions, and confidentiality protection measures across the datasets lead to divergence in comparable statistics, such as county-to-county aggregate commute flows. To understand these differences, this study compares ACS and LEHD source files, using probabilistic matching to join survey responses with job records. In our assessment, we compare employment status, home and work locations, commute distance, and other job characteristics at a person level, and identify person or job characteristics that are associated with or explain these differences. We discuss implications of match quality and the matching methodology for our comparison results.

An ‘Algorithmic Links with Probabilities’ Crosswalk for USPC Codes

Nikolas J. Zolas (U.S. Census Bureau), Nathan Goldschlag (U.S. Census Bureau), and Travis J. Lybbert (University of California, Davis)

Patents are a useful proxy for innovation and technological change and diffusion. However, fully exploiting patent data for such economic analyses requires patents be tied to measures of economic activity, which has proven to be difficult. Recently, Lybbert and Zolas (2014) have constructed an International Patent Classification (IPC) to industry data crosswalk that incorporates several ‘Big Data’ elements and was dubbed an ‘Algorithmic Links with Probabilities’ approach. In this paper, we utilize a similar approach and apply it to a new patent classification index, the U.S. Patent Classification (USPC) system. The result is a USPC-Industry concordance that links U.S. patents to the North American Industrial Classification System (NAICS), International Standard Industrial Classification (ISIC), Harmonized System (HS) and Standard International Trade Classification (SITC). As a result of this linkage, it is possible to cross-analyze the USPC-IPC link for patents and allows researchers using U.S. patents to link them with a host of economic data that varies at the industry level. We demonstrate potential uses of the crosswalk and how it can be applied to measure patenting intensity across different sectors of the economy and patenting trends.

Linking BEA Surveys of Foreign Direct Investment in the United States with BLS Register and Survey Data: Twenty First Century Methods and Preliminary Findings

Elizabeth Weber Handwerker (Bureau of Labor Statistics), Mina Kim (Bureau of Labor Statistics), Lowell Mason (Bureau of Labor Statistics), and David Talan (Bureau of Labor Statistics)

One data gap that users mention often is the need to measure the employment effects from inward foreign direct investment. Since building new surveys can be expensive and can take several years to implement, we propose to create these measures by linking existing survey data on foreign direct investment with business register data.

The U.S. Bureau of Labor Statistics (BLS) uses its Business Register to publish measures of employment dynamics and entrepreneurship which are released quarterly by its Business Employment Dynamics (BED) program. The U.S. Bureau of Economic Analysis (BEA) collects information on foreign direct investment through annual surveys. BEA conducts these surveys to estimate U.S. assets overseas and foreign ownership of U.S. assets.

This paper lays out the conceptual framework for developing indicators of employment and wages related to FDI by linking survey micro-data from BEA with BLS business register micro-data. This paper describes the methodology for generating these measures, the linking process and results, as well as some of the challenges and caveats associated with this approach. The paper then presents preliminary results and opportunities for future work.

CONCURRENT SESSION C-2
EVALUATION OF SURVEYS THROUGH PRETESTING AND OTHER COGNITIVE METHODS

Retrieval of Autobiographical Information

Erica Yu (Bureau of Labor Statistics) and Scott Fricker (Bureau of Labor Statistics)

Questions about past behavior often require respondents to retrieve information from autobiographical memory – a combination of personal experiences (episodic memory) and general knowledge (semantic). An example would be recalling whether you recently purchased any sweaters and, if so, the price that you paid. The retrieval of autobiographical information is fundamental to the design of survey questions and yet remains poorly understood. The design of recall questions and how they facilitate or inhibit recall may affect data quality and respondent burden. We explore this issue with the Consumer Expenditure Survey.

Participants in an online free recall study reported five recent expenditures in a sequence. Participants were then asked to describe why each reported item in the sequence came to mind. Example reasons include: the expenditures being by or for the same person, purchased from the same store, or purchased for a shared purpose. The expenditures and reasons were then coded by two independent coders. These codes were analyzed to understand whether systematic retrieval strategies exist across individuals, what factors influence the use of different strategies, and whether different retrieval strategies are associated with data quality and respondent burden.

The main takeaway of this presentation is about how researchers can utilize these findings to optimize retrieval of autobiographical information in surveys. The audience will hear about why consideration of respondent response formulation processes such as retrieval of information are important and which retrieval strategies individuals may be using in surveys. Audience members may consider incorporating retrieval strategies into instrument design decisions and survey instructions.

The Science of Usability Testing

Jean E. Fox (Bureau of Labor Statistics)

Usability testing has evolved from the stringent methods of experimental psychology, to less controlled, more qualitative tests, to the wide variety of methods used today. During that time, researchers have studied many aspects of usability testing with the goal of better understanding how they work. In this presentation, I will discuss the methods researchers have used to study usability testing. I will then present some of this research and what it means for conducting usability tests.

Specifically, I will explore research that addresses the following usability test design choices:

- With federal usability tests, we often run fewer than 10 participants. How does the sample size impact the results? How many participants *should* we have?
- Usability tests are often run by just one person. How can this practice influence the findings? What impact does the "Evaluator Effect" have on the results and recommendations?
- We often encourage participants to think aloud during usability tests. How does this practice affect the test results?
- Many practitioners are now using remote, unmoderated tests, where participants complete the tests on their own over the internet. This approach is attractive because it can provide input from a diverse sample quickly. But how does it compare to standard in-person usability tests?

Understanding this research is critical to ensure that we run sound usability tests and are unbiased in our interpretation of the results. The material covered in this presentation will help attendees run better usability tests and be more aware of factors that can influence their findings.

Using Graphics to Convey Complex Survey Concepts

Heidi M. St. Onge (U.S. Census Bureau) and Rebecca L. Morrison (National Science Foundation)

The State Government Research and Development Survey (SGRD) is conducted biennially, and collects information from state government agencies concerning their expenditures for research and development (R&D) via a self-administered web instrument. The survey collects data on both R&D that is performed by the state agency itself, as well as the R&D it funds outside the agency. The current survey universe is comprised of approximately 400 state-level agencies in the United States; some states have only one agency involved in R&D, while other states have many.

The survey has been in existence since 2006. Due to the complexity of the survey content, the current web instrument relies on an abundance of words in order to convey critical concepts necessary for accurate reporting. However, recent cognitive interviews with respondents indicated the number of words may be detrimental to accurate responses. Respondents often skipped over key words and phrases that are intended to help them determine a) which expenditures should be reported on the survey, and which should not, and b) which expenditure types should be reported in each survey question. Cognitive interview respondents also indicated that discussions with survey staff were useful in sorting out these details; unfortunately, interviews with a small number of agencies that are widely geographically dispersed are cost-prohibitive.

Instead of employing interviewers to assist respondents with survey completion, researchers developed simple diagrams that would accompany selected questions found in the web instrument. The presentation will show examples of the diagrams and text tested in cognitive interviews, provide feedback from respondents on their utility, and describe how the diagrams will be displayed in the upcoming deployment of the survey. It will also describe some of the challenges in implementing unique features for one survey within a system designed for multiple surveys.

Using eye-tracking to understand how fourth grade students answer matrix items

Aaron Maitland (Westat), Hanyu Sun (Westat), Andrew Caporaso (Westat), Roger Tourangeau (Westat), Jonas Bertling (Education Testing Service), and Debby Almonte (Education Testing Service)

Eye-tracking has been used to better understand the survey response process. For instance, eye-tracking has been used to identify questions that are difficult to comprehend, how to present long lists of response options, and to measure the length of fixation on definitions in Web surveys. Matrix questions have been commonly used in Web surveys as well as in other types of surveys. The literature shows respondents took less time to answer questions when they were presented in a matrix than when they were presented individually across separate pages or screens. The use of matrix questions, however, may also be associated with several undesirable outcomes, including higher breakoff rates, higher missing data rates, and straightlining. Relatively little is known about how children answer matrix questions. This paper demonstrates how eye-tracking was used to determine the feasibility of using matrix questions to measure the background characteristics of students in the National Assessment of Educational Progress (NAEP) questionnaire. Fourth grade students were answered both matrix and discrete versions of questions on tablet computers while wearing real-world eye tracking glasses. This study addresses four research questions related to the use of eye-tracking to test survey questions. First, we examine whether matrix items require more effort to answer than discrete items for fourth grade students. Second, we investigate how the processing of sub items change within a matrix. Third, we examine how the processing of questions change over time. In order to address these research questions, we examine difference in the mean number of fixations per word and the mean duration per word for matrix and discrete questions. Overall, the study finds support for the use of matrix questions with fourth grade students in the NAEP. Implications for the use of eye-tracking equipment to evaluate survey questions are also discussed.

Reliability Testing of the Walking Environment Module

Stephanie L. Fowler (National Cancer Institute), Gordon Willis (National Cancer Institute), Rebecca Ferrer (National Cancer Institute), and David Berrigan (National Cancer Institute)

Many data elements in the Federal Statistical System are obtained via standardized survey questions. It is well established that such questions and groups of questions addressing more complex constructs may be improved through the use of reliability and validity studies, cognitive testing, and analyses of the psychometric properties of alternative versions. Additionally, a growing body of evidence has identified contextual factors that influence responses such as question order and mode of administration. However, testing of Federal survey questions, especially those in health surveys, has sometimes been limited because of cost and difficulties in obtaining samples for studies.

In this study we will describe our experiences using Amazon's Mechanical Turk (mTurk) to measure reliability, obtain responses to a module of questions for psychometric analyses, examine question order effects, and explore the utility of a web-based platform for implementing structured cognitive probes concerning question meaning. The survey questions we used concern perceptions of the environment for walking and the frequency and duration of walking for transportation and leisure. These questions have already undergone cognitive testing and have been fielded in the 2015 Cancer Control Supplement of the National Health Interview Survey (NHIS).The cognitive probes we are implementing in the online platform were based on those administered in person during pretesting of the survey module. We intend to contrast the response to in-person cognitive interview questions with responses received in free text fields in the mTurk platform.

To date, we have received OMB approval for our study design and anticipate fielding the questions in mTurk in June of 2015. Similar studies in our Program have obtained 1000+ samples in less than one day. Thus we anticipate sharing results as well as information about the study design at FSCSM 2015.

CONCURRENT SESSION C-3
APPLICATION OF BAYESIAN METHODS

Evaluating the alignment of grant allocation and community need using Bayesian spatial probit models: A case study of AmeriCorps

Robin Ghertner (Corporation for National and Community Service) and Katie Seely-Gant (Corporation for National and Community Service)

Many federal grants are intended to be allocated based on community need. Evaluating this premise is challenging because of complex spatial relationships among communities and grantees. Both communities in need and grantees tend to cluster geographically, which must be properly accounted for. Additionally, spatial algorithms can be computationally burdensome. We estimated a spatial autoregressive probit model using Bayesian MCMC methods via open source packages in R, and sped up data management and estimation using sparse matrices and parallel processing. Data were drawn from ACS, County Health Status Indicators, Common Core of Data, and other federal sources, to create indicators of need as well as control variables to account for competing explanations. Results show significant spatial dependency, and controlling for this dependency attenuated the relationships between need and allocation. In general, the location of AmeriCorps grantees have a moderate alignment with economic and educational need, but are poorly aligned with health needs. Implications for AmeriCorps and other federal grant programs are discussed, both with respect to the study findings and the analytical methods.

Bayesian Estimation Under Informative Sampling

Terrance D. Savitsky (Bureau of Labor Statistics)

An informative sampling design assigns probabilities of inclusion that are correlatedwith the response of interest and often induces a dependence among sampled observations. It is well-known that model-based inference performed on data acquired under an informative sampling design will be biased for estimation of the joint distribution of model parameters supposed to generate the population from which the sample was drawn. Known marginal inclusion probabilities assigned through the sampling design may be used to weight the likelihood contribution of each observed unit to form a “pseudo” posterior distribution with the practical intent to “undo” the design for inference about the population. This paper extends a theoretical result on consistency of the posterior distribution, defined on an analyst-specified model space, at the true generating distribution to the sampling-weighted pseudo posterior distribution used to account for an informative sampling design. We construct conditions on known marginal and pairwise inclusion probabilities that define a class of sampling designs where consistency of the pseudo posterior is achieved, inprobability. We perform a simulation study and provide an application for data acquired under the allowable class of sampling designs that demonstrate the result.

Statistical Considerations in Validating Clinical Quality Measures

Derekh Cornwell (Mathematica Policy Research), Fei Xing (Mathematica Policy Research), Juan-Diego Astudillo (Mathematica Policy Research), Michael Sinclair (Mathematica Policy Research), Nancy Sonnenfeld (Centers for Medicare and Medicaid Services), and Mihir Patel (Centers for Medicare and Medicaid Services)

The Centers for Medicare & Medicaid Services (CMS) conducts voluntary Hospital Inpatient Quality Reporting (IQR) to improve information about hospital quality and performance. As a reporting incentive, annual payment updates (APUs) in Medicare depend on these hospital performance measures. To maintain accurate reporting of hospital performance measures, CMS conducts validation of hospital reported data on a sample of cases. CMS compares the medical records to the hospital reports on the sample cases and examines the discrepancies.

We will explore properties of standard parametric statistical tests relying on the Normal or Student's t distribution. We will then compare results for confidence intervals using (1) nonparametric tests in the presence of smaller samples; (2) Empirical Bayes estimation, which may be particularly attractive when a program has a rich history of data and population covariates available; and (3) model-based estimation methods. We discuss the tradeoffs of these methods and offer guidance for different methods. These results will inform future validation designs.

A Bayesian Hierarchical Model for Combining Several Crop Yield Indications

Nathan Cruze (National Agricultural Statistics Service)

The USDA National Agricultural Statistics Service conducts multiple surveys over the course of a growing season. Each of these surveys reflects current growing conditions and provides a prediction of end-of-season crop yield. In particular NASS conducts two interview-based surveys and one field measurement survey from which indications of crop yield may be obtained. It is also known that a number of weather conditions during the growing season may contribute to changes in crop yield. This talk describes a Bayesian hierarchical model which improves end-of-season crop yield predictions by combining these several disparate sources of information. The model incorporates benchmarking of state-level forecasts with regional forecasts of crop yield and gives rise to rigorous measures of uncertainty. It also permits a useful decomposition with respect to the emphasis placed on each information source. Several aspects of covariates selection and model performance are discussed.

CONCURRENT SESSION C-4
ADAPTIVE DESIGN I

2015 National Survey of College Graduates: Enhancing the Use of Adaptive Design

John Finamore (National Science Foundation), Stephanie Coffey (U.S. Census Bureau), and Benjamin Reist (U.S. Census Bureau)

A major goal of adaptive design is to increase the efficiency of survey operations while maintaining or improving survey data quality. The 2013 NSCG adaptive design study showed that it is possible to monitor data as it is being collected and use the monitoring results to inform data collection interventions with potential to improve data quality and reduce survey costs.

Now that our ability incorporate adaptive design techniques in a large-scale national survey has been established, our current goal is to enhance the use of adaptive design. The 2015 NSCG will include an expanded adaptive design methodology study that includes a larger sample and, taking advantage of the longitudinal nature of the NSCG data, explores the use of adaptive design techniques on both new and returning sample members. The 2015 NSCG study will explore monitoring metrics and data collection interventions in an effort to address the survey issues most important for the NSCG, including nonresponse bias, data timeliness, and survey costs.
For adaptive design methodology to advance, studies that result in definitive statements about the impact of various data monitoring techniques and data collection interventions must be conducted and documented. The 2015 NSCG adaptive design study will use a sample size that provides the statistical power necessary to make more definitive statements about statistical differences between the study group and the control group on various measures, including response rates, R-indicators, cost, and effect on key estimates. The hope is that the 2015 NSCG study will add significantly to the existing survey methodology literature on adaptive design.

We will discuss developing the 2015 NSCG adaptive design study and the data monitoring metrics and data collection interventions within the study. We will present initial study results and potential implications for using adaptive design techniques in future survey cycles.

Investigating Nonresponse Subsampling in an Establishment Survey Through Embedded Experiments

Katherine Jenny Thompson (U.S. Census Bureau) and Stephen J. Kaputa (U.S. Census Bureau)

Adaptive design strategies for data collection are intended to increase the quality of response data even under a reduced survey budget. In this framework, the U.S. Census Bureau is investigating nonresponse subsampling strategies, including a systematic sample of nonrespondents sorted by a measure of size, for use in the 2017 Economic Census. Our previous research has explored this design change using an optimally allocated subsample of nonrespondents with the objective of selecting systematic samples in domains that have lower initial response. By concentrating nonresponse follow-up efforts in domains that have low response we attempt to balance response rates to reduce the effect of nonresponse bias. However, we found subsampling nonrespondents this way without changing the data collection procedure may have minimal tangible benefits besides cost reduction. Improving the data collection procedure to target “hard to reach” establishments that were selected for nonresponse subsampling is likely to improve estimates. In this presentation, we present the results of a field experiment, embedded in the 2014 Annual Survey of Manufactures (ASM), designed to test contact strategies for selected small units Then, we present the design and discuss the proposed analysis strategy for a subsequent embedded experiment in the 2015 ASM, which pairs our proposed nonrespondent subsampling design with the most effective follow-up procedures determined from the 2014 test.

Adept Adaptations: Developing Alternative Strategies in Adaptive Survey Designs

Jaki McCarthy (National Agricultural Statistical Service) and Tyler Wilson (National Agricultural Statistical Service)

Many surveys are turning to adaptive survey designs in their data collection to minimize costs, reduce non-response bias or improve data quality. By identifying key design features affecting survey costs and errors, program managers can either proactively adapt or dynamically respond by altering those features in the survey data collection. Thus multiple “phases” of a survey with differing conditions are combined in estimation. Common examples of alternative procedures include increasing or capping phone call attempts or prioritizing cases for interviewers so targeted cases are attempted before other cases. However, for some surveys it may not be easy to identify alternative procedures to be employed in data collection. NASS has been testing the use of adaptive design in the Agricultural Resource Management Survey (ARMS). This long and challenging survey uses a mail questionnaire with in-person follow up for all initial nonrespondents. ARMS is an establishment survey with rich frame data. We used this information to develop response propensity models that predict, before data collection begins, the sampled units’ likelihood of response. We could use this information to prioritize cases for follow-up. But because this survey already features an in-person follow-up interview over a relatively long field period, it was not obvious what alternative data collection procedures we could use in an adaptive design. This talk will discuss how we identified a subset of units to target and developed the alternative procedures for those units. We developed these procedures based on feedback from field enumerators, input from survey program managers and principles of social psychology. How these new procedures were received by NASS staff as well as whether these procedures were effective for increasing response in our target records will be discussed. This case study may provide an effective method of developing alternative procedures in adaptive designs for other survey organizations.

Adaptive Design Experimentation in the High School Longitudinal Study of 2009 Second Follow-up Field Test: Investigating Incentive Treatments

Elise M. Christopher (National Center for Education Statistics)

The National Center for Education Statistics (NCES) has been working in recent years to improve declining response rates in its sample surveys. Across multiple longitudinal and cross-sectional surveys, several methods of adaptive design have been tested. Using models to determine likelihood to introduce bias should sample members not respond, NCES has effectively discerned which sample members to target for special intervention, in order to boost response rates. However, it is clear that sample members' propensity to respond is not always strongly correlated with their likelihood to introduce bias if they do not respond, necessitating more research on tailored ways to encourage response. Incentives and other treatments thus become an important area of investigation. This presentation describes the adaptive design approach that NCES used in the High School Longitudinal Study of 2009 (HSLS:09) Second Follow-up Field Test, conducted in spring and summer, 2015. This field test examined the effectiveness of several types of incentive treatments to encourage sample member response. The comparative effectiveness of four treatment methods will be discussed: 1) prepaid incentives, 2) response-contingent incentives, 3) incentive boosts, and 4) an abbreviated interview. The paper will describe the results from the adaptive design experiment and the plans for implementation of the findings in full-scale data collection in 2016.

CONCURRENT SESSION D-1
IMPUTATION, MULTIPLE IMPUTATION AND ADMINISTRATIVE RECORDS

Treatment of Missing Data in Hierarchically-Structured Administrative Records: A Case Study in the Bakken Region Using FBI's National Incident Based Reporting System

Dan Liao (RTI International), Marcus Berzofsky (RTI International), David Heller (RTI International), Kelle Barrick (RTI International), Matthew DeMichele (RTI International) Kim Martin (Bureau of Justice Statistics), and Alexia Cooper (Bureau of Justice Statistics)

In response to the growing reliance upon administrative records to generate national estimates of key indicators of interest, federal statistical agencies have been expanding and enhancing activities to assess and improve the quality of data collected through administrative records systems. Given that administrative records are often collected across different agencies or local reporting units, encountering missing data at both the individual and aggregated levels is inevitable and must be addressed when developing estimates.

The National Incident-Based Reporting System (NIBRS) is a system designed to collect data from administrative records to be used for research and statistical purposes. It was developed by the FBI as part of its Uniform Crime Reporting (UCR) Program to present comprehensive information about crime incidents. In this paper, we present an imputation method developed to treat missing data in NIBRS by leveraging other relevant external data sources. Given the hierarchical structure of NIBRS, this particular method addresses missing data occurring at multiple levels, including: a) incident level, due to item missing within each incident; b) agency level by month, due to some agencies reporting only for a partial year; c) agency level by year, due to some agencies not submitting data to NIBRS for an entire year. The proposed method will be applied to a study in the Bakken region of the US that utilizes the NIBRS data to examine how crime and law enforcement changed in the region as oil production increased from 2006 to 2012. A variance estimation method will also be presented to evaluate the uncertainties in our estimates introduced by this imputation technique. In a broad sense, this research also can be viewed as an example that demonstrates how to handle missing data in hierarchically-structured administrative records.

Introducing Parametric Models and Administrative Records Into 2014 SIPP Imputations

Gary Benedetto (U.S. Census Bureau), Joanna Motro (U.S. Census Bureau), and Martha Stinson (U.S. Census Bureau)

As part of the redesign of the Survey of Income and Program Participation (SIPP), we have developed a new imputation process for handling respondents who are missing entire sections of data. This new process creates indicator variables called topic flags that determine whether each section of questions was relevant for a respondent (e.g., receipt of Food Stamps). We model the joint distribution of these variables and covariates from the survey and from independent data sources using a parametric method called Sequential Regression Multiple Imputation (SRMI). The resulting, approximate distribution is used to impute missing values for the topic flags.

Modeling topic flags in this manner is an alternative imputation method to hot-deck imputation or whole-record donation for cases where respondents did not complete the majority of the survey. As opposed to hot-deck imputation that can only control for a limited number of characteristics, the SRMI approach is able to control for many more variables, including household, parent, and spouse characteristics.

Moreover, our process incorporates administrative records for the first time into SIPP production. These data offer a valuable set of covariates whose availability is unrelated to survey non-response and, as a result, helps to mitigate problems caused when survey data are not “missing at random”. This paper describes our modeling process, its advantages over more traditional imputation methods like hot-deck imputation, and demonstrates the usefulness of linking administrative data into the models. Lastly, we show preliminary results for the SIPP 2014 panel topic flags.

Comparison of Modern Imputation Methodologies on Complex Data from Agricultural Operations

Darcy Miller (National Agricultural Statistics Service) and Andrew Dau (National Agricultural Statistics Sevice)

The National Agricultural Statistics Service (NASS), in conjunction with the Economic Research Service (ERS), conducts the Agricultural Resource Management Survey (ARMS) to study the well-being of farm households. ARMS has a complex survey design, collects personal household information, and has a burden exceeding ninety minutes. Due to item nonresponse, some of the ARMS data are missing. Prior to 2015, a complete data set for use by NASS was formed by a mixture of machine imputation (conditional mean) and manual imputation. Recently, Sequential Iterative Regression (ISR), a multivariate imputation methodology, was implemented through a cooperative agreement between the National Institute of Statistical Sciences and NASS (see Robbins et al. 2013), and it better preserves relationships and the distribution of the data. ISR has been noted to be a blend of the popular data augmentation described and fully conditional specification (FCS) methods, allowing for some flexibility of the conditional models while providing a valid joint distribution. IVEware, a product of the University of Michigan, utilizes Sequential Regression Multiple Imputation (SRMI; see Ragunathan et al. 2001), which utilizes FCS methodology for mixed data types and allows for more flexibility in terms of variable type and the incorporation of edit logic. In this study, the empirical performance of IVEware and ISR for use in ARMS are compared through simulation.

CONCURRENT SESSION D-2
DEMONSTRATIONS ON DATA VISUALIZATION AND METADATA SYSTEMS

Census Bureau’s Microdata Analysis System (MAS) Pilot for the American Community Survey

Tiffany Julian (U.S. Census Bureau), Amy Lauger (U.S. Census Bureau), and William Hazard (U.S. Census Bureau)

The Census Bureau’s Microdata Analysis System (MAS) for the American Community Survey allows public access to confidential microdata while applying disclosure avoidance rules to the results. The system will be free to data users, and will be useful to those unable to do analysis using other more expensive and involved Census Bureau data options, such as requesting a special tabulation or using a Research Data Center.

A user will select variables for the analysis, then will select a universe (domain) on which the analysis is performed. The universe may be defined on a custom geographic region and may be restricted based on values of non-geographic variables. For a survey such as the American Community Survey, we anticipate allowing geographic regions defined as low as individual tracts, either singly or in combination with each other to form a larger area.

Other than geography, the core features that the system provides are twofold. First, it allows customized queries on the full microdata file. Second, and possibly more innovatively, the MAS performs real-time disclosure avoidance procedures on each request when it is submitted. When a table is requested, the system does a number of checks on-the-fly to make sure the data are safe to release. In the case of a table of counts, most of these checks are for excessive sparsity in the cell values. If the table passes disclosure review, then it is released to the user (perhaps with some rounding of cell sizes), whereas if the table does not pass, then the user receives an error message indicating that the table was not output for disclosure reasons. We are still testing and modifying the system, but at this point our hope is that the user will receive either a table or a denial within a minute.

Crowdsourcing Codebook Enhancements: A DDI-based approach

Lars Vilhuber (Cornell University), Benjamin Perry (Cornell University), Venkata Kambhampaty (Cornell University), Kyle Brumsted (McGill University), and William C. Block (Cornell University)

Recent years have shown the power of user-sourced information evidenced by the success of Wikipedia and its many emulators. Agencies on the other hand publish metadata on their data products, but have little opportunity to get structured feedback on that metadata (codebooks) from their users. Creating and augmenting metadata is a labor-intensive endeavor. Harnessing collective knowledge from actual data users can supplement officially generated metadata. As part of our Comprehensive Extensible Data Documentation and Access Repository (CED²AR) infrastructure, we demonstrate a prototype of crowdsourced metadata (codebooks), using DDI-C and supplemental XML. The system allows for any number of network connected instances (web or desktop deployments) of the CED²AR DDI editor to concurrently create and modify metadata. The backend transparently handles changes, and frontend has the ability to separate official edits (by designated curators of the data and the metadata) from crowd-sourced content. Features of the software allow official curators to merge in select enhancements into revisions of official documentation. CED²AR ingests and publishes widely-used DDI metadata standards, and can thus easily augment existing metadata publishing systems. Using standards-compliant ingest and publication methods, our proposed crowd-sourced metadata system can greatly enhance user acceptance of documentation, user-engagement in the documentation process, and reduce agency costs while improving the quality of data documentation. This development is part of the NSF-Census Research Network node at Cornell University.

Visualization of BLS Geospatial Data Using R/Shiny

Elizabeth Cross (U.S. Bureau of Labor Statistics), Kenneth Cho (Bureau of Labor Statistics), Randall Powers (U.S. Bureau of Labor Statistics), Jeffrey M. Gonzalez (U.S. Bureau of Labor Statistics), and Wendy L. Martinez (U.S. Bureau of Labor Statistics)

Several U.S. Bureau of Labor Statistics (BLS) surveys have data with geospatial characteristics. For example, the Occupational Employment Statistics (OES) program publishes employment numbers for occupations at various geographic levels. Additionally, there is an on-line tool, hosted at www.bls.gov, which shows maps of different statistics (e.g., mean wages, location quotient) for these occupations for states and Metropolitan Statistical Areas (MSAs). Currently, these maps are created annually and saved as static files. When interacting with the current on-line mapping tool, users select the desired occupation, statistics, and geographic level and then the relevant map is displayed. The mapping tool appears to be dynamic (i.e., the user observes changes, in real-time, in the visualization based on options he/she chooses), but the user is, in fact, limited to only a pre-defined set of maps whose features and layout have been determined by BLS staff.

In order to enhance functionality of the existing product by providing users with dynamic visualizations, researchers at BLS created a dynamic on-line mapping tool for OES data using R, an open-source computing environment for data analysis; its various spatial packages (e.g., choroplethr, leaflet); and Shiny, a web application framework for R. This presentation will demonstrate this dynamic mapping tool and comment on the lessons learned from converting a static mapping tool to a dynamic tool.

Interactive Web Visualization of Birth and Pregnancy Trends by Maternal Age, Race/Ethnicity, and Marital Status: United States, 1909-2013

Li Lu (CDC NCHS), Yinong Chong (CDC NCHS), Sally C. Curtin (CDC NCHS), and Betzaida Tejada Vera (CDC, NCHS)

Vital statistics numbers and rates are widely used by the research community as well as policy makers and the general public. Aggregate data, particularly rates, have traditionally been published in reports with static tables and figures, most often in PDF format. Improving the access of these data with an interactive graphical interface and providing downloadable Excel tables could enhance the usefulness of these data. Interactive graphs can make the data "come alive", showcasing relationships and trends that may be difficult to detect otherwise.

We developed a new data visualization approach for vital statistics data. Working with demographers/statisticians in the Division of Vital Statistics/NCHS, we designed dashboards and storyboards for the data visualization based on birth and pregnancy data. The storyboards were designed to present the data in the order and manner that are most useful and understandable. Historical data begin in 1909 (or earliest available) and go through 2013, and were compiled from a variety of CDC/NCHS resources. These data were exported into Excel workbooks and interactive charts were created using the Tableau professional desktop software.

To date, two storyboards have been created and published by maternal age and race/ethnicity (1) general trends in the number, rate, and percent distribution of births (2) pregnancy, births rates, and percent distributions of births to unmarried women. These have been published in Tableau Public for users to access and manipulate. All data are provided in exportable Excel format.

Tableau Public can be a powerful tool in visualizing and understanding vital statistics aggregate data. It also provides a repository for these data in one location and Excel-exportable tables for all the data. The visualization can be updated quickly and easily as new data become available. This approach can be an important adjunct in the dissemination of vital statistics data

CONCURRENT SESSION D-3
INNOVATIVE RECRUITING AND QUESTIONNAIRE TESTING METHODS

How Do We Bring Them In?: A Case Study in Using Non-Traditional Approaches to Recruiting Focus Group Participants

Ashley Schaad (ICF International) and Rikki Welch (ICF International)

This paper focuses on the effectiveness of several non-traditional strategies used to recruit focus group participants. The effectiveness of each strategy – including a highly targeted pay-per-click ad campaign through Facebook, advertisements on Craigslist, and partnerships with local organizations likely to be affiliated with the populations of interest, are compared in relation to one another, as well as in relation to the more traditional approach of using a professional recruitment firm. The data come from a project that included focus groups with participants from Greater Houston fitting one or more of the following demographic categories as part of a disaster preparedness research project: individuals with ambulatory or transportation difficulties, seniors 65 and older living independently, caregivers for seniors or individuals with cognitive impairments, individuals who are deaf or hard of hearing, individuals who are blind or have low vision, and monolingual Spanish speakers fitting the above categories. The Facebook and Craigslist ads were posted in English and Spanish. Separate groups of Facebook ads were developed for each population of interest. Local organizations that agreed to assist in the recruitment efforts were provided full-page flyers in English and Spanish to display in prominent locations and/or distribute to their membership. Potential focus group participants were asked to complete an online screener to determine their eligibility for the focus groups. The screener also asked participants how they heard about the groups. This paper presents an analysis of the effectiveness of each non-traditional method, including how

many people completed the screener and how many actually participated in a focus group, broken out by recruitment method. We also discuss the relative effectiveness of the various approaches in garnering participants in relation to the time and monetary costs involved with each strategy.

A Multi-Method Approach to Survey Pretesting

Joe Murphy (RTI International), Ashley Richards (RTI International), David Roe (RTI International), and Danni Mayclin (Energy Information Administration)

There are several options for evaluating survey questions and questionnaires prior to data collection. Traditionally, expert review and cognitive interviewing have been used to identify potential issues with item wording to be addressed prior to finalizing the instrument. Recently, a third option has emerged in the form of online pretesting via crowdsourcing. With this approach, ready and willing participants are rapidly recruited and asked to complete a self-administered web version of a cognitive pretest. This presentation discusses the coordinated use of all three methods in the development of a national survey. We present findings on how the survey was improved and fitness of use for each method during the pretesting phase.

Our design employed the Question Appraisal System (Dean et al., 2007; Willis & Lessler, 1999) for the expert review component of the evaluation. After updates to the questionnaire, we conducted 15 cognitive interviews across 3 U.S. cities to learn about respondents' understanding and strategies in completing the survey. After subsequent revision, we conducted a second round of 15 cognitive interviews along with 57 self-administered web interviews with participants recruited via Amazon Mechanical Turk. Finally, after a first pilot survey, we conducted a second round of self-administered web interviews with another 93 participants via Mechanical Turk.

This presentation will summarize the range of options available for pretesting survey instruments; introduce the new options for evaluation with a specific focus on online pretesting via crowdsourcing; summarize findings from a survey employing the three pretesting methods in an iterative fashion; and discuss applicability of the different methods for investigating particular types of questionnaire issues prior to finalizing a survey instrument.

Cognitive Interviewing for Surveys on Sexual Assault with College Students

Sarah Cook (RTI International), Michael Planty (Bureau of Justice Statistics), Jessica Stroop (Bureau of Justice Statistics), Chris Krebs (RTI International), and Christine Lindquist (RTI International)

This paper focuses on the cognitive interviewing methods that were used to test and improve a survey instrument that was ultimately used for the Campus Climate Survey Validation Study (CCSVS) Pilot Test, which involved using a web-based survey to collect data from approximately 22,000 undergraduate students across nine universities. Cognitive testing was done using two approaches: 1) via crowd-sourcing using an online opinion hub, and 2) via in-person interviews in three geographical areas (Raleigh, Durham, and Chapel Hill, NC; Washington, DC; and Portland, OR). Male and female college students were included in cognitive testing, and targeted recruitment and collaborations with crisis centers and universities enabled the inclusion of survivors of sexual assault in the in-person interviews. Through the cognitive testing process, feedback was obtained on key sections and items within the CCSVS instrument from 240 online respondents in our desired demographic (college students between the ages of 18-24), and from 36 college students who participated in the in-person interviews, 20 of whom were survivors of sexual assault. The audience will learn about how cognitive interviewing can be done different ways, and why doing cognitive interviewing is such an important component of research when studying sensitive topics, such as sexual assault, and when surveying college students. Although all respondents were college students, there is tremendous diversity among this population across a number of dimensions, including geography and socioeconomic status. Cognitive interviewing can help identify questions or terms that are not universally understood, and result in important improvements to survey instruments.

Modeling the Effect of Diverse Communication Strategies on Decennial Census Test Response Rates

Gina Walejko (U.S. Census Bureau), Nancy Bates (U.S. Census Bureau), Rachel Horwitz (U.S. Census Bureau), and Monica Vines (U.S. Census Bureau)

To conserve decennial census costs, the Census Bureau has focused several research efforts on ways to maintain and increase self-response rates. Although used less during other Census Bureau data collections, one component of a successful decennial self-response operation has been an integrated communications campaign

Past decennial censuses used an array of advertising to build awareness and promote participation. The 2000 Census was the first to benefit from paid advertising. The media campaign included television, radio, Internet, print, and out-of-home advertising, and messages targeting both the general public and select populations encouraged audiences to fill out their census forms. The 2010 Census campaign employed a bigger and expanded paid advertising operation.

Since then, the use of digital advertisements has increased, and the Census Bureau is interested in how to take advantage of this medium. The 2020 Census will likely include an integrated communications campaign with more digital advertisements to complement an Internet self-response option and ability to process non-ID households in real-time.

In preparation for 2020, the Census Bureau tested several advertising and communication strategies in experimental panels across the Savannah, Georgia designated market area (DMA) in the spring of 2015. The Census Bureau served varied mixes of digital media to five segmented test panels and several other DMA-wide experimental treatments.

Using advertising data, paradata, and response data, this presentation discusses the effectiveness of targeted digital advertisements, saturated advertising buys, telephone reminder or “influencer” calls, and mail pieces on response rates across self-response modes. Specifically, we discuss the results of a model-based approach that measured the effectiveness of an integrated communications campaign on self-response – an approach that controls for a diverse set of communication activities and their interactions. Findings will inform policy decisions for increasing census response rates, including how to use digital advertising to promote the 2020 Census and beyond.

Respondent Driven Sampling with On-line Recruitment and Adaptive Follow-ups

Ronaldo Iachan (ICF), Naomi Freedner (ICF), and Karen Trocki (ARG)

This paper describes a methodology that ICF developed for on-line respondent driven sampling (RDS) sample recruitment and telephone data collection. The methodology includes novel methods for selecting both seeds for the RDS sample from a national sample, and a comparison sample matched to the seeds subsampled from the same national sample. We provide some background for the national sample survey, the National Alcohol Survey, and the design of the study of sexual minority women that is the subject of the paper. We discuss alternative methods for matching including stratified random subsampling and propensity score matching. The paper also describes the adaptive approaches planned for controlling the RDS sample network structure. These approaches use network data and para-data to control network parameters such as chain growth, or chain length, and intra-chain correlations. We discuss the importance of these parameters, and their control, for effectiveness of the RDS sample and for ensuring the quality of the data. In particular, these methods help prevent any possible scams that might arise from the online nature of the coupon distribution and the associated incentives.

CONCURRENT SESSION D-4
TIME SERIES AND FORECASTING

Structural Changes via Threshold Effects: Estimating U.S. Meat Demand Using Smooth Transition Functions

Nestor M. Rodriguez (Economic Research Service-USDA) and James Eales (Purdue University)

Structural change has been a focus in the food demand literature. Studies have analyzed structural change using a variety of different approaches and methodologies. This paper uses macroeconomic economic factors as a motivation to examine structural change under a new context. Because of the “Great Recession”, economic activity in the U.S., as measured by GDP, contracted from the last quarter of 2007 until the second quarter of 2009 resulting in acute economic effects like higher unemployment. Policymakers instituted expansionary monetary and fiscal policies to address the downturn in the economy. However, these policies may be potentially inflationary in the long run.

This study will look at the potential effects of both unemployment and inflation on food demand, specifically meat demand. Quarterly meat data from the USDA including data on beef, pork, and poultry is used from 1960 - 2013. An Inverse Almost Ideal Demand System (IAIDS) model is used in a Seemingly Unrelated Regression (SUR) framework. These methods are combined with more contemporary time series modeling techniques, specifically Smooth Transition Autoregression (STAR) modeling. The resultant Smooth Transition Regression (STR) model can be used to examine the effects of transition variables on U.S. meat demand.

Results include that expanding the IAIDS model by using unemployment and inflation as transition variables provide models that have more explanatory power based on in-sample performance and standard statistical criterion compared to the basic IAIDS model. Consumer preferences for meat are sensitive to the unemployment rate and its effects resulted in transitions between own-price and scale flexibility regimes. These transitions coincided with periods of high and low unemployment. Consumer preferences for meat are sensitive to inflation and its effects resulted in transitions between own-price and scale flexibility regimes. These transitions coincided with periods of high and low inflation. Given recent economic events, understanding the impact of these macroeconomic events on consumer food demand seems essential and can be informative to industry, policy makers, and researchers who examine and analyze this particular market.

Measuring Single-Year Poverty Transitions: Opportunities and Limitations

Ashley Edwards (U.S. Census Bureau)

Previous research has shown that over the period from 2009 to 2012, the median length of a poverty spell was 6.2 months. However, while longitudinal data over multiple years has the benefit of capturing a greater number of poverty spells and reducing the proportion of spells affected by left or right-censoring, researchers and policymakers must wait years for data to be released, and the impact of sharp swings in the economy is masked over extended periods.

The biggest limitation in providing single-year estimates of poverty spell dynamics relate to issues of spell capture and censoring. As researchers shorten the observation period, they capture fewer poverty spells and a greater proportion of spells are unable to be assigned “true” start and end dates as spells begin prior to the start of the calendar year or continue beyond the end of the calendar year.

Analysis within single calendar years from 2009 to 2012 captures approximately 20 to 35 percent fewer spells when compared to the 4-year period, and left-censoring increases by approximately 240 to 265 percent. Further, the traditional practice of dropping left-censored poverty spells from duration estimates introduces an unexplored amount of bias, as approximately 55 to 60 percent of spells are excluded due to left-censoring.

This research presents estimates of single-year poverty dynamics across various demographic groups over the period from 2009 to 2012. Findings suggest that small differences in medians across calendar years combined with relatively high standard errors limit the conclusions that can be drawn by comparing year-to-year changes. Additionally, while the characteristics of left-censored spells captured within a single calendar year are fairly comparable with left-censored spells observed over the 4-year period, the increased capture of left-censored spells within single calendar years leads to greater bias when excluding left-censored spells, and often prohibits the assignment of median spell durations.

A Tale of Two Series: Examining Seasonality In Changing Time Series

John Stewart (Economist, Bureau of Labor Statistics) and Steve Mance (Economist, Bureau of Labor Statistics)

The Current Employment Statistics – State and Area (SA) program at the U.S. Bureau of Labor Statistics publishes sample-based employment estimates for over 400 metropolitan areas in the United States. These areas were redefined by the Office of Management and Budget and this caused breaks in the SA time series. Potentially, these changes could have prevented the publication of seasonally adjusted data for those areas due to a reliance on unavailable sample-based histories to forecast factors for the coming year. Series constructed using administrative data showed statistically significant seasonal changes, even for areas that experienced small level changes, although areas undergoing smaller compositional changes tended to show less severe breaks. This research used several measures to identify changing areas with potential breaks in seasonality and derived a threshold for evaluation. Areas whose change was greater than that threshold would have historical sample-based data deemed likely discontinuous; other areas would remain eligible for publication. This allowed the SA program to provide as much continuity in its publication of seasonally adjusted data as possible.

Improving NASS's Crop Yield Forecasts

Noemi Guindin-Garcia (United States Department of Agriculture, National Agricultural Statistics Service)

Monitoring crop condition and predicting yield on regional and national scales is becoming increasingly important in developing countries and has sustained importance for government agencies, private industry, and researchers under current weather and climate change conditions. Improving the crop yield forecast is the subject of continual study in the United States Department of Agriculture's National Agricultural Statistics Service (USDA-NASS). In recent years, crop yields forecasting has become more complex and challenging since anomalous weather conditions (e.g., droughts, heat waves, freezes, and floods) have been observed in major United States crop-producing regions.

One of the main challenges in forecasting crop yields is to develop meaningful statistical indicators about crop condition during anomalous conditions due to the ability of plants to adapt and compensate during short period of stress. USDA-NASS is developing a Decision Support System (DSS) to monitor the effect of climate variability and extreme weather events on crop yields during the growing season. Agronomic parameters, soil, weather, and remote sensing data can be combined into a decision support system to develop meaningful statistical indicators about crop condition to adjust crop yield forecasts during anomalous weather conditions. The integration and adaptation of these products would greatly enhance NASS's decision-making capability. The main goal is to detect areas under potential crop risk based on weather and crop condition indicators.

CONCURRENT SESSION E-1
METHODS FOR MISSING DATA IMPUTATION

Patterns of Item Nonresponse for Income in the National Survey on Drug Use and Health

Peter Frechtel (RTI International), Kristen Gulledge Brown (RTI International), and Jonaki Bose (Substance Abuse and Mental Health Services Administration)

On the National Survey on Drug Use and Health (NSDUH), family income is used in many analyses. The item response rate for family income tends to be around 90%, which is relatively low for this survey. Since the 2002 survey, missing values in this variable have been replaced with valid values using an imputation method called Predictive Mean Neighborhoods (PMN).

This study analyzes the patterns of nonresponse for the family income variable, with an eye towards improving the imputation method for it. Some questions that are answered are: (1) Is the item response rate lower for youths than for adults? (2) Among the item nonrespondents, do the youths tend not to know the family income, while the adults tend to refuse to answer the question? (3) All respondents have the option to select a proxy respondent among the adult relatives in their household. How often do respondents select proxies? Is the item response rate higher for the proxy respondents than for the self-respondents? (4) Is the item response rate lower among high-income respondents than it is among low-income respondents? This can be tested indirectly using the predicted values from the imputation models.

The results of these tests are used to make recommendations for improving the imputation method. The current method does not distinguish between proxy respondents and self-respondents, nor does it distinguish between "don't know" responses and "refuse" responses.

Missing Data Methods for Regression Analysis

Susan Edwards (RTI International), Phillip Kott (RTI International), Rachel Harter (RTI International), Peter Frechtel (RTI International), Stephen Tueller (RTI International), Jiantong Wang (RTI International), Jonaki Bose (Substance Abuse and Mental Health Services Administration), and Sarra Hedden (Substance Abuse and Mental Health Services Administration)

This paper presents various methods for handling missing data available to analysts interested in fitting regression models involving data from the National Survey on Drug Use and Health (NSDUH), where some of the variables in the models have missing values. Motivation for this work stems from the desire to standardize the treatment of missing data for official government analyses.

The NSDUH is an annual national and state level survey that collects information on the use of tobacco, alcohol, illicit drugs, and mental health in the U.S. The design of the NSDUH sample involves weighting, stratification, and clustering. Many commonly used NSDUH variables undergo a weighted sequential hot deck imputation procedure and therefore have no missing values. Item response rates on the NSDUH tend to be high; the vast majority of variables have item response rates greater than 95 percent.

This work seeks to address particular challenges encountered when dealing with missing data on the NSDUH survey. Many popular missing data methods for regression models are not ideal for handling data collected via a complex sample design. Regression analyses for NSDUH are conducted by a highly diverse group of analysts and for a wide variety of purposes.

Using regression models from earlier NSDUH studies, the typical amount of missing data across survey years was assessed. The results from a simulation study using these same regression models to evaluate several missing data methods are presented along with guidance on which missing data method to use evaluated by the extent of missing data, the ease of implementation, and the anticipated effect on bias and variance. Missing data methods considered in the simulation study include listwise deletion, listwise deletion with additional weighting, maximum-likelihood estimation, and single imputation using the WSHD method. An overview of software capable of performing these methods is also addressed.

Using Classification Trees to Recommend Hot Deck Imputation Methods: A Case Study

Laura T Bechtel (U.S. Census Bureau), Darcy Steeg Morris (U.S. Census Bureau), and Katherine J Thompson (US Census Bureau)

The U.S. Census Bureau conducts an Economic Census every five years. Besides collecting a set of common items from *all* eligible establishments, the Economic Census collects detailed information on each establishment's products. Beginning in 2017, the Economic Census will use the North American Product Classification System to produce economy-wide product tabulations from cross-sector collections. This marks a major departure from the current collection – which explicitly links products to industry – and makes the trade-area specific missing data adjustment practices impossible. An interdisciplinary research team was established to address this, and the outcome was the recommendation of a single (unified) methodology for the treatment of missing product data.

The team conducted a comprehensive evaluation study using empirical and simulated data from the 2012 and 2007 Economic Census. In all of the studied industries, a form of hot deck imputation appeared to be the best compromise of the considered methods. However, the recommended variation (nearest neighbor or random) was split between trade areas. Consequently, the team investigated whether certain properties of establishments or products might be predictive of one method having better statistical properties than another across different subdomains.

Such exploratory analyses readily lend themselves to classification tree analysis. A classification tree starts with a categorical outcome (often binary) and grows branches that represent an explanatory variable. The nodes (splits) at the top of the tree represent the covariates that are most strongly related to predicting outcome. In our application, the outcome was the choice of hot deck method, and the predictors were characteristics of establishment data within the imputation cells. In this paper, we describe how we used classification trees to develop an understanding the underlying causes that led to one method preferable to another and provide some limited guidance for implementation in the 2017 Economic Census and future analyses.

Within-Industry Productivity Dispersion and Imputation for Missing Data

T. Kirk White (U.S. Census Bureau), Jerome P. Reiter (Duke University), and Amil Petrin (University of Minnesota and NBER)

Within-industry differences in measured plant-level productivity are large. A large literature has been devoted to explaining the causes and consequences of these differences. In the U.S. Census Bureau's Census of Manufactures, the Bureau imputes for missing values using methods known to result in under-estimation of variability and potential bias in multivariate inferences. We present an alternative strategy for handling the missing data based on multiple imputation via sequences of classification and regression trees (CART). We use our imputations and the Bureau's imputations to estimate within-industry productivity dispersions. The results suggest that there is more within-industry productivity dispersion than previous research has indicated. We also estimate relationships between plant exit, productivity, prices, and demand shocks. For these estimands, we find the results are robust to using an alternative imputation strategy.

CONCURRENT SESSION E-2
INNOVATIONS IN SAMPLE DESIGN

Optimal Stratification and Allocation for the June Area Survey

Jonathan Lisic (National Agricultural Statistics Service/USDA), Hejian Sang (Iowa State University), Zhengyuan Zhu (Iowa State University), and Stephanie Zimmer (Iowa State University)

A computational approach to optimal multivariate designs with respect to stratification and allocation is investigated under the assumptions of fixed total allocation, known number of strata, and the availability of administrative data correlated with the characteristics of interest under coefficient of variation constraints. This approach uses a penalized objective function that is optimized by simulated annealing through exchanging sampling units and sample allocations between strata. Computational speed is improved through the use of a computationally efficient machine learning method such as K-means to create an initial stratification close to the optimal stratification. To increase the acceptance rate of the simulated annealing algorithm, sampling units near initial strata boundaries are selected at a higher rate for potential exchanges. The numeric stability of the algorithm has been investigated and parallel processing has been employed where appropriate. Results are presented for both simulated data and USDA's June Area Survey. An R package has also been made available for evaluation.

NHTSA's Data Modernization Project

Fan Zhang (National Highway Traffic Safety Administration), Chou-Lin Chen (National Highway Traffic Safety Administration), Eun Young Noh (National Highway Traffic Safety Administration) and Rajesh Subramanian (National Highway Traffic Safety Administration).

The National Highway Traffic Safety Administration (NHTSA) has embarked on a multi-year, multi-disciplinary endeavor to modernize its main data systems that sample and collect information on motor vehicle traffic crashes to generate nationally representative estimates. A major aspect of this effort is to redesign the survey samples. It has been thirty years since these systems were originally designed and the landscape has changed in terms of the population, vehicle fleet and driver behaviors and the data needs of the highway safety community have changed significantly.

The U.S. Congress authorized NHTSA to reassess the data needs of its internal and external stakeholders and use that assessment in redesigning the survey samples. NHTSA has designed new data collection systems that are aligned with the data needs and optimized to get information of interest. In addition, NHTSA was asked to design a scalable survey that would provide flexibility to address fluctuating budgetary scenarios or nonresponse with cooperating entities such as police jurisdictions.

With all these requirements in mind, NHTSA has designed two independent surveys that will provide nationally representative estimates of motor vehicle traffic crashes that cover different scopes. These are both three-stage sample designs. They are also scalable samples so NHTSA can change the sample size with minimum change to the existing sample. NHTSA obtained a sequence of nested PSU samples so that any one of them can be used for data collection based on prevailing budget and the selection probabilities can be calculated.

Finally, to guide sample allocation of this complex, multistage design, NHTSA built a mathematical optimization model to allocate the sample for various budgetary scenarios while minimizing variance of the key estimates generated from the survey.

CONCURRENT SESSION E-3
INCREASING RESPONSE RATES

Getting a Boost: Improving Cooperation Rates in Youth and Young Adults

Jennifer Cantrell (Truth Initiative) & Randall K. Thomas (GfK Custom Research), Elizabeth Hair (Truth Initiative), and Donna Vallone (Truth Initiative)

Beginning in May, 2014, two probability methods (ABS and dual-frame phone) were used to recruit a panel of 12,000 15 to 21 year old participants for an online panel to assess smoking-related behaviors and attitudes for 6 survey waves. Wave 2 began in January, 2015. After obtaining a 40% cooperation rate in 5 weeks using only email invitations and reminders, we increased incentives from a base of $10 to a base of $20, resulting in cooperation rates near 60%.

We implemented an experiment that tested two primary manipulations – increase minimum base incentive from $20 to a randomly assigned $30, $40, or $50 and randomly assign to 1 of 6 multiple enhancements:

1. Control (only an email that indicated the base incentive increase)
2. Provision of new sweepstakes [$500 prize]
3. Interactive Voice Response (IVR) reminder calls
4. Live phone prompting calls
5. Large postcard reminder
6. All of the above

There were 4,467 participants as of March 20 who had not responded at all to any prior communications efforts that formed the base for assignment to conditions. The cooperation rate for the ABS sample prior to the experimental implementation was 68.9% and for telephone recruit sample it was 58.8%. The increase in total cooperation rate due to the experimental implementation was 8.6% for ABS and 5.8% for telephone sample, with 699 of the 4,467 participants assigned to the experiment complete the Wave 2 study for a 15.6% overall cooperation rate across conditions. In our preliminary analyses, the independent influence of 'Large postcard' had the largest effect on cooperation, with Sweepstakes and Live phone prompt having lower, but still significant positive effects on response. IVR did not have a significant impact on response. We discuss these results in the context of motivating the hardest to reach of low participating samples.

Designing a Multipurpose Longitudinal Incentives Experiment for the Survey of Income and Program Participation

Ashley Westra (U.S. Census Bureau), Mahdi Sundukchi (U.S. Census Bureau), and Tracy Mattingly (U.S. Census Bureau)

The U.S. Census Bureau has experimented with the use of monetary incentives in the Survey of Income and Program Participation (SIPP), a demographic longitudinal survey, since the 1996 Panel. As with most surveys, the main goal of using incentives is to increase response rates, especially when facing a steady increase in nonresponse over the course of a panel. For the most recent SIPP panel, the 2014 Panel, the survey has been extensively redesigned, with households being interviewed only once a year instead of every four months. Since this redesign could have an impact on the effect of incentives, a new incentives experiment is introduced for Waves 1 and 2 of the SIPP 2014 Panel. In addition to investigating the effect of incentives on response rate, we design a way of assigning incentives using a response propensity model with the purpose of reducing nonresponse bias. This new methodology is made possible due to the longitudinal design of the SIPP. We will outline the design of the multipurpose incentives experiment for Waves 1 and 2 of the SIPP 2014 Panel and provide preliminary results.

Incentive Types and Amounts in a Web-based Survey of College Students

Chris Krebs (RTI International), Michael Planty (Bureau of Justice Statistics), Jessica Stroop (Bureau of Justice Statistics), Marcus Berzofsky (RTI International), and Christine Lindquist (RTI International)

For the Campus Climate Survey Validation Study (CCSVS) Pilot Test, two incentive amount experiments were conducted to determine the optimal dollar amount for increasing response rates while balancing costs to implement, and a new incentive type was tested with a large sample of college students. The CCSVS Pilot Test involved using a web-based survey to collect data from approximately 22,000 undergraduate students across nine universities. Understanding what types and amounts of incentives are effective for encouraging survey participation among college students, especially for surveys on sensitive topics such as sexual assault, is important given the recent push for more surveys of this kind. Incentive-related results from the CCSVS Pilot Test will be discussed. Students were randomized within schools to receive gift cards of different values, and CCSVS respondents were able to choose among nine online and in-store gift card options. Students at two schools were randomized to receive either a $10 or $25 gift card, and students at two other schools were randomized to receive either a $25 or $40 gift card. All students at the five remaining schools were offered a $25 gift card. A distribution of the online and in-store gift cards chosen by the CCSVS respondents will also be presented. The audience will learn which incentive types are most effective for encouraging college students to participate in surveys; and what impact different incentive amounts have on response rates. The CCSVS Pilot Test results will help universities, researchers, and the government plan and budget for what is necessary to implement methodologically rigorous studies of college students on sensitive topics such as sexual assault.

Efforts to Address Respondent Concerns in the American Community Survey

Todd Hughes (U.S. Census Bureau)

The American Community Survey (ACS) provides vital and high-quality information about the population in our Nation's communities on important social, demographic, and housing topics including the age distribution, the composition of families, the number of veterans, the disabled, incomes, employment, and so on. However, the ACS places a burden on those who fill out the survey, and parts of the survey cause concern among survey respondents. It takes an average of 40 minutes to answer the 72 questions on the survey. Some of the ACS questions are sensitive, and sometimes people are understandably hesitant to answer them even though their information is kept confidential by law.

Multiple research projects are underway at the U.S. Census Bureau to address these respondent concerns. Research into including some questions on the survey only periodically, or asking questions of a smaller subset of ACS respondents in cases where those agencies do not need certain data annually could lead to reducing respondent burden. Other changes to survey design (such as matrix sampling) could provide additional options to reduce the number of questions asked of individual households. Research into reducing the number of contacts attempted to households, and revising the messages in materials sent to households may help to address some respondents' concerns with intrusiveness. Research into the use of information that households have already provided to other federal agencies could lead to reductions to the number of questions asked on the ACS. An examination of questions perceived as difficult or sensitive could identify changes in question wording to address these concerns. This presentation will provide an overview of these various research projects, and some preliminary results from each.

CONCURRENT SESSION E-4

DEMOGRAPHICS IN LARGE-SCALE FEDERAL SURVEYS: THE IMPACT OF MEASUREMENT AND CLASSIFICATION CHOICES ON KEY SOCIAL INDICATORS

As Time Goes By: How Period Data Influence the Estimates of Recently Arrived Immigrants in the American Community Survey

Elizabeth M. Grieco (U.S. Census Bureau), Luke J. Larsen (U.S. Census Bureau), and Howard Hogan (U.S. Census Bureau)

The American Community Survey (ACS) includes a question on “year of entry” that asks household members who are foreign born which calendar year they came “to live in the United States.” Researchers have used the year of entry data to analyze “recent” immigrants – usually defined as those who arrived five to ten years before the survey. In doing this, they have noted that the number of new arrivals is considerably lower than those who arrived in prior years, suggesting the size of the recent immigrant population may be underestimated. The cause often is attributed to survey error – sampling, nonresponse, measurement, or coverage – although exactly how these errors influence the estimates is rarely demonstrated. This paper shows that the primary cause of the lower-than-expected estimates is not survey error but the ACS data collection methodology, which causes estimates of survey-year arrivals to be downward biased. The chance that a new immigrant will enter the country during the survey year increases through time. However, the possibility that a recent arrival is included in sample depends on the month of arrival being before the month of interview. This results in an estimated number of new immigrants for the survey year that represents about half of expected arrivals for that entire year. In addition, when the annual data are aggregated into multi-year period estimates, the inclusion of years in which immigration could not occur introduces a strong bias in the calculated estimates for the more recent years of entry in the period considered.

Comparison of Migration Data: 2013 American Community Survey and Annual Social and Economic Supplement of the Current Population Survey

David Ihrke (U.S. Census Bureau), William Koerber (U.S. Census Bureau), and Alison Fields (U.S. Census Bureau)

Geographic mobility is measured by several surveys conducted by the United States Census Bureau. This paper focuses on migration data collected through two different surveys, the American Community Survey (ACS) and the Annual Social and Economic Supplement (ASEC) of the Current Population Survey. It is the first in a series of evaluations planned to help users understand the Census Bureau surveys, migration estimates, and how they differ.

The ASEC offers a historical perspective on annual migration that is unparalleled. It first asked respondents about their movement in 1948. Data are available at the national and regional levels. There are two important measures offered by ASEC, reason for move and distance moved. Neither are currently available through the ACS.

While the ACS cannot highlight long-term trends, its strengths include the ability to focus on smaller geographies and populations. Migration data are available to the city/town level. There are also ACS flow products available down to the county level. This level of detail is too refined for ASEC migration data.

Even though the two surveys have similar migration questions, design and methodological differences result in different estimates. Previous work by Koerber (2004) explained many of these differences. They include: how people are surveyed, when they are surveyed, and differences in the population universe. This paper revisits these differences and notes changes since full ACS implementation. The analysis plans to evaluate national mover rates for each survey. The mover rates will be deconstructed by selected characteristics, such as age groups and collection mode. Limited comparisons at the state and county level will also occur.

General guidance is provided regarding when to use the ACS or ASEC for migration estimates. The paper concludes with plans for a series of evaluations of Census migration data compared to other surveys, population estimates, and administrative records.

A New Approach to Classify and Analyze Changing Social Structure by Race/Ethnicity across Censuses: Complex Households

Laurel Schwede (U.S. Census Bureau)

The 2013 CNSTAT Seminar, “Changing Social Structures and the Meaning of Household in Federal Surveys” identified overall household type trends. Noting single-person household increases and household size declines, presenters suggested declining household complexity trends.

Other research associated household complexity with census omissions; unemployment; increased young adult residential dependency, family instability, and food insecurity.

One problem is that social structure research is hampered by the lack of an accepted standardized definition and typology for classifying complex households. Further, most analyses cannot disaggregate beyond Whites, Blacks and Hispanics; survey samples are too small to provide reliable statistics for smaller minorities.

The author developed a complex household typology for classifying and analyzing changing household structures. This typology extends classification beyond noncomplex single and nuclear families to differentiate blended; lineally extended; laterally extended; include nonrelatives; or multiple families.

Using recoded census data, the author presents the typology, documenting complex household growth from 18% (1990) through 21% (2000), to 23% (2010).

With 2010 Census data, she compares the overall and non-Hispanic White complex household distributions to those for Blacks, Hispanics, American Indians/ Alaska Natives, Asians, Native Hawaiians/Other Pacific Islanders, other race and multiple races, documenting wide differences, such as non-Hispanic White alone (19%) and Hispanic of any race (39%).

This research has four takeaways. First, it provides a new tool: an alternative typology for classifying and analyzing household structure. Second, using this tool with past census data enables us to track trends; it may be useful in improving household complexity measurement in the Census Bureau’s Planning Database and in adaptive design. Third, it enables researchers, policy makers, and minority leaders to identify and compare household complexity patterns across all OMB racial/ethnic groups. Fourth, it documents that changing overall and non-Hispanic household patterns mask changing subpopulation patterns, especially as minority populations grow faster than non-Whites.

Creating the American Opportunity Study (AOS): A New Tool to Study Trends in Social Mobility

Carol C. House (Committee on National Statistics, National Academy of Sciences), J. Trent Alexander (U.S. Census Bureau), Jonathan Fisher (Stanford University), David Grusky (Standord University), Michael Hout (New York University), Amy O'Hara (U.S. Census Bureau), Aliya Saperstein (Stanford University), and Matthew Snipp (Stanford University)

The National Academy of Sciences is overseeing the creation of a novel tool to use existing data sources to facilitate research into educational, occupational, and economic mobility across and within generations. Ultimately, the tool will permit on-demand links and extracts of existing decennial censuses, administrative data (e.g., Social Security earnings reports), and other survey data (e.g., the American Community Survey (ACS)) to generate reliable longitudinal measurements for the entire population and important subpopulations.

This paper describes the first phase of a multi-phase activity termed the American Opportunity Study (AOS). This phase will be a "proof of concept" and produce six preliminary products: (1) a statistical methodology to digitize household members' names and addresses from 1990 census microfilm records accurately and at low cost and append them to the 1990 electronic records; (2) a statistical methodology to assign identifiers to the electronic 1990 records and link them to later census and ACS electronic records ; (3) a statistical methodology to establish intergenerational "relationship pointers;" (4) negotiated arrangements to append further information to these linked records from tax data, earnings reports, other administrative sources, and surveys; (5) a statistical methodology to estimate errors associated with linking data from multiple sources; and (6) a tool, with appropriate documentation, to enable on-demand links of 1990 census data with more recent censuses and selected administrative and/or survey data.

Future phases will build on this initial work to enhance the tool and the methods for error estimation, to capture the information from the entire 1990 census and earlier censuses that is necessary for linking, and to develop methods for imputing or filling in gaps in the information. The data provided by the AOS will enable researchers to illuminate contemporary levels, differentials, and trends in mobility, and also provide valid comparisons with past decades.

Travel Time Use Over Five Decades

Chao Wei (George Washington University) and Chen Song (George Washington University)

In this paper, we use five decades of time-use surveys, including the annual American Time Use Survey between 2003 and 2013, to document travel time uses in the aggregate and across demographic groups. We find that total travel time features an inverted-U shape over time, registering around 20 percent increase from 1975 to 1993, but 18 percent decline from 1993 to 2013.

We use the Blinder-Oaxaca method to decompose changes in the unconditional mean of total travel time into the portion explained by demographic shifts and the portion explained by changes in within-cell means and time effects. We find that demographic shifts explain around 45 percent of the increase in total travel time from 1975 to 1993. Increases in educational attainment alone contribute to around 28 percent of the increases. Demographic shifts play a much smaller role in the evolution of total travel time afterwards.

We find that variations in total travel time from 2003 to 2013 are dominated by time effects that are common to all demographic groups. In particular, the shift of time allocation from travel-intensive non-market work to travel-non-intensive leisure accounts for around 50 percent of the decline in total travel time. There is no strong evidence for economizing on travel during the recent decade.

We also examine how travel time covaries with other time use categories. We find that the decline in travel time is associated with reduction in time spent on leisure outside home, time spent on obtaining goods and services, and time spent on civil activities. Leisure at home, especially entertainment using computer and TV and sleeping, are the major alternative time uses coupled with a decline in total travel time. Effectively, there is an increasing allocation of time to leisure at home compared to leisure outside.

CONCURRENT SESSION F-1
COMPARING AND UNDERSTANDING DIFFERENCES IN ESTIMATES ACROSS SURVEYS

Health Care Use And Expenditure Data For Elderly Medicare Beneficiaries: A Comparison Of Two Surveys

Lisa B. Mirel (Centers for Medicare and Medicaid Services) and Steven R. Machlin (Agency for Healthcare Research and Quality)

The population aged 65 and older is predicted to almost double in 2050 compared to 2012. This population's health care use and expenditures is important to understand for health care policy. Two nationally representative surveys, the Medical Expenditure Panel Survey (MEPS) and the Medicare Current Beneficiary Survey (MCBS), capture this age group and their health care use and expenditures. The goal of this paper is to compare and contrast the surveys and, to the extent possible, compare use and expenditure estimates for select types of health care, using similar analytic samples. In terms of similarities, both surveys have panel designs and the overlapping panels are used to create yearly files and estimates. Use and expenditure information is collected in a similar manner for both surveys. However, MEPS enhances its expenditure estimates with data collected from a sample of medical providers who provided care to the household respondents while MCBS enhances its estimates with Medicare claims data. The main difference between the two surveys is their target population. In MEPS the sample frame is the US civilian, non-institutionalized population; for MCBS it's the Medicare population, which includes both institutional and non-institutionalized persons. In this paper we show that despite attempts to derive similar analytic samples for comparison, differences still exist between the surveys' results. These differing results are both important and relevant to consider when interpreting data from either source from a policy perspective.

Comparability In Race Reporting Between Cancer Registry Data And The National Surveys: Results From SEER-NLMS Linked Data

Mandi Yu (National Cancer Institute), Sean Altekruse (National Cancer Institute), and Kathleen Cronin (National Cancer Institute)

The cancer surveillance data collected by the NCI's SEER has been used extensively in monitoring cancer health disparities (HD) in the United States. Very often, the study of race/ethnic disparities involves comparing cancer incidence rates across population subgroups. It is important that the rates are uniformly measured and estimated for all subgroups. However, concerns remain over the differential comparability of race data collected in the cancer surveillance system (numerator) and the census population estimates (denominator) across racial/ethnic groups, and more importantly, whether such differences lead to invalid conclusions about racial/ethnic HD.

Research published in the Cancer Causes Control in 2007 found mild to moderate differences in race and Hispanic ethnicity reports between SEER and the National Longitudinal Mortality Study (NLMS) for cancer cases diagnosed from 1973 to 2001. This difference is mainly attributable to the use of different data source because SEER heavily relies on information abstracted from hospital's medical records and administrative databases, whereas survey data is self-reported. Since 2000, the collection of denominator race data has switched to the new race classification system to comply with the 1997 OMB's recommendations. Despite the compliance effort, SEER continues to use the old system, thus creating a potential mismatch and source of error.

This study will extend this 1973-2001 analysis to 2011 and evaluate the comparability in race/ethnic reports due to differential reporting sources and classification systems. The results from this study provide guidance to researchers as to using population based cancer registry data to ascertain disparities in cancer incidence across racial and Hispanic ethnicity groups.

Self-Reported vs. Administrative Race/Ethnicity Data and Racial Disparities in Criminal Justice System

Zhen Zeng (Bureau of Justice Statistics) and E. Ann Carson ((Bureau of Justice Statistics)

As a federal statistical agency, the BJS must adhere to the 1997 Office of Management and Budget (OMB) standards on race and ethnicity in its data collection efforts. A principle of the OMB standards is that an individual's response to the race question should be based upon self-identification. However, the BJS routinely receives administrative record data of correctional populations, where the classification of an individual's race and Hispanic origin is not based upon self-identification.

This study compares aggregate counts of prisoners by self-identified race/Hispanic origin categories from BJS' establishment surveys (i.e., Survey of Prison Inmates 2004 and National Inmate Survey 2007, 2008-9, 2011-12) to those from state administrative records (i.e., National Corrections Reporting Program and National Prisoner Statistics Program). Compared to self-reports, administrative records tend to overestimate the percentages of prisoners who are white or black, while underestimating the percentages of prisoners who are Hispanic, Native American, Asian, or multi-racial. The disparity in measurement varies significantly by a combination of factors, including race, sex, age, and collection year.

Using Poisson regressions, we predict prisoner counts by self-identified race from administrative records. The results allow us to estimate the distribution of self-identified race for the years when only administrative race data is available.

Finally, we explore how the different measurements of race affect estimates of racial disparity in the criminal justice system. The ratio of Hispanic-to-white imprisonment rate increases by 68% when the measurement of race is based on self-identification than obtained from administrative data. And the ratio of black-to-white imprisonment rate is only 7% higher when race is measured by self-identification.

CONCURRENT SESSION F-2
LINGUISTIC AND CULTURAL ISSUES IN SURVEY DESIGN AND EVALUATION RESEARCH

Multilingual, Multicultural, Multi-mode Testing of Questions for U.S. Census 2020

Alisú Schoua-Glusberg (Research Support Services), Patricia Goerman (U.S. Census Bureau), and Mandy Sha (RTI International)

As part of the research program for the population census in 2020, the U.S. Census Bureau is currently conducting a set of multilingual studies to refine and improve the census form in Spanish, Arabic, Chinese, Vietnamese, Korean, and Russian. A multi-mode approach to pretesting is being implemented. Expert review panels were assembled to weigh in on translation and cultural issues in the form and ancillary materials. Following their recommendations, revisions were made to the form in each language. Cognitive testing of the revised forms in each language is being carried out to identify patterns of interpretation of questions and terminology, as well as uncover cultural issues that may be impairing question equivalence across languages and target populations. Cognitive testing is being conducted in different administration modes: interviewer administered and self-administered, on paper and electronic devices. Focus groups will also be convened this summer to test acceptance and adequacy of messages for each of the target populations.

This presentation will discuss the types of findings from each study component, the kinds of issues uncovered, and the different possible strategies we are adopting to solve the translation and/or cultural issues found. Strategies for resolving translation issues in the questions and materials tested will be presented. Ongoing analysis with the additional languages will be discussed.

Does a Spanish Translation of USDA's U.S. Household Food Security Survey Module Reduce Differential Item Functioning Between Hispanic and White non-Hispanic Households?

Matthew P. Rabbitt (USDA-ERS) and Alisha Coleman-Jensen (USDA-ERS)

USDA measures food security with the Household Food Security Survey Module (HFSSM), consisting of questions about conditions characterizing households having difficulty meeting basic food needs. Prior research indicates there may be differences in how Hispanic and White-non-Hispanic reference persons respond to items. A key assumption of the Rasch model, a type of Item Response Theory model on which the HFSSM is based, is that the severity and discrimination of items are invariant across subpopulations. Violation of this assumption is differential item function (DIF). There is modest DIF between Hispanic and White-non-Hispanic households with children which may arise from linguistic and cultural differences. In order to standardize Spanish-language interviews, USDA implemented a Spanish translation of the HFSSM in the Current Population Survey Food Security Supplement (CPS-FSS) in 2012.

We use data from the 2012-2014 CPS-FSS to estimate Rasch models of food security. The Rasch model assumes responses to the HFSSM items may be modeled as indicators of a single underlying index of food security. Separate Rasch models are estimated for households interviewed with the Spanish versus English HFSSM. Model parameters will be compared using tables and plots to assess the extent of DIF. To assess the role of acculturation in the observed DIF between Hispanics and non-Hispanics, we will estimate behavioral Rasch models that control for key households characteristics, such as country of origin, and year of entry into the U.S., and citizenship status. We also compare responses of Hispanic-headed households interviewed in English versus Spanish.

Adapting the Medicine Wheel Model to Extend the Applicability of the Traditional Logic Model in Evaluation Research

Susan Jenkins (U.S. Department of Health and Hunan Services, Administration for Community Living) and Kristen Robinson (Social & Scientific Systems, Inc.)

Evaluation is a systematic process for obtaining information on program activities, outcomes, and effectiveness. Performance measurement tracks how/whether program activities accomplish specific goals, objectives, and outcomes. Both require stakeholder agreement about inputs and activities/outputs, goals, objectives, and outcomes. A logic model is a plausible diagram of the sequence of causes (inputs, activities/outputs) that produce outcomes. Because a logic model illustrates a program's logic/theory and focuses attention on the important connections between actions and results, it can build a common ground among stakeholders and establish a framework for evaluation and measurement.

Traditional evaluation models organize projects linearly. Results that are consistent, and which can be isolated and measured are given precedence over more variant and interconnected outcomes. Such models can, however, neglect to involve the project's various stakeholders in the evaluation process and in the development of the evaluation framework, leaving many of the meaningful outcomes unreported. Conversely, a Medicine Wheel model is a more holistic concept of evaluation/measurement. Its circular form and all-encompassing categories help to expand an evaluation to capture outcomes and elicit responses that are otherwise overlooked. Developed within a Tribal context, the Medicine Wheel is meant to make sense of the world and bring order to it, without isolating or compartmentalizing various program components and intended individual, community, or systems outcomes.

This paper describes the Administration for Community Living's use of both the traditional logic model and Medicine Wheel model to develop a more robust evaluation of its Older Americans Act Title VI Tribal Grants Program. Evaluation designs using both models will be discussed as well as the implications each has on potential evaluations.

CONCURRENT SESSION F-3
PREDICTIVE ANALYTICS IN A RANGE OF CIRCUMSTANCES

A Predictive Model of Patient Readmission Using Combined ICD-9 Codes as Engineered Features

Robert P. Yerex, UVA Medical System

The timing of post-discharge care is a significant factor in reducing unplanned hospital readmission. Statistical learning techniques can be applied to the development of models that predict the likelihood of patient readmission during the critical 30 day post-discharge period. The accuracy of these models is dependent on the quantity and quality of data used for training and validation. For Medicare and Medicaid patients who are members of an Accountable Care Organization (ACO), the Centers for Medicare and Medicaid (CMS) provides detailed claims based data that can be used, if appropriately collated, and transformed. This involves the identification and creation of useful features, which when included in the model, increases its predictive strength. Creation of derived features (feature engineering) is a process in which a large number of base dimensions (n) are combined to create a smaller features set (n* << n), reducing the complexity of the model, while retaining its inherent information value. The inpatient admission diagnoses, in the form of ICD9 codes, are an example of high dimensionality attributes found in the CMS claims data. Patterns inherent in the combinations of these codes can be used to create an engineered feature. In this study, a taxonomy of patterns of patient diagnoses was developed that was then used as a feature within a random survival forest model that predicts the hazard function (where the hazard event is unplanned readmission) of an individual patient for the first 30 days post discharge. Over the ensuing 30 days after release from hospital, a patient's likelihood of readmission can be dynamically estimated based on the remaining portion of the hazard curve. Inclusion of the multiple diagnoses feature increased model accuracy to the point where it could be effectively used as a tool for targeting post-discharge patient care.

Predictive Analytics with Administrative Data from the Mine Safety and Health Administration

Yuwen Dai (Summit Consulting, LLC), Natalie Patten (Summit Consulting, LLC), Albert Lee, Ph.D. (Summit Consulting, LLC), and George Cave, Ph.D. (Summit Consulting, LLC)

The U.S. Department of Labor (DOL), Mine Safety and Health Administration (MSHA) would like to predict at an early stage which mine operating firms with violations are at risk of failing to pay their fines on time. Summit Consulting, LLC (Summit), in collaboration with the DOL Chief Evaluation Office (CEO), used MSHA internal administrative data to develop predictive models that identify mine operators who are at high risk of failing to make timely payments to MSHA. Summit also created a dynamic, user-friendly Microsoft Excel tool (the Early Detection tool) based on the delinquency risk scores calculated by the predictive models.

The early identification of delinquent operators has three components: 1) identification of the probability to be delinquent, and 2) the severity of delinquency in terms of duration of delinquency, and 3) the compounding effect of delinquency probability and severity. Summit used logistic regression to predict whether a firm would be over 90 days delinquent, survival analysis to determine how long a firm would be in delinquency, and developed a composite risk score to rank the delinquency risk on violations based on both the predicted probability of delinquency and the duration of the delinquency. The early detection model has demonstrated good predictive power to discriminate operators with high delinquency risk and has uncovered key relationships in the delinquency behavior in a statistical and systematic way. Summit implemented the early detection model in a Microsoft Excel application so that MSHA can periodically use in-house resources to conduct the analysis and use the results for early enforcement activities. The highly automated tool requires minimum inputs and operations from users and has a user-friendly, dynamic interface.

This project increases MSHA's internal capacity for conducting and implementing program-enhancing data analytics and serves as a proof of concept for using predictive analytics to improve agency performance.

Responsive Design in Suicide Prevention Program Data Collection

Aruna Rikhi, MPH (HQMC Behavioral Health), Jessica Jagger, PhD, MSW (HQMC Behavioral Health), and Adam Walsh, PhD, MSW (HQMC Behavioral Health)

Timely, high-quality data is needed to monitor suicide trends, guide evidence-based suicide prevention and clinical efforts, and identify those service members at an increased risk of dying by suicide. In late 2013, United States Marine Corps (USMC) Behavioral Health implemented the Marine Intercept Program (MIP) to provide care coordination and regular follow up for Marines with reported suicidal ideations or attempts. To effectively implement the program, an IT tool was developed to allow for case entry and assignment, and to document services provided in accordance with program guidance.

Public health data surveillance efforts are increasingly tied closely with information technology systems. The MIP Tracker was a unique IT tool that was developed through collaboration with stakeholders. These collaborations determined the technical requirements and created a flexible IT tool that is able to evolve with changing needs. Due to the responsive and adaptive design of this secure database both internal and external stakeholders have timely reports to guide their suicide prevention efforts. Marine Expeditionary Force (MEF) Prevention Directors, installation CCP individuals, and Quality Assurance are among the stakeholders to benefit from the adaptable secure database.
Data submitters can have difficulties with stagnant data entry systems and questionnaires. Surveillance personnel also benefit from an adaptable tool. As needs arise, especially for newer programs, a responsive system allows for growth and expansion of an evolving public health intervention. These potential changes do not affect the long term tracking of at risk Marines and attached Sailors at the population level rather these changes can provide additional insight to an individual Marine's circumstances.

Scenario Forecasting of Insurance Claims Based on the Representative Concentration Pathways (RCPs)

Vyacheslav Lyubchich (University of Maryland Center for Environmental Science)

The adverse effects of climate change bring increasingly more alterations into all aspects of human life and welfare, and one of the sectors that is particularly affected is insurance industry. Indeed, the year 2013 brought a record amount of claims and losses due to weather related damages, which in the USA and Canada alone cost to insurers more than $3 billion. We aim to provide a statistical data-driven insight into (non)linear relationship between weather-related house insurance claims and atmospheric variables, and to predict future claim dynamics accounting for the changes in extreme weather suggested by representative concentration pathways scenarios. We propose to employ a flexible thresholded time series models for count time series of insurance claims, and develop a new method to compare tails of the observed and projected extreme precipitation and evaluate its impact on number of claims in the modeling framework. We use alternative scenarios of future climate and infrastructure development to forecast the potential increase in the number of claims in certain geographic areas and advise the insurance industry and policy makers.

CONCURRENT SESSION F-4
GEOSPATIAL TECHNIQUES

Spatial Data Analyses, Visualization, and Research Opportunities in the Division of Cancer Control and Populations Sciences at the US National Cancer Institute

Zaria Tatalovich (National Cancer Institute), Li Zhu (National Cancer Institute), and David Berrigan (National Cancer Institute)

The National Cancer Institute has a long history of developing, sharing, analyzing and visualizing spatial data related to cancer incidence, mortality, prevalence, and survival, alongside with potential risk factors including disparities in health services, environmental factors, and behavior. This work sprouted within The Surveillance, Epidemiology, and End Results (SEER) Program of the Division of Cancer Control and Population Sciences, at the National Cancer Institute. SEER collects and reports cancer statistics at several levels of spatial aggregation. Interactive mapping and statistical tools are available to explore these data: NCI Geo-Viewer, Animated Historical Cancer Atlas, State Cancer Profiles, and SEER*Stat are among the most frequently used tools.

The Division supports a portfolio of intra and extramural research concerning spatial statistics, geospatial modeling, small area estimation, health disparities calculation, and environmental determinants of cancer. The Division is also supporting substantial research concerning policy influences on cancer risk factors related to energy balance such as obesity and physical activity. This work frequently involves spatial approaches because exposure and access are critical elements of understanding policy effects on behavior. Finally, we are just beginning to invest in mobile Health technology for behavior monitoring and change that integrates spatial data into cancer control activities.

This presentation will include handouts summarizing data availability, shared software/tools, funding opportunities across the division as well as discussion and slides of major conceptual and analytical issues facing the further use of spatial data in the analysis of cancer, cancer risk factors, and cancer control.

Integrating Geospatial and Public Health Data: Examples Using National Center for Health Statistics Data Systems

Lauren Rossen (National Center for Health Statistics) and Patsy Lloyd (National Center for Health Statistics)

Previous research has shown that health is related to where people live, work, and play. The National Center for Health Statistics (NCHS) collects data from birth and death records, medical records, and health surveys. Although the publicly available data files do not typically include geographic data, geocoded data from many of the NCHS data systems is accessible through the Research Data Center (RDC). Integrating geospatial data with NCHS data systems provides researchers the opportunity to examine how various social and environmental determinants of health relate to specific health outcomes, behaviors, risk factors or disparities. Additionally, the linkage of geospatial data can augment NCHS data systems by providing multi-level or temporal information.

The objective of this presentation is to illustrate how geospatial data can be used in public health research and highlight key considerations for researchers conducting geospatial analyses. We will present examples of research using geospatial data to examine a broad range of public health topics, including food insecurity and diet among children, and associations between air pollution and health outcomes. These examples, among others, will illustrate key considerations that researchers should be aware of when using geospatial data for public health research purposes, including: limitations related to confidentiality and disclosure risk; selection bias due to linkage refusal, or failure to geocode; measurement error or bias due to temporal inconsistencies and/or misalignment of geographic boundaries; and issues related to ecological fallacies. Additional methodological concerns may include multi-level modeling with complex survey data, combining multiple sources of uncertainty, and appropriate methods for smoothing.

Ultimately, integrating geospatial data with NCHS data systems enhances our ability to investigate broader social, economic and environmental determinants of health and disparities. Researchers should be aware of the various strengths and limitations of using geospatial data in their analyses.

Geospatial Data for Statistical Use from the U.S. Department of Transportation

Edward Strocko (Bureau of Transportation Statistics)

The Department of Transportation collects and compiles geospatial data on the extent, use, condition, performance, and consequences of the transportation system. The Bureau of Transportation Statistics compiles these data into the National Transportation Atlas Database, the National Commodity Origin Destination Accounts, and other products that he research community uses to measure economic and social interactions, transportation safety, and energy consumption and environmental impacts. The presentation identifies these geospatial data resources and applications, and highlights challenges in developing and using geospatial transportation data.

Stratification Of An Agricultural Area Sampling Frame Using Geospatial Cultivation And Crop Planting Frequency Data Layers

Claire G. Boryan (National Agricultural Statistics Service), Zhengwei Yang (National Agricultural Statistics Service), and Patrick Willis (National Agricultural Statistics Service)

Area Sampling Frames (ASFs) are the basis of the USDA National Agricultural Statistics Service (NASS) agricultural statistics program and many agricultural statistical programs around the world. The NASS ASFs are stratified based on percent cultivation. To improve the accuracy, objectivity, and efficiency of the NASS ASFs, this paper presents three land cover stratifications created using geospatial corn, soybean and wheat planting frequency data layers and a geospatial cultivation layer, which are derived from historical Cropland Data Layer (CDL) data. Geospatial crop frequency layers were created to provide predictive crop planting information, aiming to improve survey sampling efficiency, estimate accuracy and coefficients of variation (CVs). South Dakota (SD) U.S. is selected as the study area for this investigation as it is one of the major crop production states in the U.S. and has nearly 100% ground reference coverage to assess test results. Consequently, the corn, soybean and wheat crops are the primary focus in this study. The crop planting frequency and cultivation data layers are first derived from historical NASS CDL data and validated with Farm Service Agency (FSA) Common Land Unit (CLU) data. Three crop specific frames are derived and refined further by percent cultivation based on the NASS cultivation layer. These refined crop specific frames based on corn, soybean and wheat mean frequency statistics and percent cultivation are evaluated using 2014 SD FSA CLU data. Preliminary results indicate that the new method has potential for yielding a more accurate, objective, efficient and lower cost SD Area Sampling Frame design, which would be expected to result in improved survey estimates.

CONCURRENT SESSION G-1
REDUCING MEASUREMENT ERROR: EDITING TECHNIQUES AND USE OF ADMINISTRATIVE DATA

Editing Index – A New Methodology of Identifying Response Error

Chin-Fang Weng (U.S. Census Bureau)

Data editing is a process to identify and correct potential respondent errors in a survey. Ideally, the errors list should contain few unimportant errors in order to minimize the subject matter specialists' work. At the same time the listing should lead to maximizing the data quality of a survey. Unlike the current editing methodology, the editing index does not involve defining parameters in detecting potential respondent errors. The editing index utilizes two criteria: the relative difference (RD), which identifies the potential respondent errors that have higher probability of being a true error, while relative importance (RI) identifies the potential respondent errors that have the most impact on the final estimates. The editing index is efficient in that it identifies those errors that are both non-trivial and are highly likely to be true respondent errors. The editing index affords the analysts flexibility of prioritizing the errors to correct by utilizing the results of the RD and RI. This paper will show how the editing index compares to the Hidiroglou and Bertholot editing methodology in identifying potential respondent errors in a survey. The editing index is illustrated using the data from the Local Government Finance survey.

Using Administrative Data to Ensure Data Quality in Anonymous Surveys

Marina Murray (Peace Corps) and Angel Velarde (Peace Corps)

When surveys are designed to gather sensitive information, researchers may opt not to collect names, assign questionnaire identification numbers, or enable identifiable metadata in online surveys. The *Peace Corps Annual Volunteer Survey*, an attempted census of currently serving volunteers, is administered anonymously to ensure that respondents, who may provide candid feedback about the Peace Corps program or staff, are not at risk of potential negative consequences.

With an advantage of protecting respondents' identities and encouraging them to share information honestly, anonymous surveys have specific data quality issues. One issue that surveying organizations need to take into account the possibility that someone other than a member of the sampling frame responds, or that one respondent completes the survey more than once. Researchers are also unable to verify missing or inaccurate data with respondents.

Since its inception in 1961, the Peace Corps has maintained administrative data with comprehensive information about its volunteers, including demographic characteristics as well as details about their service and work, such as length of service, country and region, training hours, primary projects, etc. Peace Corps administrative data are the principal source of the agency's official statistics. In the recent years, the quantity of administrative data has grown significantly, and researchers at Peace Corps use these data to strengthen data quality in the anonymous *Annual Volunteer Survey*.

This paper describes how Peace Corps uses its administrative data to increase the quality of survey data by using known population characteristics in verifying respondent eligibility; setting upper and lower limits for numeric responses; identifying duplicate responses; checking inconsistency of individual records; and replacing missing values. It concludes with a discussion about remaining data quality issues and implications of cross-referencing administrative and survey data to respondent anonymity.

Exploring the Use of External Data in the American Community Survey: Opportunities and Challenges

Amy O'Hara (U.S. Census Bureau) and Deborah Stempowski (U.S. Census Bureau)

The Census Bureau is exploring whether administrative records and third party data can supplement or supplant information currently collected in the American Community Survey (ACS). We are analyzing certain data elements from the ACS with external data sources, focusing on evaluating data quality and reducing respondent concerns. This paper illustrates the challenges and opportunities of using administrative records and third party data by discussing preliminary results on key variables including income and flush toilets.

Efforts to integrate external data into ACS are described, including the identification, acquisition, and preparation of administrative records and third party data. We discuss measurement issues, particularly definitional differences and reference period alignment. We compare the distribution of income reported to ACS and income reported to the Internal Revenue Service.

We discuss matching issues, and the challenge of securing external data for all cases. Direct data collection and imputation are necessary when external data are unavailable for a portion of the sample. The expected stability of data elements is discussed: if an apartment has a flush toilet in 2013, can we assume that the flush toilet remains in future years? We discuss ongoing efforts to evaluate such questions, and to document the coverage, quality, and availability of external data sources for ACS integration.

What Do We know About the Presence of Young Children in Administrative Records

William P. O'Hare (The Annie E. Casey Foundation)

The net undercount of young children (under age 5) in the2010 U.S Decennial Census was twice as high as any other age group. The Census Bureau's Demographic Analysis found a net undercount of nearly a million young children in the 2010 Census which amounts to 4.6 percent of this age group. Young children also had the lowest net coverage rates of any age groups in the Census Bureau's American Community Survey, Current Population Survey and Survey of Income and Program Participation. Use of administrative records is being discussed as a way to reduce respondent burden and costs in the 2020 census without compromising data quality. This article reviews what we know about the presence of young children in the set of administrative records often used by the Census Bureau. Implications for use for administrative records in the Census and major Census Bureau surveys are discussed.

CONCURRENT SESSION G-2
RESPONDENT CONTACT TECHNIQUES AND RESPONSE RATES

Mandatory Messaging in the American Community Survey

Elizabeth Poehler, Dorothy Barth, and Todd Hughes (U.S. Census Bureau)

The American Community Survey (ACS) is a mandatory national household survey. Previous research has indicated that the use of mandatory language on mail materials can improve response rates for the ACS (Dillman, 1996). Therefore, materials mailed to respondents include messages about the mandatory nature of the survey. The envelopes for two of the mailings include the statement, "YOUR RESPONSE IS REQUIRED BY LAW" in bold font. In response to respondent concerns about the prominence of this message the Census Bureau conducted an experiment in May of 2015 to determine the impact of removing this mandatory reference from the outside of the envelopes. Several other references to the mandatory nature of participation appear throughout the materials mailed to respondents, such as letters, brochures, and reminder postcards, but these materials were not modified for the May test. Response rates were compared at various points of data collection to determine the impact of the change to the envelopes. A second experiment, conducted in August 2015, tested more comprehensive changes throughout the mail materials to soften the references to the mandatory nature of participation in the survey. The design and results of the May test and the design of the August test will be discussed.

The Impact of Greeting Personalization on Estimates of Sexual Assault Victimization

Ashley Richards (RTI International), Marcus Berzofsky (RTI International), Kimberly Peterson (RTI International), Christine Lindquist (RTI International), Christopher Krebs (RTI International), Michael Planty (Bureau of Justice Statistics), Lynn Langton (Bureau of Justice Statistics), and Jessica Stroop (Bureau of Justice Statistics)

Evidence suggests that personalized invitations tend to increase response rates in web surveys (Cook et al., 2000). However, personalization may have an unintended impact on survey estimates. There is some evidence that personalization may reduce self-disclosure on sensitive items (Joinson, Woodley, & Reips, 2007) or increase socially desirable responding (Heerwegh et al. 2005), but other studies have been unable to replicate these findings (e.g. Heerwegh, 2005; Heerwegh & Loosveldt, 2006). To evaluate the impact of personalization on response rates and survey estimates of sensitive items, we compared the effects of personalized and generic greetings in a survey on an extremely sensitive topic: sexual experiences, including sexual assault victimization.

We conducted a Web survey with students at five universities. Sample members were randomly assigned to receive either a personalized greeting ("Dear John") or a generic greeting ("Dear [Fill: School Name] Student") in their survey invitation and reminders. Despite the literature suggesting personalization increases response rates, we hypothesized the personalized greeting would result in a lower response rate because our survey focused on such a highly sensitive topic. We also predicted personalization would result in lower rates of self-reported sexual assault victimization compared to a generic greeting. This is because we assumed sample members receiving the personalized greeting would perceive the survey as less anonymous, making them less likely to participate if they had experienced sexual assault victimization, or less likely to report their victimization experiences if they did participate.

We compared the effect of greeting on response rates and reported victimization. The personalized greeting resulted in a significantly higher response rate, but the generic greeting resulted in higher rates of sexual assault victimization; this difference is statistically significant for females. This experiment adds evidence to the divided literature on the effect of personalization on self-disclosure on sensitive items. Our findings suggest personalization increased response rates but decreased reported victimization, emphasizing that a higher response rate is not necessarily indicative of more accurate data.

Testing a Model-Directed, Mixed Mode Protocol in the RECS Pilot Study

Stephanie Zimmer (RTI International), Paul Biemer (RTI International), Phil Kott (RTI International), and Chip Berry (Energy Information Administration)

In designing web/paper mixed mode general population surveys, a typical aim is to maximize response by the web while achieving acceptable response rates. To increase web response, the web option is initially presented to a sample member and response by paper questionnaire is withheld until later in the nonresponse followup phase (the so-called *web-first protocol*). Evidence in the literature suggests that initially offering the web-only option to sample members who cannot or will not complete the questionnaire by web will suppress their overall propensities to respond. Ideally, then, one should implement a *paper-first protocol* to sample members who will only complete the questionnaire by paper and the web-first protocol for all others. The paper reports on an experiment conducted for the Residential Energy Consumption Survey (RECS) Pilot Study to test this approach using a model to identify sample members who have lower propensity to respond by the web.

In this experiment, half the sample of approximately 5,000 households was randomly assigned to the *model-directed protocol* treatment and the remaining half received the web-first protocol. The model used for protocol assignment was based on ACS data where the outcome model was “web-access in the home.” In the model-directed treatment, the 25% lowest propensity cases received an initial invitation to complete a paper questionnaire and the remainder received an invitation to complete the questionnaire by web. In the web-first treatment, all sample members received an initial invitation to complete the questionnaire by web.

This paper examines two key hypotheses: (a) no difference in the proportion of the sample responding by web and (b) higher response rates in the model-directed treatment. Other issues that will be explored include the effects of choice of protocol on: response rates by short vs. long questionnaire; sample representativity; and survey costs.

An Experiment Testing Alternative Email Contact Timing Strategies in a Web-Based Survey of Federal Personnel

Taylor Lewis (U.S. Office of Personnel Management) and Karl Hess (U.S. Office of Personnel Management)

The Federal Employee Viewpoint Survey (FEVS) is an annual survey of approximately 900,000 permanently employed civilian personnel from over 80 agencies. First administered in 2002, the Web-based survey measures a wide range of employee perceptions, attitudes, and behaviors, serving as a valuable tool for human resources managers to determine which aspects of the organization are working well and which may require intervention. Like many other surveys, however, the FEVS has experienced a gradual response rate decline in recent years. A response rate surpassing 50% was once routinely attainable, but that threshold has not been met since 2010.

The current contact protocol commences by sending all sampled individuals an initial invitation to participate. Five weekly reminder emails are sent to nonrespondents thereafter, generally on the same day and time during the work week, and then a final reminder is sent on the Friday of the sixth field period week with a message indicating the survey closes today. In this paper, we discuss results from an experiment in which two alternative contact protocols were investigated. In the first, individuals were randomly assigned to one of six predetermined time blocks for receiving the initial survey invitation. The six cohorts were then rotated through each of the other five time blocks for receiving subsequent reminders. In the second, individuals were also randomly assigned to one of six predetermined time blocks for the initial invitation, but subsequent weeks’ reminders were scheduled adaptively, contingent upon response patterns observed up to that point in the field period. Using survey timestamp information and auxiliary information from the sampling frame, response patterns were modeled and nonrespondents were sent a follow-up reminder at the time block deemed most likely to elicit a survey complete.

CONCURRENT SESSION G-3
HEALTH CARE: MEASURING QUALITY, SPENDING AND REFORM

Adjusting the Measurement of the Output of the Medical Sector for Quality: A Review of the Literature

Anne E. Hall (Bureau of Economic Analysis)

In January 2015, BEA released the first version of the health-care satellite account, which redefines the good being measured in health care output from a single service to an episode of treatment of a specific medical condition. This change follows multiple recommendations by the Committee on National Statistics and by international authorities on national accounting as applied to medical care. BEA now faces the intensely difficult problem of how to adjust the price indexes for the quality of health care. In this paper, I review and summarize a number of previous papers that created quality-adjusted price indexes for individual medical conditions. It divides them into those that use primarily outcomes-based adjustments and those that use only process-based adjustments. Outcomes-based adjustments adjust the indexes based on observed aggregate health outcomes, usually mortality. They usually do so by calculating a concept called net value, which is the monetized value of the improved health outcome minus the increased spending on the condition. Process-based adjustments adjust the indexes based on the treatments provided and medical knowledge of their effectiveness. Outcomes-based adjustments are easier to implement while process-based adjustments are more demanding in terms of data and medical knowledge. I then calculate outcomes-based adjustments using the net value method for the indexes in the health-care satellite account with mortality by cause of death with data from the Centers for Disease Control and Prevention. They show that improved outcomes in diseases of the circulatory system created positive net value and declining inflation for those conditions but most other categories of diseases exhibit increasing inflation because spending on them is higher than the value of the improved outcomes.

What Medical Conditions Are Driving the Spending Slowdown? An Analysis Using the New Health Care Account from the Bureau of Economic Analysis

Abe Dunn (Bureau of Economic Analysis), Lindsey Rittmueller (Bureau of Economic Analysis), and Bryn Whitmire (Bureau of Economic Analysis)

This year the Bureau of Economic Analysis (BEA) released a new experimental account that tracks national health care spending by medical condition. These statistics improve upon our understanding of the health sector by blending together both medical claims data and survey data to present new measures of national spending and the cost of treatment by condition. This paper introduces key aspects of this account and uses it to study the spending slowdown over the 2000 to 2010 period. The account reveals that the slowdown is primarily driven by a reduction in cost per case growth, but spending trends can vary greatly across conditions and have differing effects on the slowdown. Over half of the overall slowdown can be accounted for by circulatory conditions. However, disease categories that include conditions such as diabetes, back problems, and preventative services slow more rapidly. In contrast, categories that include conditions such as migraines, depression, and trauma actually show acceleration in spending.

State-Level Estimates from the NHIS Restricted Data: Analysis to support states implementation and evaluation of the ACA

Joanna Turner (University of Minnesota - SHADAC)

The Patient Protection and Affordable Care Act (ACA) involves significant changes in health insurance coverage and health care systems across the United States. Many of the provisions of the ACA are being implemented by states and state specific factors such as health insurance coverage, access, use, and affordability will influence both implementation and impact of the law. As a result, a full understanding of the impacts of the ACA over time will require assessing the impacts of reform at the state level.

The National Health Interview Survey (NHIS), the nation's primary survey for monitoring the nation's health, provides a strong base for informing both the implementation and evaluation of the ACA. The NHIS provides national estimates for a variety of health indicators, but only selected estimates are available for states with sufficient sample size. This study expands the use of the NHIS for state-level analysis of key health care outcomes.

We submitted a proposal to the National Center for Health Statistics to work in a Census Bureau Research Data Center (RDC), for access to state identifiers, to develop state-level estimates for ACA relevant indicators and to make these publicly available. We discuss the benefits and challenges of working in an RDC, as well as the disclosure process. We demonstrate how to access the 2011, 2012, and 2013 NHIS state-level estimates through an online interactive data tool. We plan to create an on-going series to support the tracking of health outcomes for states over time.

CONCURRENT SESSION G-4
WHAT'S NEW WITH LONGITUDINAL SURVEYS?

An Early Look at the Consumer Expenditure Survey Gemini Redesign Proof of Concept Test

Laura Erhard (Bureau of Labor Statistics), Jennifer Edgar (Bureau of Labor Statistics), and Nhien To (Bureau of Labor Statistics)

The U.S. Bureau of Labor Statistics (BLS) began the Gemini Project in 2009 with a goal of redesigning the Consumer Expenditure Survey (CE) as a response to increasing evidence in measurement error, declining response rates, the emergence of new data collection technologies, and need for flexibility in addressing changes in the interviewing environment. In 2013, a redesign plan was approved. In order to test the basic underlying structure and components of the new design, a proof of concept test was developed and will be fielded from July 2015 – October 2015. The main objective of the test is to assess the feasibility of completing one wave of the survey redesign--whether a single-sample expenditure survey design consisting of two personal interviews, individual diaries, incentives, record usage, and technology usage (electronic diaries) is achievable. The survey redesign's "concept" will be proved if no major methodological, operational, or experience issues are discovered.

This presentation will provide an overview of the POC test design, a discussion of lessons learned to date, highlights from Field Representative feedback on the test, and a preliminary analysis of the test results. Preliminary analysis will include completion rates for each component of the test (recall interview, individual diaries, and records interview) and sample performance compared to the CE production sample. This presentation will be of interest to survey methodologists, data producers, and data users.

An Overview of the New Survey of Income and Program Participation

Jason Fields (U.S. Census Bureau), Matthew Marlay (U.S. Census Bureau), and Patrick Campanello (U.S. Census Bureau)

The Survey of Income and Program Participation (SIPP) is now halfway through the 2014 panel, having wrapped up Wave 2 in mid-2015. This panel began data collection in February 2014 and will conclude Wave 4 collection in mid-2017. This paper describes the redesign effort, discusses some challenges and accomplishments in the fielding of the survey, and presents some initial statistics from the Wave 1 data.

The Census Bureau spent over five years reengineering the SIPP. The reengineering focused on reducing costs and modernizing the survey instrument and data processing system. A key component of the reengineering has been a transition to annual interviewing. Through this transition, we simplify the data structure, and are working to improve the ability of SIPP to support our data users.

Fielding the SIPP is not a trivial undertaking. The interview period runs for four months, from February through May of each year. The initial 2014 sample consisted of 53,000 households. Of these, we were able to interview approximately 30,000, for a final response rate of just over 70%. To get these interviews, our six regional offices hired about 1,200 field representatives, who completed an average of 25 interviews each during the four-month interviewing period.

The SIPP is focused on collecting information about the economic and social characteristics of the civilian, noninstitutionalized population of the United States. To accomplish this, we ask questions about a variety of topics, including Demographics, Residency, Fertility History, Program Receipt, Employment and Unemployment, Program Receipt, Health Insurance, Assets, and Disability. This paper presents some initial statistics about SIPP respondents along these dimensions. These statistics will help other government agencies such as the Social Security Administration more efficiently run their programs and more accurately measure eligibility and predict future need.

Design of a National Longitudinal Survey of Small Businesses to Assess the Early Impact of Healthcare Reform

David Kashihara (Agency for Healthcare Research and Quality) and Robert Baskin (Retired)

Effective January 1, 2014, the Affordable Care Act (ACA) stated that all firms with 50 or fewer full-time equivalent (FTE) employees could purchase health insurance for their employees from health insurance marketplaces known as the Small Business Health Options Program (SHOP). This paper describes the sample design of the 2013-2014 Medical Expenditure Panel Survey – Insurance Component (MEPS-IC) Longitudinal Survey and presents the new questions developed to measure the impact of the ACA. A longitudinal design was utilized to capture more detailed transitions that would be missed by a cross-sectional design. In 2014, this survey sampled responding business establishments to the 2013 MEPS-IC that were eligible to use SHOP marketplaces. The sample design was planned to balance precision considerations for two key variables (offer health insurance and number of enrolled employees) and ACA-relevant comparisons of the insurance characteristics of these firms before and after the implementation of the ACA. Relevant survey results will be provided along with planned changes for upcoming versions of this policy-relevant survey.

Movement and Changing Environment on the National Children's Study: How Can We Understand the Impact on a Longitudinal Population Survey

Ned English (NORC at the University of Chicago) Edward Mulrow (NORC at the University of Chicago), Jennifer Hasche (NORC at the University of Chicago), Katie Dekker (NORC at the University of Chicago), and Christina Park (NICHD)

The National Children's Study Vanguard Study was a pilot study for a large-scale epidemiological cohort study of children and their mothers and fathers. Measures were to be taken from pre-pregnancy until the children reached adulthood. The Vanguard Study tested a variety of sampling schemes, measurement forms and protocols, and information management systems. Ultimately, it was decided that moving forward with the large-scale study was not feasible and it was never launched. Nonetheless, data from the Vanguard Study can be used to address a number of research questions in pediatric and environmental health. Once women were enrolled in the study, the first participant interview was scheduled to occur before childbirth. Women were then interviewed at childbirth and again at regularly-spaced intervals every three to six months, including whether they stayed in place or moved.

National longitudinal studies depend on recontacting diverse populations across an extended period of time. Movement is not evenly-distributed across populations, however, with lower SES households tending to change address at higher-rates than others. Moreover, such households tend to be more challenging to find with standard locating methods using databases assuming credit and historical purchasing activity.

The NCS captured historical information about where all participants resided during the course of the study, 2009-2012. We then geocoded each address in order to understand location and distance moved, in addition to linking extant information for analysis. Our analysis focuses on how movers experienced different environments, from both a socioeconomic and environmental perspective. We profile how the places in which NCS participants have resided in may be similar or different, as well as the types of people who tend to move to different locations. Our findings shed light on nature of movement in cohort studies and how the concept of environment can change. Such mover profiling will be useful not only in studying retention outcomes but in studying outcomes of child health and well-being.

CONCURRENT SESSION H-1
CHALLENGES AND BENEFITS FROM LINKING ADMINISTRATIVE AND SURVEY DATA

Creating Improved Survey Data Products Using Linked Administrative-Survey Data

Michael Davern (NORC at the University of Chicago) and Bruce D Meyer (University of Chicago)

The groundwork has been laid through past administrative to survey data linkage research to create improvements in survey data products (microdata, summary files, and report tabulations). However, due to a variety of constraints (including cost of altering existing processing systems and potentially introducing new error) the opportunities have not been fully exploited. In this paper we lay out a framework which examines the component of survey error (Non-response error, sampling error, coverage error, processing error and measurement error) to make the case that past research with linked data demonstrates that significant improvement could be made in policy relevant survey estimates using linked data products. We use a mean squared error metric to estimate the gains in estimate quality that would be possible using linked data. We also use findings from past administrative-survey linked research findings on policy relevant estimates of Medicaid, SNAP, Social Security, Public Assistance, and uninsurance to make the case that data producers should not only continue to invest in data linkage research, but that more importantly, there is an imperative to produce large measureable improvements in survey estimate quality by creating enhancements to existing survey data products (microdata, summary data and report tabulations). We conclude with an assessment of the costs (both in terms of money and timeliness) associated with integrating linkage into the estimation process to produce data products. We compare the costs to those often paid by surveys in other attempts to improve survey data quality such as reducing unit non-response and increasing response rates.

Developing a Residence Candidate File for use with Employer-Employee Matched Data

Matthew R. Graham (U.S. Census Bureau), Mark J. Kutzbach (U.S. Census Bureau), and Danielle H. Sandler (U.S. Census Bureau)

The Longitudinal Employer-Household Dynamics (LEHD) program at the U.S. Census Bureau is developing a candidate file of residences using federal administrative data sources. LEHD, an employer-employee jobs frame, uses place-of-residence information for several missing-data imputation procedures and as a residence characteristic in a public use data product. Prior methodologies simply de-duplicated the list of possibly disagreeing addresses that pertained to a person record in a given year, using a besting rule. Our proposed methodology will use survey response data, linking a person with his or her residence and job, as a truth set, in order to train a model to discriminate among a blocked candidate set of administrative residence locations. We will then use the estimates to predict probability weights for the entire set of persons and candidate residences. Downstream imputation processes and tabulations may draw from the resulting probability distribution, which we expect to improve data quality, better represent uncertainty in the data, and minimize exposure of any one source.

Using the Census to Evaluate Administrative Records and Vice Versa

J. David Brown (U.S. Census Bureau), Jennifer H. Childs (U.S. Census Bureau), and Amy O'Hara (U.S. Census Bureau)

An ideal way of evaluating the accuracy and coverage of administrative records for use in census enumeration would be through a comparison to the actual occupancy and number of residents in each housing unit on April 1, 2010. While the 2010 Census provides information about this, not all Census enumerations are equally reliable. Censuses, like surveys, have some level of unit and item nonresponse as well as measurement error.

A common way to evaluate the quality of survey response data is by comparing it to information from administrative records on the same people. Meyer and Goerge (2011), for example, compare responses on food stamp receipt from both the American Community Survey (ACS) and the Current Population Survey (CPS) to administrative data on food stamps. With such an approach, however, one must determine the direction of quality comparison. Is comparing the two sources a measure of administrative record quality, Census response quality, both, or neither?

Sources of error in survey data collection have been well documented in the literature (see Groves et al., 2009). More recently, researchers have started documenting systematic errors within administrative records sources as well (Groen, 2012). At the Census Bureau, researchers have been using administrative records as a research tool to assess survey responses, allowing for the possibility that neither the census nor the records are perfect (Mulry et al, 2006). This paper follows that vein.

This report posits that some census responses are likely of higher quality than a given administrative record, and others may be of worse quality. By exploring characteristics of census responses that we hypothesize are related to accuracy, we propose a way to use a combination of survey and administrative record sources to evaluate the quality of each, and to provide evidence in support of this method.

CONCURRENT SESSION H-2
MULTIMODE DATA COLLECTION

Data-Driven Decision Making and the Design of Economic Census Data Collection Instruments

Eric B. Fink (U.S. Census Bureau), Jennifer L. Beck (U.S. Census Bureau), and Diane K. Willimack, (U.S. Census Bureau)

The economic census, which the U.S. Census Bureau conducts every 5 years, is undergoing a major re-engineering effort. For the 2012 Economic Census, establishment-level data were collected using two-self-administered modes: mail-out/mail-back and electronic. For the 2017 Economic Census, only electronic reporting will be available. This presents unique challenges and opportunities for designing electronic instruments. For example, in past censuses, paper questionnaires contained long, detailed lists of products that filled multiple pages; respondents had to search for goods and services in this list and enter revenue data. A Web instrument offers automated features that may reduce the burden of sifting through long product lists, and improve data quality.

This paper focuses on the planned electronic collection of detailed product lines for implementing the North American Product Classification System (NAPCS), a comprehensive demand-oriented classification system launched among the statistical agencies of the United States, Canada, and Mexico. As part of this effort, we analyzed product information that businesses reported in the 2012 Economic Census to discern reporting patterns associated with industries in the economic census. These reporting patterns may be leveraged in 2017 instrument design, providing a familiar starting point for respondents to begin supplying product-level receipts. We use the results from this analysis, in conjunction with usability testing, to aid development of an effective design for obtaining product-level detail.

We demonstrate how analyzing respondent reported data, paired with instrument design testing, may be used to inform instrument-design decisions for business surveys. As many Federal surveys increasingly rely on electronic-based data collection, electronic instruments can provide many benefits over traditional paper forms. The electronic instrument need not have the look and feel of its paper-based counterpart to be effective, but can be uniquely customizable to the respondent to improve the survey experience, thus reducing respondent burden and increasing data quality.

Integrated Management of Survey Modes

Jerome Wernimont (Westat) and Ray Snowden (Westat)

In efforts to improve response rates, reduce costs, and take advantage of emerging new technology, it is becoming increasingly common for surveys to utilize multiple survey modes to address different needs. Some studies use multiple modes at the beginning of data collection, while others adopt a phased approach or incorporate additional modes in an adaptive design. These multimode approaches present unique challenges in automating case workflow control, providing common services and supporting unified reporting and status monitoring. In order to be efficient, the management of the survey process requires integrated systems that support data transformation with a high degree of flexibility and real-time control.

This presentation will begin with a short literature review, then discuss the issues and explore examples and approaches to developing these capabilities, including solutions that have been adopted or proposed for this purpose by a number of survey data collection organizations. The presentation will also feature a case study of Westat's multimode management platform that has been developed to meet many of these requirements, while providing core management functions and common services that are needed by many projects through their full survey life cycle. A review of several implementations of the multimode manager will be presented. We will conclude with an assessment of how well today's multimode management systems in North America and Europe meet emerging survey methods requirements. The need to continue development and expand these capabilities will also be explored.

Evaluating Collection Mode Effect with Web Data Collection in the Canadian Labour Force Survey

Justin Francis (Statistics Canada) and Guy Laflamme (Statistics Canada)

The Canadian Labour Force Survey (LFS) is a monthly household survey measuring unemployment and other labour characteristics. The survey has a rotating panel design, where households remain in the sample for 6 consecutive months, and has historically used both telephone and in-person collection. In 2015 LFS introduced the option for web data collection. At the end of each telephone or in-person interview, respondents can choose to complete an Electronic Questionnaire (EQ) online for the following month, instead of having interviewers contact them in person or by telephone. To evaluate the impact of the new strategy on main estimates, EQ was introduced with an embedded randomized experiment, offering the EQ option to half of each new sample in each region.

Both design-based and model-based analyses were conducted to evaluate possible errors introduced by the change in collection mode. Direct comparisons between the two strategies were made for unemployment rate and other main survey estimates. Markov latent class analysis was used to evaluate changes to the rates of labour force misclassifications across repeated months of collection. Finally, propensity score matching was used to compare responses across collection modes while adjusting for self-selection of collection mode choice. Key findings as well as challenges encountered are discussed.

Agreement across modes of collection in the Occupational Requirements Survey: Results from a Pilot Job Observation Test

Kristen Monaco (Bureau of Labor Statistics), Kristin Smyth (Bureau of Labor Statistics), and Tiffany Chang (Bureau of Labor Statistics)

The Occupational Requirements Survey (ORS) is an establishment survey conducted by the Bureau of Labor Statistics (BLS) for the Social Security Administration (SSA). The survey collects information on the vocational preparation and the cognitive and physical requirements of occupations in the U.S. economy, as well as the environmental conditions in which those occupations are performed.

These data are collected by BLS Field Economists who conduct interviews with establishment representatives. A question that has been raised during the collection process is whether the data collected through this mode result in similar measurements as data that would be collected through direct job observation (which is more typical among small scale studies of job tasks). To answer this question, BLS will conduct a job observation pilot test during Summer 2015. Under this test, Field Economists will recontact establishments who responded to the ORS pre-production survey and collect data on the physical demands and environmental conditions of the job.

Our paper will present the results of an analysis that compares the data from direct collection to that gathered through interviewing an establishment representative. The comparisons will be performed at the occupational level (defined by eight digit Standard Occupational Classification code) and include visual comparison techniques (such as a Bland-Altman plot) and statistical comparisons (through a set of statistical tests, such as Mann-Whitney-Wilcoxon test).

CONCURRENT SESSION H-3
FRAME DEVELOPMENT AND RESPONDENT SELECTION

Vaping the Web: Crowdsourcing and Web Scraping for Establishment Survey Frame Generation

Bryan B. Rhodes (RTI International), Annice E. Kim (RTI International), and Brett R. Loomis (RTI International)

Traditionally sampling frames for establishment surveys have been based on one or more administrative or commercial data sources, such as state licensure lists, trade group registries, or Dun & Bradsteet listings. These sources, however, have several limitations. One limitation is that the business lists may be updated only periodically, and so may not include new businesses, reducing frame coverage. Another limitation is that the list may not provide enough information about the business for a particular survey's sampling needs (e.g., products sold, website). By contrast, online business directories that cater to consumers (e.g., Yelp, Google, YellowPages.com) are constantly being updated by their user base, and may contain extensive information about their businesses. This paper will outline an innovative methodology that uses automated web scraping of these online directories along with crowdsourcing to build a sampling frame of specialty sellers of Electronic Nicotine Delivery Systems (ENDS), called vape shops, in Florida.

We first used web scraping software to conduct a series of automated searches of online retailer directories. These automated searches used combinations of keywords (e.g., vape, vapor, e-cig) and locations (e.g., Orlando, Miami) to search for vape shops. The results of these searches were collected and consolidated to create a potential list of all vape shops in Florida. Next, to confirm that the businesses identified were in fact vape shops, we used Amazon's Mechanical Turk crowdsourcing platform to have workers call each establishment and verify that it met our definition of a vape shop. Through these methods we were able to create an up-to-date list of vape shops in the state of Florida in only a few days at fairly minimal costs. This paper will provide details on the web scraping and crowdsourcing methods as well as a comparison of the results to a state licensure list of tobacco retailers.

Using a Mobile Mapping Instrument to Evaluate a Permanent Grid Sampling Frame

Denise A. Abreu (National Agricultural Statistics Service), Linda A. Lawson (National Agricultural Statistics Service), Claire Boryan (National Agricultural Statistics Service), Michael Gerling (National Agricultural Statistics Service), and Rick Hardin (National Agricultural Statistics Service)

The National Agricultural Statistics Service (NASS) conducts the June Agricultural Survey (JAS), which is based on an area frame. Segments of land comprise the sampling units for the JAS. Every year, 20 percent of the sampled segments are rotated out and a new rotation of segments is introduced. Building and constructing an area frame is expensive and time consuming. The agency is evaluating the use of a permanent grid sampling frame as a cost saving initiative.
NASS is also investigating use of mobile mapping technology during data collection. Currently, JAS sampled segment boundaries follow roads or other physical features to match the infrastructure on the ground. Field enumerators use an aerial photo to locate and interview all operators within the segment boundary. NASS is evaluating the modernization of its data collection effort through replacing the use of the aerial photo and paper questionnaire with the use of a mobile mapping instrument.

To test this concept of a permanent grid segment in conjunction with the mobile mapping instrument, enumerators in North Carolina, Pennsylvania and South Dakota visited with farm operators during Summer 2014. This report documents the challenges faced as well as the lessons learned from this test and discusses future plans for NASS' data collection activities, including the use of Farm Service Agency (FSA) common land units (CLUs).

Quantifying Urban Agriculture: A Case Study from Baltimore

Linda Young (National Agricultural Statistics Service)

Increasingly agriculture in the urban areas of the US is perceived to be an important factor in food security, especially for the socially disadvantaged. As an example, an acre within an urban area may provide numerous families an opportunity to grow fresh fruits and/or vegetables. Some of the urban agriculture operations represent farms, an entity that sells, or has the potential to sell, a thousand dollars or more of agricultural produce. Others, such as a small plot within a community garden, do not. Yet, all can contribute to food security. The USDA's National Agricultural Statistics Service (NASS) has been asked to propose a method for better quantifying urban agriculture. A pilot study of a new approach to quantifying urban agriculture is being conducted in two US cities, the first of which is Baltimore. Algorithms incorporating information from satellite imagery, social media, and permit lists are used to identify areas of potential agricultural activity. A survey is then conducted to assess whether each of the operations in a sample of the identified areas is non-agricultural, agricultural but not a farm, or an urban farm. In this paper, the study is outlined; the results from satellite imagery are discussed; and the results of the pilot study are presented. Challenges and lessons learned will be highlighted. The potential of scaling the pilot study up for national implementation is discussed.

A Meta-analysis of Within-Household Respondent Selection Methods

Ting Yan (Westat), Roger Tourangeau (Westat), and Rose McAloon (Joint Program in Survey Methodology, University of Maryland)

Random selection of a respondent within a sampled household is essential for maintaining the probability nature of the resulted sample and for making reference from the sample to the general population. The latest review on within-household selection methods lists at least 15 selection methods that have been used to generate a sample of persons from a probability sample of households. However, there is no clear guideline in the literature on how to select from the existing pool of respondent selection methods that is driven by empirical evidence. This paper conducts a meta-analysis on empirical research that experimentally compares two or more respondent selection methods. The goal of the meta-analysis is to generate quantitative effect sizes indicating the size of the impact of different selection methods in terms of cooperation rates and sample compositions. These meta-analytic results will be of practical significance to survey organizations and practitioners; the effect sizes will be used as systematic and accessible evidence to guide survey practitioners on their choice of respondent selection methods.

CONCURRENT SESSION H-4
HEALTH INSURANCE ESTIMATES: ASSESSING THE IMPACT OF A REDESIGN

How Did the Method Change in the CPS ASEC Affect Health Insurance Estimates?
Carla Medalia (U.S. Census Bureau) and Brett O'Hara (U.S. Census Bureau)

In 2014, the redesigned questions replaced the traditional health insurance questions in the Current Population Survey Annual Social and Economic Supplement (CPS ASEC). In previous research, using survey and modeled data, the effect of the methods change in 2013 was estimated to be a 1.7 percentage point decrease in the uninsured rate (O'Hara and Medalia forthcoming). In order to better understand the implications of the methods change, Congress requested that the Census Bureau implement the traditional CPS ASEC questions as an additional supplement in 2015. This request resulted in two versions of the survey: the 2015 CPS ASEC, which included the redesigned health insurance and income questions, and the 2015 Parallel Supplement, which included the traditional questions on income and health insurance coverage. To examine the effect of changing the method of collecting health insurance data on estimates, this paper compares the 2015 Parallel Supplement to the 2015 CPS ASEC.

Estimating a Time-Trend of the Uninsured Rate for the CPS Parallel ASEC
Brett O'Hara (U.S. Census Bureau) and Carla Medalia (U.S. Census Bureau)

In 2014, redesigned questions replaced the traditional health insurance series in the CPS ASEC. Previous research modeling the change produced a reasonable estimate of the 2013 uninsured rate for the traditional questions using data from the American Community Survey and previous years of the Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC) (O'Hara and Medalia forthcoming). In this paper, we take two approaches to produce model-based estimates of health insurance coverage. First, we take a backwards forecasting approach to estimate the uninsured rates in 2013 and 2012 using the 2015 CPS Parallel ASEC, which reused the traditional questions. We then use the forward forecasting approach used in O'Hara and Medalia 2015 to predict the uninsured rate in 2012. Finally, we make two comparisons of the model-based estimates: we compare the 2012 model-based uninsured rate versus a 2012 survey-based uninsured rate, and we compare the forwards and backwards model-based 2013 uninsured rates.

Reference
O'Hara, B., and C. Medalia. "Health Insurance in the 2014 CPS ASEC: Examining the Effect of the Redesign." U.S. Census Bureau Working Papers, forthcoming.

Comparing 2014 SIPP and 2014 CPS ASEC Employer-Sponsored Insurance Offer and Take-up Rates
Joelle Abramowitz (U.S. Census Bureau)

This paper compares offer and take-up rates of employer-sponsored insurance in the 2014 Current Population Survey Annual Social and Economic Supplement (CPS ASEC) to those found in Wave 1 of the 2014 Survey of Income and Program Participation (SIPP) Panel. We examine estimated offer and take-up rates as well response rates across the surveys. The analysis also compares the reasons reported for why individuals were ineligible to enroll in employer-sponsored insurance or were eligible but chose not to enroll. We compare outcomes for the full sample and by demographic characteristics, including educational attainment, sex, race/ethnicity, and age, as well as by employer characteristics, including firm size.

The CPS ASEC was recently redesigned to address concerns over validity of health insurance estimates. Among the changes to the survey content, the redesign introduced questions about employer-sponsored health insurance benefits and reasons for nonparticipation in an employment-based health insurance plan. These questions are the focus of this paper and are of particular interest given changes introduced through the 2010 Patient Protection and Affordable Care Act (ACA), which may lead to changes in the rates of offer and take-up.

Comparing estimates of offer and take-up across surveys is important for understanding robustness of and discrepancies in alternate estimates and identifying any factors contributing to these discrepancies. In particular, key models predicting the impact of the ACA have used the 2005 and 2008 SIPP employer-provided health benefits topical modules (Congressional Budget Office Health Insurance Simulation Model, RAND COMPARE microsimulation module) and the 2005 CPS Contingent Work and Alternative Employment Supplement (Urban Institute Health Insurance Policy Simulation Model) for the take-up portion of their simulations. Understanding differences in estimates of offer and take-up rates in the CPS ASEC and SIPP could have important implications for using them to model and evaluate the effects of the ACA.

Medicare Coverage and Reporting of the Elderly Population: A Comparison of CPS and Administrative Records

Renuka Bhaskar (U.S. Census Bureau), James Noon (U.S. Census Bureau), Sonya Rastogi (U.S. Census Bureau), Brett O'Hara (U.S. Census Bureau), and Victoria Velkoff (U.S. Census Bureau)

Medicare coverage of the elderly population in the United States is widely recognized as being nearly universal. Recent statistics from the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) indicate that 93.1 percent of individuals ages 65 and older were covered by Medicare in 2013. Those without Medicare include those who are not eligible for the public health program, though the CPS ASEC estimate may also be impacted by misreporting. Using linked data from the CPS ASEC and Medicare Enrollment Database, we estimate the extent to which individuals misreport their Medicare coverage - including those who report having Medicare but are not enrolled (false positives) and those that do not report having Medicare but are enrolled (false negatives). We use regression analyses to evaluate factors associated with both types of misreporting including socioeconomic, demographic, and household characteristics. We then provide national and state-level estimates of the implied Medicare-covered, insured, and uninsured elderly population, taking into account misreporting in the CPS ASEC. Finally, we evaluate the characteristics of those who are not covered by Medicare and examine separately those who are uninsured and those who have only private insurance, Medicaid, or SSI. Our results will be useful to researchers studying insurance coverage and reporting and to policy makers aimed at improving health insurance coverage for the elderly population.

CONCURRENT SESSION I-1
EXPERIENCES AND EVALUATIONS IN USING RECORD LINKAGE TO IMPROVE THE QUALITY OF SURVEY PRODUCTS AND DATA

Simulated versus Actual SNAP Unit Composition in Survey Households in Two States

Karen Cunnyngham (Mathematica Policy Research), John L. Czajka (Mathematica Policy Research), and Randy Rosso (Mathematica Policy Research)

National survey data are used to simulate Supplemental Nutrition Assistance Program (SNAP) eligibility in order to assess SNAP performance and to estimate the effects of proposed changes to the program on SNAP eligibility. An important part of simulating SNAP eligibility is forming potential SNAP filing units within survey households. A SNAP unit may contain only a subset of household members, and a household may contain more than one SNAP unit. Under a project cosponsored by the Census Bureau's Center for Administrative Records Research and Applications (CARRA) and the Economic Research Service (ERS) of the U.S. Department of Agriculture, SNAP administrative data from two states, New York and Colorado, were linked to data from three surveys, the American Community Survey (ACS), Current Population Survey Annual Social and Economic Supplement (CPS ASEC), and Survey of Income and Program Participation (SIPP). SNAP unit membership as recorded in the administrative data was compared to simulated unit membership (ACS and CPS ASEC) and reported unit membership (SIPP). The analysis sample for each survey consisted of all households in which one or more members matched a SNAP administrative record. Unlike previous studies of linked survey and SNAP administrative records, this analysis took account of unmatched as well as matched SNAP records.

This paper describes how the linked files were constructed and presents key findings. For example, the analysis of ACS data linked to New York SNAP administrative data showed that in 50 percent of survey households, (1) all members of both the ACS survey household and the New York administrative unit were matched to the other dataset and (2) the numbers of simulated and administrative SNAP units were the same. The vast majority of these households contained only one SNAP unit. In addition, between 44 and 47 percent of the households receiving SNAP benefits included nonparticipants.

Program Confusion in the 2014 SIPP: Using Administrative Records to Correct False Positive SSI Reports

Katherine Giefer (U.S. Census Bureau), Abby Williams (U.S. Census Bureau), Gary Benedetto (U.S. Census Bureau), and Joanna Motro (U.S. Census Bureau)

The 2014 Survey of Income and Program Participation (SIPP) asks about two programs administered by the Social Security Administration (SSA): Supplemental Security Income (SSI) and Social Security (OASDI or Old-Age, Survivors, and Disability Insurance). While the eligibility requirements for SSI and Social Security differ, both programs provide benefits to individuals who are blind, disabled, or aged. This similarity combined with the presence of false positive rates of SSI receipt in the 2008 SIPP led to changes aimed at clarifying which program was being asked about in the SSI section of the 2014 instrument. Despite these modifications, the rate of false positive SSI reports in the 2014 SIPP rose to 49% compared to 23% in the 2008 Panel.

Matching 2014 SIPP Wave 1 data with administrative records from SSA revealed that many of the SSI false positives fell under a specific type of false positive reporting that can be described as "program confusion". In these cases, respondents were either reporting both SSI and Social Security (double reporting) or only reporting SSI (program swapping), when administrative records indicated they were only receiving Social Security.

The high rate of false positive reporting affected the quality of the Wave 1 SSI data to the extent that an edit correction was necessary to avoid suppressing the data on the public use file. Using administrative records, we were able to identify respondents who made false positive SSI reports because of program confusion and correct their survey reports, which will allow the data to be released for public use. This paper discusses the issue of program confusion and the method used to "correct" the data, as well as the distribution of SSI receipt in Wave 1 before and after the correction.

Evaluation of Record Linkage for SEER breast cancer registries to Oncotype DX assays

Michael D. Larsen (George Washington University), Will Howe (IMS), Nicola Schussler (IMS), Benmei Liu (National Cancer Institute), Valentina Petkov (National Cancer Institute), and Mandi Yu (National Cancer Institute)

The SEER cancer registries contain information on breast cancer cases in their registry areas. A diagnostic test based on the Oncotype DX assay, performed by Genomic Health, Inc. (GHI), is often performed for certain types of breast cancers. Record linkage using personal identifiable information was conducted to associate Oncotype DC assay results with SEER cancer registry information. The software Link Plus was used to generate a score describing the similarity of records and to identify the apparent best match of SEER cancer registry individuals to the GHI database. Clerical review was used to check samples of likely matches, possible matches, and unlikely matches. Performance of record linkage procedures, impact of blocking and comparison variables used in matching, and the impact of record linkage decision rules on substantive analyses will be reported. It is anticipated that this work will lead to improved methods with greater accuracy and reduced cost for linking SEER and GHI files in the future. Suggestions will be given for record linkage methods in other scenarios and for methods of evaluating record linkage performance.

CONCURRENT SESSION I-2
MOBILE SURVEY DESIGN

Optimizing the Decennial Census for Mobile – A Case Study

Elizabeth Nichols (U.S. Census Bureau), Erica Olmsted Hawala (U.S. Census Bureau), Rachel Horwitz (U.S. Census Bureau), and Michael Bentley (U.S. Census Bureau)

The U.S. Census Bureau is committed to offering an Internet response option for the 2020 Census. We expect most self-responses to come in online. Current surveys, such as the American Community Survey, have been online since 2013. Other decennial census field tests, such as the 2014 Census Test, have used an online instrument to collect data. However, as of 2014, the online instruments developed were designed for optimal view on a desktop or laptop. Although these surveys could be answered on tablets or smartphones, the screen display was very small and required the user to pinch to zoom or other manipulations to be able to clearly read and answer the questions.

As of 2014, mobile-ownership statistics show 64% of adults own a smartphone and 7% of adults are dependent upon their smartphone for Internet access. The smartphone-dependent adults are also more likely to be lower income, younger, and minority (Pew Internet project, 2014). With the growth of mobile device ownership overall and the differences in device-dependent Internet access populations, the Census Bureau realized it must create a mobile-optimized design for the 2020 Census. For the 2015 Census Test, the Census Bureau developed a mobile-optimized online census, in addition to the traditional desktop/laptop design. A mobile style guide was developed for the programmers. In addition to user acceptance testing, usability testing was conducted prior to fielding the survey.

This presentation discusses the creation of a mobile-optimized style guide and the best practices which arose from the usability testing. Additionally, we compare usage and break-off data from the 2014 and 2015 Census Test online instruments. The 2014 instrument was not optimized and the 2015 instrument was. The goal of the comparison was to determine whether optimizing for mobile improved data quality and the user experience.

Testing the Feasibility of Collecting Expenditure Data via Individual Mobile and Web Diaries

Ian Elkin (Bureau of Labor Statistics), Brett McBride (Bureau of Labor Statistics), and Lucilla Tan (Bureau of Labor Statistics)

The current Consumer Expenditure Diary Survey (CED) at the Bureau of Labor Statistics (BLS) uses a pencil-and-paper instrument (PAPI) to collect expenditure information from respondents. PAPI diary data collection has a number of inherent drawbacks, such as limiting entry to a single individual in a single location, and requiring that the main diary keeper carry the diary with them throughout the day in order to support in-the-moment diary keeping. Additionally, having one person in the household maintain the diary for all household members has drawbacks. The CE program leveraged new data collection technologies to present households with options for contemporaneous diary maintenance that included a mobile application for Smartphones as well as a desktop-based web diary. In addition to testing the use of an online mode to collect diary data, the CE program continued past research exploring the feasibility and effectiveness of providing a diary to all household members over a certain age. By providing individual diaries, the CE program hopes to address underreporting caused by proxy reporting, by allowing each household member to report for themselves. Beginning in August 2014, CE fielded a 5-month test (n=600) to determine the feasibility of collecting expenditure data via mobile and web diaries provided to all eligible members of a household. In this presentation, we report on preliminary findings regarding sample performance, sample composition, diary maintenance patterns, data quality impact, and other associated operational issues as well as provide recommendations for implementation and future research.

Gridlock: Improving Questionnaire Design for Mobile Devices

Randall K. Thomas (GfK Custom Research) and Frances M. Barlas (GfK Custom Research)

Grid formats are commonly used for self-administered surveys, found frequently in both mail and online modes. They are the most efficient means of assessing a series of elements that can share a similar response scale. However, and partly because of their efficiency, many grids have become lengthy in terms of the numbers of responses used and number of elements presented. This explosion in grid length has been especially seen in online surveys. While grids with many columns and many rows may not be ideal for respondents on desktops or laptops, for the 20% to 30% of participants attempting to complete on a mobile device, these grids can become impossible to complete. In a series of 3 experiments, we examined how the number of responses presented could affect both the validity and differentiation ability of the scales. In the first experiment, we randomly assigned 1,734 respondents to 3, 4, or 5 responses, comparing bipolar with unipolar variations across different types of content (behavioral and attitudinal). In the second experiment, we had 4,998 respondents randomly assigned to receive 3, 4, or 5 responses with a unipolar variation. In our third experiment, we compared several grid variations with fewer or more response options. This third experiment had 4,555 respondents who had been randomly assigned to complete the survey on a desktop/laptop, a tablet, or a smartphone. Across all experiments, scales with fewer response categories were found to be as highly differentiating as scales with more categories. In addition, in comparing the validity of the response formats, we found that scales with fewer response categories were as valid as scales with more response categories. This suggests that response scales with fewer categories are a viable and important consideration in designing online surveys to accommodate the large and growing share of respondents on mobile devices.

Measurement on the Move: Designing Questionnaires for Mobile First

Frances M. Barlas (GfK Custom Research), Randall K. Thomas (GfK Custom Research), and Patricia Graham (GfK Custom Research)

The proportion of participants who take web-based surveys on mobile devices is increasing and may improve coverage and reduce non-response. We first review a number of studies we have done with both probability and non-probability samples to detail the demographic differences of participants who use mobile devices for online surveys as well as attitudinal differences after controlling for normal demographic factors. We next review studies we have conducted to empirically determine best practices for mobile questionnaire design. A necessary, but not sufficient, method to adapt web surveys to mobile devices is to implement responsive design whereby the survey display is adjusted based on the screen size and orientation. Beyond this, evidence-based recommendations are needed to better inform design decisions around survey question and response format. As such, we utilize data from two different types of studies to inform our recommendations. The first was “accidental mobile” studies where respondents selected their survey completion device and the second was a “purposefully mobile” study where respondents were randomly assigned to a completion device. We examine how device affects responses to various question formats, including single and multiple choice, horizontal and vertical display and scrolling, open-ended numeric, sliders, and drop down formats over a variety of survey topics. We will discuss observed differences in responses that appear to occur because of device used and not due to sample differences as well as differences that appear to be due to differences in respondents across devices. We will summarize the empirical evidence for changing the very nature of questionnaire design to prepare simpler, easier to complete surveys with a mobile-first mentality. We will show that such an approach improves the survey experience and data collected with surveys completed on mobile devices, and also benefits all respondents including those completing studies on desktop and laptop devices.

A Summary of Issues Associated With the Modernization of Data Collection

Linda A. Lawson (NASS), Denise A. Abreu (NASS), Claire Boryan (NASS), Michael Gerling (NASS), and Rick Hardin (NASS)

The National Agricultural Statistics Service (NASS) is considering the use of a permanent grid frame instead of its area frame for the June Agricultural Survey (JAS). It has been proposed that a grid of one-square mile areas be used to establish the frame for each state. The grid areas would be stratified by agricultural intensity and then a stratified random sample drawn. As with the current area frame, every year 20 percent of the sampled segments would be rotated out and a new rotation of segments introduced. A challenge associated with this proposed approach is that only a portion of an agricultural field may lie within the selected grid whereas currently sampled areas have boundaries that follow roads or other physical features.

Because of the presence of partial fields in a sample unit, the use of mobile mapping technology may be critical for proper identification of the area to be sampled. Currently, enumerators identify fields within a sample unit on an aerial map. The mobile mapping also allows electronic data entry. To test the concept of a grid segment in conjunction with the mobile mapping instrument enumerators in North Carolina, Pennsylvania and South Dakota visited with farm operators during summer 2014. A sample of grid segments was selected in each state. For each sampled segment, the enumerators completed a segment evaluation form that gathered information on issues associated with the grid concept, use of a mobile mapping instrument, connectivity and glare associated with the iPad. This report documents the results of both the mobile mapping as well as the permanent grid concept.

CONCURRENT SESSION I-3
ISSUES WITH DISCLOSURE AND DATA CONFIDENTIALITY

Formal Privacy Protection for Data Products Combining Individual and Employer Frames

Ashwin Machanavajjhala (Duke University), Samuel Haney (Duke University), Matthew Graham (U.S. Census Bureau), Mark Kutzbach (U.S. Census Bureau), and John Abowd (U.S. Census Bureau, Cornell University)

Published tabular summaries of linked employer-employee data usually use a job frame (statutory employer linked to a specific employee) but include characteristics of both the individual (employee) and workplace (employer establishment). Formal privacy protection of these characteristics requires defining the sensitivity of the published statistic to the inclusion of an individual or to the variation in the size of a single workplace (establishment). We propose a model that simultaneously protects individuals and establishments using parameters that control the conventional differential privacy for individuals and a generalization that provides a similar privacy guarantee for the employment magnitudes associated with an employer establishment. We implement our model using three alternative noise distributions. We present results for cross-sectional employment summaries for combinations of employer industry, geography, and ownership; employee sex, age, race, ethnicity, and education. The system is illustrated using the LEHD Origin-Destination Employment Statistics (LODES) database displayed in the U.S. Census Bureau's OnTheMap application.

Methods of Selecting Variables in Data Disclosure

Charles C Lin (National Center of Veterans Analysis and Statistics, Department of Veterans Affairs), Hwai-Tai Lam (Office of Actuary, Department of Veterans Affairs), Lijia Guo (Office of Actuary, Department of Veterans Affairs), and Tom Garin (National Center of Veterans Analysis and Statistics, Department of Veterans Affairs)

Data released for public use needs to be protected for personal identified information such as name and Social Security Number and any unusual pattern in data which could have a high risk of re-identification. All privacy protected information should be stripped from released variables in data according to a set of disclosure guidelines. Excessive restrictions of released data elements, however, could render the data useless. The task of proper data disclosure with minimum risk of re-identification can be overwhelming when the number of variables becomes large. The brute force approach of examining all becomes infeasible as the number of possible combinations of variables increases exponentially. To prepare a data for public use, this study proposes systematic methods examining each variable with respect to both risks and benefits. These methods compare a subset of variables to another and traverse back and forth from subsets to subsets in a step-by-step manner until a stopping criterion is met. The final subsets of variables will provide reasonable choices of variables for public release. The methodology with its implementation in SAS program will be discussed in details and demonstrated with examples.

Considering the Usefulness of Standard FOIA Provisions in Interagency Agreements

Jennifer Goode (U.S. Census Bureau), Michael Toland (U.S. Census Bureau), Hampton Wilson (U.S. Census Bureau), and Rana Wahdan (U.S. Census Bureau)

The Freedom of Information Act (FOIA), 5 U.S.C. §552, is a disclosure statute which requires federal agencies to disclose information unless such information is covered by one or more of the FOIA's exemptions. Each agency is responsible for responding to requests related to their own data. However, to the extent that the agencies have jointly or collaboratively created or generated information, documents, or data under an Interagency Agreement (IAA), each agency has an interest in the information disclosed to a requester under the FOIA. This paper discusses the usefulness of the inclusion of standard FOIA language in applicable Interagency Agreements.

CONCURRENT SESSION I-4
MODELING PRELIMINARY ESTIMATES

Early estimates of annual manufacturing industry output

Peter B. Meyer (Bureau of Labor Statistics), Jason McClellan (Bureau of Labor Statistics), Jennifer Price (Bureau of Labor Statistics), Sam Rowe (Bureau of Labor Statistics), and others in BLS-OPT

BLS estimates labor productivity of manufacturing industries using measures of output from the Annual Survey of Manufactures or the Economic Census. In this paper we use other data sources to make estimates of those output measures before they are released so that it is possible to construct preliminary productivity statistics for many manufacturing industries about four months after the end of the reference year.

The output measure used for these preliminary productivity statistics is called the “value of production.” This is a sectoral output measure, which is different from either gross output or value-added output, and excludes sales from one establishment in the industry to another. As computed from the underlying data it incorporates several elements for each industry: (1) the overall value of shipments, (2) inventory levels at the beginning and end of the year, (3) sales to other establishments in the same industry, and (4) resales, which are specially excluded from industry output.

These four components are predicted by the output and inventory measures in the M3 survey, the Federal Reserve’s Industrial Production indexes, imports, exports, employment, wages paid, rail carloads shipped, net sales in the Census’s Quarterly Financial Reports, and price indexes.

We examine the quality of the predictions relative to estimates previously released by the labor productivity program, and discuss the likely criteria for releasing preliminary estimates using this method in the future.

Early Monthly Estimates for the Services Sector

Pieter Vlag (Statistics Netherlands), Ton de Waal (Statistics Netherlands), and Cagan Kaya (Turkish National Statistical Institute)

The services sector contributes about 50 % to the Dutch economy. Statistics Netherlands uses a combination of 1) VAT (Value Added Tax) data and 2) a survey for the largest enterprises to produce a quarterly turnover estimate for the services. The quality of these quarterly estimates is good and can be used as a reference.
The demand for early available monthly information about the services sector is large Therefore, Statistics Netherlands intends to introduce a monthly survey for the services. However, the decision process is long and timeliness issues remain: a turnover estimate based on a regular survey cannot be published earlier than 40 – 45 days after the month.

Therefore, alternatives to develop an early indicator for the services were investigated. Restrictions for these alternatives were: low production costs, based on existing data, based on existing methodologies.

Three alternatives have been explored:

- a simple econometric model using information outside the services sector (order position, consumer confidence, bankruptcies, producer confidence).
- quantification of the results of the monthly Business Survey Netherlands (BSN) for enterprises active in the services sector. The BSN provides information on the opinions of Dutch producers about performance over the last three months and expectations over the next three months.
- using data from the 1600 traffic (induction) loops on high-ways in the Netherlands. These traffic loop data provide real-time information (per minute) about traffic intensities of small cars, large cars and trucks. Traffic intensities near ports, airports, industrial areas and border crossings related to growth of the transportation sector (= part of the services) and economic activity in general.

Time-series analyses have been used to compare the results of these early indicators with the quarterly estimates based on surveys. During the presentation the advantages and disadvantages of these three alternatives will be discussed, too.

Medicaid and CHIP Data Methodology for SAHIE Models

David Powers (U.S. Census Bureau), Lauren Bowers (U.S. Census Bureau), Wesley Basel (U.S. Census Bureau), and Samuel Szelepka (U.S. Census Bureau)

This work seeks to identify and document the best available Medicaid and CHIP data sources, data transformations, and methodology for use in the U.S. Census Bureau's Small Area Health Insurance Estimates (SAHIE) program. SAHIE is the only source of single-year health insurance coverage estimates for all counties in the United States. SAHIE are model-based estimates that enhance the American Community Survey (ACS) data by combining them with informative administrative records data for a given year. With state Medicaid expansions taking place in many states under the Affordable Care Act (ACA), the time lag of the Medicaid data historically used in the SAHIE models of ACS health insurance coverage may limit their usefulness going forward. In response, the SAHIE program currently seeks to reduce the Medicaid time lag by benchmarking its detailed Medicaid tallies (by age, sex, basis, county) from the Medicaid Statistical Information System (MSIS) with timely state-level Medicaid growth figures or numerical benchmarks from more rapidly published data series from Centers for Medicare and Medicaid Services (CMS) and/or Kaiser Family Foundation (KFF). In this work, we lay out the conceptual differences between various Medicaid and Children's Health Insurance Program (CHIP) data sources, citing key assumptions and filters, and we study numerical differences between data series for like concepts and time periods. We describe a few candidate benchmarking approaches for combining the detailed MSIS and timely state-level data series, and we study the predictive accuracy of each approach by examining historical simulations (using old data to predict later-published actual data), discussing apparent advantages and disadvantages to each option. Finally, we compare summary results from provisional SAHIE models that utilize the different versions of the Medicaid and CHIP data and benchmarking approaches.

CONCURRENT SESSION J-1
ADAPTIVE DESIGN II

Managing Survey Costs: Using Mobile Technology Coupled with Performance Dashboards to Improve Field Operations

Brad Edwards (Westat), Richard Dulaney (Westat), Abie Reifer (Westat), and Tamara Bruce (Westat)

The cost of traditional household surveys continues to rise and challengers increasingly question their value in the face of nonprobability studies and big data. In face to face surveys, interviewer labor and expenses drive the project budget, yet little is known about how interviewers spend their time when they are not conducting interviews. Although CARI can provide some insight into interviewer behavior during interviews, it often reveals how poorly many interviewers ask questions, and little of their behavior when not conducting interviews (how they spend the majority of their time) has been observable.

However, technology exists today that can remedy that. Smart phones can tell us where interviewers are and what they are doing. Speech to text, smart small screen design, and internet connectivity enable them to record and transmit outcomes of contact attempts on the doorstep. With text and instant messaging the supervisor and interviewer can remain in almost constant contact. Performance dashboards can give the supervisor at-a-glance views of the region's current activity, with drill down and drill through capability, and with alerts based on statistical process control that highlight the problems of greatest concern each day. In the last decade we saw the concept of a virtual telephone center take shape, enabling telephone interviewers to work at home, but with the equivalent supervision and coaching provided in a brick and mortar center. The capability exists today to create a virtual field center, with levels of control that come close to those we have come to expect in CATI call centers. We used task analysis and qualitative research with this dispersed work force to inform an attempt to create a user-centered design for a real time field management system, deployed it on a large field survey, and conducted a cost-benefit analysis in evaluating its deployment.

Adaptive and Responsive Survey Designs: A Review and Assessment

Roger Tourangeau (Westat), J. Michael Brick (Westat), Sharon Lohr (Westat), and Jane Li (Westat)

This talk reviews the growing literature on responsive and adaptive designs for surveys. These designs encompass a set of methods for managing data collection, including front-loading potentially difficult cases, tailoring the data collection strategy to different sample subgroups, prioritizing effort according to estimated response propensities, imposing stop rules for ending data collection, monitoring key survey estimates throughout the field period, using two- or multi-phase sampling for following up nonrespondents, and calculating indicators of non-response bias (such as the R-indicator) other than response rates to monitor and guide field work. We give particular attention to efforts to evaluate these strategies experimentally or via simulations. Although the field seems to have embraced the new tools for managing data collection, most of the evaluation studies suggest they produce marginal reductions in cost and nonresponse bias. Part of the problem is that it is generally easier to lower the response propensities of high-propensity cases than to raise the propensities of low-propensity cases. Other issues limiting the effectiveness of these designs include weakly predictive auxiliary variables, ineffective interventions, and slippage in the field in the implementation of interventions.

Innovative Uses of Paradata in the Survey of Income and Program Participation

Matthew Marlay (U.S. Census Bureau), Holly Fee (U.S. Census Bureau), and Jason Fields (U.S. Census Bureau)

The Census Bureau is fielding its redesigned Survey of Income and Program Participation (SIPP). As part of the redesign, SIPP has access to new paradata sources. This presentation discusses those sources, how paradata can inform field operations and monitoring, and some analytical results.

Our paradata come from sources including a field representative (FR) certification test, an FR debriefing instrument, keystroke files, our Unified Tracking System (UTS), our Contact History Instrument (CHI), and our Computer-Assisted Recorded Interview (CARI) system.

Paradata is useful during data collection to control costs, track interviewing progress, and monitor FR performance, among others. We track costs via UTS, which provides information such as hours, miles, and contact attempts per case. We can see whether certain cases, FRs, or entire regions are out of compliance. UTS lets us track interviewing progress – we know how many cases have been completed, started, and not even touched. Finally, we monitor FR performance through UTS and CARI. Our CARI system records interview items (with respondent consent), which can then be coded for whether FRs are reading questions as worded, whether respondents understand the questions, etc. This tool also allows us to detect possible falsification.

Paradata let us evaluate data quality and survey design. Keystroke files let us construct interviewing timing reports, useful for identifying where respondents might get bogged down, or providing evidence for ways to shorten the survey. We can use the certification test to determine where our training needs improvement. We can use debriefing results to determine where FRs encountered problems and their severity. And we can use CHI to see how easy or difficult respondents are to locate; these results can feed into analyses such as whether difficult-to-locate respondents produce more incomplete surveys, item nonresponse, overall refusals, etc.

Using Computer-Assisted Recorded Interviewing to Enhance Field Monitoring and Improve Data Quality

Holly Fee (U.S. Census Bureau), Matthew Marlay (U.S. Census Bureau), and Jason Fields (U.S. Census Bureau)

The reengineered Survey of Income and Program Participation (SIPP) entered production in 2014. A key goal for the reengineered SIPP is to improve field monitoring using paradata such as Computer-Assisted Recorded Interviewing (CARI). CARI is a Census Bureau technology used to monitor Field Representatives (FRs) by listening to recordings of interactions between FRs and respondents. FRs must obtain consent from each respondent to record the interview. The goal of CARI is twofold: to ensure the accuracy and quality of data collected by identifying opportunities to improve the FR's performance and to improve the survey's design by identifying difficult or problematic questions

The Quality Assurance (QA) Component in the CARI System ensures that the data collected have minimal errors and monitors FRs' behavior. The QA program identifies falsification problems and errors introduced by the FRs during the interview. Falsification occurs when data collected did not come from the respondent or if an answer is different from what the respondent reported. Errors introduced by FRs occur when questions are not read consistently across FRs. During QA, for each completed interview, two coders review a subset of questions for up to three respondents per household.

CARI is also useful in evaluating the quality of the survey itself. Approximately 66% of respondents agreed to be recorded for Wave 1 of the 2014 SIPP panel. One of our analyses is to examine how this consent rate differed along a number of dimensions, including respondent characteristics, household location, and incentive receipt. We can also improve data quality by analyzing interview techniques. The current study examines the difference in data quality indicators, such as Don't Know or Refused responses, between CARI and non-CARI interviews by estimating a three-level organizational model using multilevel modeling.

CONCURRENT SESSION J-2
WEALTH DATA AND WEALTH DATA QUALITY

Changes in the Distribution of After-Tax Wealth: Has Income Tax Policy Increased Wealth Inequality?

Kevin Moore (Federal Reserve Board) and Adam Looney (Brookings Institution)

A substantial share of the wealth of Americans is held in tax-deferred form such as in retirement accounts or as unrealized capital gains. Most data and statistics on assets and wealth is reported on a pre-tax basis, but pre-tax values include an implicit tax liability and may not provide as accurate a measure of the financial position or material well-being of families. In this paper, we describe the distribution of tax-deferred assets in the SCF from 1989 to 2013, provide new estimates of the income tax liabilities implicit in those assets, and present new statistics on the level and distribution of after-tax net worth. The results of our analysis suggest that, relative to published statistics on pre-tax net worth, the distribution of after-tax wealth is slightly less concentrated at each point in time and the effectiveness of the income tax system in reducing wealth inequality has decreased during the last decade. We find the reduction in the long-term capital gains rate is the primary reason for the muted effectiveness of the income tax system in reducing wealth inequality.

Rounding in household financial surveys: the roles of survey design and individual characteristics

Michael Gideon (U.S. Census Bureau), Joanne W. Hsu (Federal Reserve Board of Governors), and Brooke Helppie McFall (Institute for Social Research, University of Michigan)

This paper explores the prevalence of rounding, exact values, and item nonresponse in self-reported wealth data. The determinants of rounding behavior and how systematic it is have implications for economic research using survey data, particularly on income dynamics and inequality, as well as the measurement of key economic relationships, like savings rates.

Three patterns emerge from our preliminary analyses of mortgage balances in HRS, SCF and CogEcon. First, respondents in the SCF report substantially more precise mortgage balances, and this is true across the distribution of their values. Second, there appears to be increasing rounding over the distribution of their values. However, this appears to be non-monotonic, in that rounding is larger near “focal points” such as $100,000. Therefore, exact value and range data should be combined with care, especially in the analysis of changes in values across waves in panel data. Third, we analyze the predictors of rounding, particularly the role of education, income, cognition/financial literacy, time to respond (using paradata), survey mode, and the characteristics of range alternatives offered. Respondents who report using records while completing the questionnaire provide more precise balances (less rounding, more significant figures). People in the top quintile of income report less precise mortgage balances (fewer significant figures), yet education itself does not appear to impact rounding. Comparing respondents who consulted financial records to answer the survey with respondents who did not, people using financial records were more likely to report exact dollars. Asking people to use their records could potentially lead to increased precision, especially for those who might otherwise round heavily, but could also introduce bias if take-up varies systematically by income or some other characteristic.

Reassessing Wealth Data Quality in the Survey of Income and Program Participation

Jonathan Eggleston (U.S. Census Bureau) and Mark A. Klee (U.S. Census Bureau)

The Survey of Income and Program Participation (SIPP) and the Survey of Consumer Finances (SCF) are two principal sources of wealth data for the U.S. population. The Social Security Administration sponsored Mathematica Policy Research to write a 2003 report that identified considerable discrepancies in wealth estimates across these surveys. While one might expect SIPP and SCF to deliver different estimates for a variety of reasons, the magnitude of differences in levels and trends across surveys fostered doubts about SIPP wealth data. To address these concerns, SIPP implemented various strategies that the report recommended to close the gaps between wealth estimates. We use 2008 SIPP and 2010 SCF data to assess for the first time the impact of these changes on comparisons of wealth estimates. We also employ 2014 SIPP and 2013 SCF data to investigate whether the re-engineering of SIPP has any implications for wealth estimate comparisons

Measuring the Wealth of Hard-to-Find U.S. Minorities: Sampling, Recruiting and Weighting Issues

Thomas M. Guterbock (University of Virginia), James M. Ellis (University of Virginia), Deborah L. Rexrode (University of Virginia), Casey M. Eggleston (U.S. Census Bureau), Darrick Hamilton (The New School), and William A. Darity, Jr. (Duke University).

The first phase of the National Asset Scorecard and Communities of Color project (NASCC) was a telephone survey conducted by the University of Virginia Center for Survey Research designed to better understand the asset and debt positions of various ethnic and racial groups whose wealth status is often inadequately measured. Nearly 3,000 interviews were collected in Boston, Los Angeles, Miami, Tulsa and Washington. Challenges included low incidence target populations tending to be wireless only, an intrusive survey instrument over 40 minutes long, and 85 sample quota cells.

The research goals dictated a disproportionate sample focused on each city's unique demographic profile (e.g., Native Americans figured prominently in Tulsa, Haitians in Miami, etc.). We used 2010 Census and ACS public use data at the levels of tract and ZIP Code Tabulation Area (ZCTA) to inform sampling. Lorenz curves showing geographic concentration of groups helped us identify areas for targeted sampling. We used listed landline sample by census tract, random-digit dial wireless sampling by ZCTA, and listed landline sample from ethnic surname lists. Most groups were targeted via several sample types.

Initial attempts at geographically targeted samples produced low yields of the targeted groups. In general, directory-listed phone samples could be targeted geographically but tended to miss the groups of interest. Cell phone samples tended to reach the targeted groups, but lacked the geographic specificity we required. Targeting cell phone samples by ZCTA did not improve sampling as much as expected.

Overall response rates varied across samples but were in low single digits. Nevertheless, the completed interviews represented a usable cross-section of the populations of interest. We applied weights to each sample to match ACS estimates on household demographics. We examine the resulting design effects to assess the precision of the final samples as tools for examining wealth disparities between the groups.

CONCURRENT SESSION J-3
REMOTE ACCESS AND ANALYSIS TOOLS FOR WORKING WITH GOVERNMENT DATA

Education Data in the Cloud

Shelley Burns (National Center for Education Statistics), Brian Taylor (National Center for Education Statistics), Marilyn Seastrom (National Center for Education Statistics), and Ted Socha (National Center for Education Statistics)

The National Center for Education Statistics (NCES) provides multiple data access tools that range from simple information lookup (such as the College Navigator), to table generation/data analysis tools that allow for more sophisticated statistical analyses of NCES data, such as the NAEP Data Explorer (NDE) and International Data Explorer (IDE) for NCES assessment data. NCES has also developed PowerStats, a data analysis tool that provides public access to firewall-protected restricted-use NCES datasets, while building in security/suppression safeguards to prevent disclosure risk. PowerStats users can create tables and regression analyses with a drag-and-drop interface, and can receive their data in Excel, PDF, and other formats. PowerStats also provides users the ability to search for variables, to save recoded variables for future use, and to build an online library of their work and share their work with other users. For the more in-depth data analyses (such as the creation of composite variables), NCES also provides restricted-use data to researchers through a licensing program that allows researchers to use NCES Restricted data at their institutions under strict security guidelines and inspection. Future directions for all NCES data access tools and the potential migration of the license program to remote access in a secure cloud environment will be presented. In-house testing has been proposed for allowing staff to access restricted-use data in a secure cloud environment. The benefits and obstacles to providing access to our restricted-use data under the evolving technical environment will be elaborated. For example, among the options being considered may be the use of remote, secure cloud-based desktops that would allow for all analysis of restricted-use data in the cloud and not on a researcher's own equipment.

Research Using Remote Access or Remote Execution Systems

Peter Meyer (National Center for Health Statistics), Vijay Gambhir (National Center for Health Statistics), Corey Decker (National Center for Health Statistics), and James Craver (National Center for Health Statistics)

The Department of Health and Human Services (HHS) has been developing remote access, remote execution, and Internet accessible systems that allow researchers access to health data. Some of these systems allow access to restricted use data that would not usually be made available but has high analytic utility. Other systems simply facilitate the research by providing access to public use data but not requiring statistical software. Hundreds of researchers from other Federal agencies, academic institutions, and non-profits access data through these systems annually. This presentation will provide an overview of how HHS has developed these systems and their analytic limitations. Also, we will discuss plans for developing the next generation of data access products and how they might assist the research community in the future.

SAMHSA Data Portal

Brooklyn Lupari (Substance Abuse and Mental Health Services Administration)

The Substance Abuse and Mental Health Services Administration (SAMHSA) hosts a Data Archive where all of the data collected by the Center for Behavioral Health Statistics and Quality (CBHSQ) is disseminated for public use. Public-use files are made readily available, along with access to a restricted-data analysis system (R-DAS) which allows for more in-depth online analysis on restricted mental health and substance use data.

The Data Portal has been developed by SAMHSA as a way for approved researchers to safely access micro-level, confidential data for research purposes. The system has been developed completely unique to the requirements and needs of SAMHSA, and has functionality and safeguards built in to ensure data security, while allowing for maximum access to the rich data CBHSQ collects.

The development and implementation of the Data Portal has brought about the opportunity for researchers to gain access to confidential data in a safe, manageable way - with access remotely from their own locations. It has also greatly increased the ways that CBHSQ/SAMHSA data can be used and analyzed, ensuring that the data is being utilized to its full capacity.

More information can be found at: http://www.icpsr.umich.edu/icpsrweb/content/SAMHDA/dataportal.html

Developing and Testing the Microdata Analysis System at the US Census Bureau

Bryan Schar (US Census Bureau), Michael Freiman (US Census Bureau), and Amy Lauger (US Census Bureau)

Data users in government, private industry, non-profits and academia have substantial demand for data from the Census Bureau's surveys and censuses, such as the American Community Survey (ACS). Hence the Census Bureau aims to disseminate data widely and with as much detail as possible while keeping the pledge of confidentiality given to all respondents. Although the Census Bureau produces many estimates and tables, along with public use microdata for some surveys, existing data products may not meet the needs of some users. This presentation describes the development and capabilities of the Microdata Analysis System (MAS), an online remote access system being developed by the Census Bureau. The MAS will allow any user to create custom tables—and later, other analyses—from the underlying data. In many cases, the amount of detail in geographic and other variables available in the MAS will be greater than what is currently possible, with estimates for the ACS available down to low levels of geography. Tables and estimates will be produced quickly and interactively for the user's specified geography and analysis variables. The system will also dynamically generate measures of variance for all estimates. Data will be protected through dynamic application of disclosure checks in response to the user's query, and since calculations will take place behind two firewalls, the user will not be able to see the microdata directly. We describe the capabilities of the system and how we plan to incorporate user feedback in improving the system's functionality. In addition, we discuss the testing performed to ensure the system's utility and the planned disclosure avoidance methodology to protect the data.

CONCURRENT SESSION J-4
JPSM SESSION AT 2015 FCSM CONFERENCE

New Developments at JPSM

Richard Valliant (Joint Program in Survey Methodology) and Frauke Kreuter (Joint Program in Survey Methodology)

JPSM has revised its curriculum and plans to launch several new degree and certificate programs in the coming year. The curriculum is being broadened beyond just survey methodology to include a new emphasis on analysis of big data and data science. The amount of digital data generated as a by-product in society is growing fast, e.g., data from satellites, sensors, transactions, administrative processes, social media, and smartphones. These data are characterized by high volume, high velocity, and high variety. The hope is to gain insights from this data for different areas such as e.g., health and crime prevention, planning of infrastructures, and business decisions. In Spring 2015 a new course was taught on Big Data for Federal Agencies that covered sources of these data and techniques that can be used for analysis. Another, more advanced big data class will be taught in Fall 2015.

JPSM now offers certificates in Survey Methodology and Survey Statistics that are taught completely online. A third certificate that combines survey methodology and data science will be added and offered in conjunction with other departments at Maryland. In Spring 2016 we also plan to begin offering an online 30-credit Masters of Professional Studies in which students take core courses in survey methodology but can choose electives in several areas, including data science.

A Comparison of Ex-Ante, Laboratory, and Field Methods for Evaluating Survey Questions

Aaron Maitland (Westat)

A diverse range of evaluation methods is available for detecting measurement error in survey questions. Ex-ante question evaluation methods are relatively inexpensive, because they do not require data collection from survey respondents. Other methods require data collection from respondents either in the laboratory or in the field setting. Research has explored how effective some of these methods are at identifying problems with respect to one another. However, a weakness of most of these studies is that they do not compare the range of question evaluation methods that are currently available to researchers. The purpose of this research is to understand how the methods researchers use to evaluate survey questions influence the conclusions they draw about the questions. In addition, we seek to identify more effective ways to use the methods together through three studies. The first study examines the extent of agreement between ex-ante and laboratory methods in identifying problems and compares the methods in how well they predict differences between questions whose validity has been estimated in record-check studies. The second study evaluates the extent to which ex-ante and laboratory methods predict the performance of questions in the field as measured by indirect assessments of data quality such as behavior coding, response latency and item nonresponse. The third study evaluates the extent to which ex-ante, laboratory, and field methods predict the reliability of answers to survey questions as measured by stability over time. The findings suggest (1) that a multiple method approach to question evaluation is the best strategy given differences in the ability to detect different types of problems between the methods and (2) how to combine methods more effectively in the future.

The Impact of Rapport on Data Quality in CAPI and Video-mediated Interviews: Disclosure of Sensitive Information and Item Nonresponse

Hanyu Sun (Westat)

Rapport is generally described as a sense of connection, mutual comfort and ease of conversational coordination during an interaction (Foucault, 2010). Although there is no universally accepted way to measure rapport, the general consensus is that it is good for survey interviews and may affect the quality of the responses obtained (e.g., Foucault, 2010; Cassell & Miller, 2007). Technological advances in recent years have made video-mediated interviews more feasible and affordable; however, little attention has been paid to videoconferencing as a potential mode of data collection in survey interviews. In video-mediated interviews, the interviewer and the respondent can see and talk to each other via a video window. Although rapport-related verbal behaviors have been found to increase the disclosure of moderately sensitive information in face-to-face interactions (e.g., Dijkstra, 1987; van der Zouwen et al., 1991), it is unknown if rapport can be established to the same extent in video-mediated interviews, leading to similar levels of disclose.

I examined the impact of rapport on data quality in CAPI and video-mediated interviews with a laboratory experiment that varies the level of rapport, the mode of data collection, and the version of the questionnaire. Eight professional interviewers and 128 respondents participated. I found that (1) there was no significant difference in rapport ratings between video-mediated and CAPI interviews; that (2) the impact of rapport on disclosure depends on question sensitivity: when questions are moderately or less sensitive, rapport does not seem to affect disclosure; whereas when questions are highly sensitive, rapport leads to more rather than less honest responses; and that (3) the effects of rapport on item nonresponse depends on question sensitivity: when questions are slightly sensitive, rapport motivates respondents to invest more effort to respond, whereas when questions are moderately or more sensitive, rapport leads to more item nonresponse.

Topics in Model-Assisted Point and Variance Estimation in Clustered Samples

Timothy Kennel (U.S. Census Bureau)

This presentation will address two topics related to model-assisted estimation in clustered samples. The first topic explores a new variance estimator that is motivated by sandwiches. New sandwich variance estimators are constructed to estimate the variance of calibrated estimators in two-stage sample designs. We find that including leverage adjustments into the sandwich variance estimators can improve estimated variances, especially in small to moderate sized samples. The second topic proposes a new method to produce calibrated point estimates of categorical variables in cluster samples. We highlight several advantages of this new method and provide several ways to estimate the variance of the new estimator.

The Use of Responsive Split Questionnaires in a Panel Survey

Jeffrey M. Gonzalez (Bureau of Labor Statistics)

Lengthy surveys may be associated with high respondent burden, low data quality, and high unit nonresponse. To address these concerns, survey designers may reduce the length of a survey by eliminating questions from the original questionnaire, but this means that some information would never get collected. An alternative may be to divide a lengthy questionnaire into subsets of survey items and then administer each subset to distinct subsamples of the full sample. This is referred to as a split questionnaire design and has the benefit of collecting all of the original survey information. We identify a significant deficiency in the current set of split questionnaire methods, namely, the incomplete use of prior information about the sample unit in the design. In most contemporary applications of split questionnaires, generally only characteristics of the survey items (e.g., content, cognitive burden) are used to inform the design; however, if joint consideration is given to characteristics on the survey items as well as the sample unit when designing a split questionnaire, then there may be the potential to improve the split questionnaire's utility. In this dissertation, we explore the extent to which, if any, jointly considering both types of information at the design stage will yield more efficient split questionnaires. We propose various methods for incorporating prior information about the sample unit into the split questionnaire using features of responsive design. We highlight how this specific application of a responsive split questionnaire can be used to address the concerns present in a major federal survey. Finally, we draw from the literature pertaining to survey design, experimental design, and epidemiology to develop and implement a framework for evaluating the proposed new elements of our split questionnaire design.

Testing the Relationship between Social Integration and Nonresponse

Ashley Amaya (Joint Program in Survey Methodology)

Differential nonresponse is an enigma researchers have attempted to understand for decades. Several theories have been introduced to offer an explanation for differential nonresponse. One such theory is the theory of social integration. Individuals who are more integrated (i.e., individuals who participate in a broad range of social relationships) are more likely to respond to a survey request because they feel compelled to adhere to their group(s) norms or perceive that their participation may result in benefits for their group(s).

Despite a plethora of literature describing the theory of social integration, it is difficult to test. Integration is a latent construct that cannot be directly measured. Therefore, most researchers have either used a single variable (e.g., volunteerism) to measure integration or a series of variables that cluster around a single topic (e.g., political interest). This technique underestimates the integration-nonresponse relationship as individuals who are integrated in ways not accounted for by the chosen variable. This method may also result in spurious inference as significant findings may be due to a different latent construct, not integration.

Our goals for this research are to (re)test the social integration theory and more accurately quantify the magnitude of the effect integration has on differential nonresponse. While methodologists have traditionally used individual variables to measure integration, more holistic measures have been developed in other fields, namely indices using multiple measures of social roles (e.g., committee member) and social activities (e.g., attending church). We conduct latent class analysis using data available for all sampled individuals to create a social integration index. We then place the index in a regression model to predict response and test the theory.

Sample Design in Three-stage Household Surveys Supplemented by Commercial Address Lists

Alena Maze (Joint Program in Survey Methodology)

When using commercial address lists to sample households, investigators spend considerable time and money on screening households for eligibility as well as locating certain subpopulations (to achieve target sample sizes). Utilizing the demographic information on these lists to target eligible persons and subgroups has the potential to lower costs and field workers' workload. However, this demographic information is often out of date or missing altogether. This research investigates how to use this information in screening of housing units for multistage samples. Among the goals of this study are

- Estimate the accuracy rates in which commercial lists can correctly identify households with certain characteristics (e.g. Hispanics, Non-Hispanic Blacks, Teens (15-19), Females, etc.)
- Determine how to allocate two and three stage samples supplemented with commercial lists accounting for: Inaccuracy of listings, costs at each stage of sampling, target sample sizes and coefficients of variation, for estimates of demographic subgroups, Stratification of secondary sample units by area characteristics (e.g. density of Blacks, Hispanics, Others), Stratification of housing units by commercial list characteristics (e.g. Race/Ethnicity, ages of persons). Theoretical variance formulas, including variance components, are derived for estimated totals and means with and without calibration to population controls. Several methods of variance component estimation are studied, including design based ANOVA, model-based Bayes, anticipated variance (model + design)).

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