



NSF-Census Research Network Newsletter

Vol. 1, Issue 2

NCRN Focus: University of Nebraska-Lincoln

University of Nebraska at Lincoln is working on exciting research looking at how computers may play roles in improving data quality and data collection while also reducing costs. Primary Investigator Allan McCutcheon said they originally heard about the NCRN grant from a note they received from Rod Little from the U.S. Census Bureau. Allan has a research interest in survey methodology and when he talked to some of his other colleagues, he found a few other folks interested in pursuing ways to take existing modes of survey methodology and improving them. They also enlisted the expertise of Leen-Kiat Soh from the computer science and engineering department, to help with the computer side of the research.

Team members include: PI **Allan L. McCutcheon**, Professor of Survey Research & Methodology and of Statistics, and a Senior Scientist with Gallup; **Robert F. Belli**, Professor of Survey Research & Methodology and of Psychology; **Jolene D. Smyth**, Associate Professor of Survey Research & Methodology and of Sociology; **Kristen M. Olson**, Associate Professor of Sociology; and **Leen-Kiat Soh**, Associate Professor of Computer Science and Engineering. The team also includes a postdoctoral fellow, **Antje Kirchner**, and five doctoral students, **Ana Lucia Cordova Cazar**, **Rebecca Powell**, **Beth Cochran**, **Jinyoung Lee**, and **Adam Eck**, as well as several M.S. students.

There are three major research objectives the team is currently exploring. The first involves computer-assisted telephone interviews (CATI) that organizations such as Gallup and Abt SRBI utilize. The group is looking at ways to improve data quality focusing on the interviewers. "There has been a lot written about respondent burden, but not much attention to interviewer burden and interviewers are often spending eight hours a day interviewing people," said McCutcheon. They are looking at evaluating questionnaires. With massive amounts of data, they are looking at paradata and measuring milliseconds measuring the time of key strokes to see if there was a change in the response, what caused the change? If there was a change, was it the interviewer who did something or was it the respondent who did something that made the change? For example, at the end of their shift, interviewers may enter the key stroke slower than they did at the beginning of

their shift. By listening to the recordings of the interviews, they can also determine if the interviewer genuinely made an error in a key stroke and then corrected it, or if the respondent first gave an answer and then asked the interviewer to change the answer. "We have our first round of data collection and we have a team of experts who are evaluating the data and the questionnaires right now," Mc-



Standing (left to right) is Phil Ruhlman (Chief Communications Officer, Gallup), Allan McCutcheon (PI), Gale Muller (Vice Chairman and General Manager, Gallup World Poll), Leenkiat Soh (co-PI). Seated (left to right) is Jolene Smyth (co-PI), Robert Belli (co-PI), Kristen Olson (co-PI).

Cutcheon said. They will also be examining things like back chatting, which is when an interviewer tries to re-engage the respondent when they are attempting to break off the interview early.

The second research objective is focusing on Internet use and looking at how much time it takes a person to respond. Are they backing up to answer previously unanswered questions or change previous answers? All the behavior is recorded, so the researchers can see if a person backed up to answer a previous question, or change their answer to a previous question, for example. We can see how much time they are taking as well. What may cause respondent fatigue? For example, surveys that use many

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Focus: University of Nebraska-Lincoln (Cont.)

grid questions typically encourage respondents to speed through their answers to complete the grid questions, called 'speeding,' or 'straight lining,' which is when someone answers the same response to each question, just to have a response, so they can skip to what they are more interested in answering. The team found that when grid questions are located towards the end of a questionnaire, the respondent will either straight line (answer the same response to many questions, such as a "4" for each question), or skip a bunch of questions, or break off from the questionnaire when they get to the grid question. They

ple to do fairly long recall, such as salary and employment history," McCutcheon explained. It is also very expensive doing this in a traditional way, but the group is looking at ways they might be able to adapt this kind of survey data gathering using computers, in a very smart and thoughtful way using machine learning and artificial intelligence to know when to ask the right question.

"Government agencies, such as the Census Bureau, are going to have to shift over to computer data collection - at least with primary data collection, with mail outs as a follow up and knocking on doors as the final attempt," noted McCutcheon, "We have got to use the language, and by that I mean the type of technology people are currently using, to gather information. With younger people, that means hand-held devices."

The work the Nebraska node is conducting will have far-reaching effects for many federal agencies as they all adapt to the modes of communication that people are using today. With the advent of machine learning and artificial intelligence, the computers can adapt to the changes that the respondent is making to keep the person engaged and hopefully to successfully complete more surveys than traditional methods while also lowering costs.

Some of the Nebraska team will share their work for the [April 2 virtual seminar](#).



(Left to right) Jinyoung Lee (GRA), Antje Kirchner (Post Doctoral Researcher), Beth Cochran (GRA), Ana Lucia Cordova Cazar (GRA), and Rebecca Powell (GRA)

found that people appear to be much more thoughtful about grid questions if they occur early in a survey. This research objective is also looking at issues of attrition and what makes members of online panels break off and not come back to complete further surveys. An interesting result the team has found is that people are three times more likely to break off from a web survey if they are using a hand-held device, but are also five times more likely to come back in later on, than someone breaking off using a computer or tablet.

"We are working on adaptive design, where if it looks like a person is going to break off, the computer program will change and start asking a series of questions that may be of more interest to the respondents, in real time," remarked McCutcheon.

The third objective is looking at time-use surveys, which use time diaries and calendars. The Survey of Income Program Participation (SIPP) and American Time Use Survey (ATUS) both use these survey methods, and the team is exploring ways to integrate calendaring with computer technology. "In these types of surveys you are asking peo-

NCRN Calendar of Events

April 2 - NCRN Virtual Seminar: Leen-Kiat Soh and Adam Eck of the University of Nebraska-Lincoln will share their work on survey informatics for this month's virtual seminar. Details will be posted at <http://www.ncrn.info/event/ncrn-virtual-seminar-april-2-2014>

May 22-23 - NCRN Spring Meeting at the U.S. Census Bureau in Suitland, MD. The eight nodes of the NSF-Census Research Network (NCRN) will hold a technical mini-symposium on Thursday and Friday, May 22-23, 2014. The program will comprise two one-half day sessions focused on topics of broad interest to the nodes, the Census Bureau and the federal statistical system. Presentations will highlight research performed by the NCRN nodes, with opportunity for questions and comments from agency researchers. Registration is now open. See article on page 5.

June 20-21 - Computational Methods for Surveys and Census Data in the Social Sciences in Montreal, Canada. The workshop will bring together statisticians working in survey and census methodology and population studies with social scientists in collaborating disciplines. [EXPLAIN why this on the calendar for interested readers]

June 23-27 - Conducting Research Using the Survey of Income and Program Participation (SIPP) - an Introductory Workshop. The Survey Research Center at the Institute for Social Research at the University of Michigan, in collaboration with the National Poverty Center at the Gerald R. Ford School of Public Policy, invites applications to participate in a five-day workshop June 23-27, 2014, in Ann Arbor, Michigan. The workshop will introduce participants to the use of micro-data from the Survey of Income and Program Participation (SIPP) and provide hands-on applications to prepare them to conduct their own SIPP-based research project.

H. Luke Shaefer, Assistant Professor of Social Work and National Poverty Center Research Affiliate, will lead the workshop in collaboration with researchers at the University of Michigan, the U.S. Census Bureau and other nationally recognized SIPP scholars. The Survey Research Center will pay travel, lodging, and meal costs for a limited number of participants. **The deadline to apply has been extended to April 7, 2014.**

June 23-27 - Advanced Workshop on the SIPP Synthetic Beta (SSB), held by the Survey Research Center at the Institute for Social Research at the University of Michigan, in collaboration with the National Poverty Center at the Gerald R. Ford School of Public Policy in Ann Arbor, Michigan. This advanced workshop will introduce participants to the use of the Survey of Income and Program Participation Synthetic Beta (SSB) and provide hands-on applications to prepare them to conduct their own SSB-based research.

The SIPP Synthetic Beta (SSB) is a Census Bureau data product that integrates person-level micro-data from a household survey (SIPP survey data) with W-2 earnings and OASDI benefits data. Census has synthesized the data to preserve the underlying covariate relationships between variables while protecting respondent confidentiality. Unlike the original, administrative data, the SSB is publicly available.

The Census Bureau offers all SSB users the opportunity to submit their programs for validation on the internal, confidential version of these data. As part of this workshop, participants will learn how to prepare programs for submission to the validation process and how to request the release of research results from Census disclosure officers. This experience will help participants not only begin their SSB research projects but also see them through to successful completion after the seminar has finished.

Martha Stinson, economist at the U.S. Census Bureau, will lead the workshop, in collaboration with researchers at the University of Michigan, the U.S. Census Bureau and other nationally recognized SIPP scholars.

September 11-12 - NCRN Fall Meeting in New York City. Details to come at a later date, consult <http://www.ncrn.info/event/ncrn-meeting-fall-2014>.

Call for Papers

2014 Research Data Center Annual Research Conference June 12, 2014

The Census Headquarters Research Data Center (RDC) is welcoming proposals to present papers at the 2014 Annual RDC Research Conference. The conference will be a day of concurrent paper sessions and a keynote presentation. Papers should be based on current or recent research using data from the nationwide network of RDCs. Data for the research include demographic, business, and linked employee-employer data from the U.S. Census Bureau and health data from the National Center for Health Statistics and the Agency for Healthcare Research and Quality. The research should involve statistical analyses on nonpublic versions of the data from these government agencies.

Please submit an abstract of no more than 500 words describing your research question(s), data used (including sponsoring agency), methodology, and summary of results. Results can be anticipated or preliminary if they are not yet

finalized. The abstract should include contact information, including e-mail and phone number, and affiliations for all authors of the paper.

Please e-mail your submissions to danielle.h.sandler@census.gov. **Submission deadline is Friday, April 11, 2014.** Notifications of inclusion in the conference program will be sent by April 25th.

For more information, please contact **Danielle Sandler** at danielle.h.sandler@census.gov or **Barbara Downs** at barbara.a.downs@census.gov.

CUSP Holding Book Launch Workshop on Big Data, Privacy, and the Public Good: Frameworks for Engagement

The Center for Urban Science and Progress (CUSP) is hosting a workshop in Brooklyn, New York to discuss the book, *Big Data, Privacy, and the Public Good: Frameworks for Engagement*, it is publishing. The book features some of the NCRN research nodes.

Privacy concerns over the use of big data for commercial or intelligence purposes are much discussed, yet big data can also be harnessed to serve the public good. Federal, state, and local governments can better use their data to improve services and reduce taxpayer costs; scientists can use new forms of data to do research that improves people's lives; and non-profit organizations can use information to advocate for public causes. Concern over privacy and confidentiality issues must be addressed to enable the realization of these beneficial uses of big data. Contributors include:

Alessandro Acquisti, Carnegie Mellon, wrote the chapter on "The Economics of Privacy." It examines the growing body of theoretical and empirical research on the economics and behavioral economics of privacy, and discusses how these streams of research can be applied to the investigation of the implications of consumer data mining and business analytics. When shared personal information can become a public good whose analysis reduces inefficiencies and increases economic welfare. But when it is abused, it

can lead to transfer of economic wealth from data subjects to data holders.

Alan Karr, NISS, and **Jerry Reiter, Duke**, wrote a chapter that looks at the interactions between data dissemination, big data, and statistical inference. They lay out some guidelines that stewards of big data can learn from statistical agencies' experiences about the measurement of disclosure risk and data utility. The sheer scale and potential use of big data will require that analysis be taken to the data rather than the data to the analyst or the analyst to the data. Karr and Reiter explore the idea of using synthetic data and a means for approved research to access confidential data via remote access solutions with verification servers that allow users to assess the quality of their inferences with redacted data.

NCRN Spring Meeting to be Held May 22-23 at U.S. Census Bureau Headquarters

The NCRN Spring meeting will be held at the U.S. Census Bureau in Suitland, MD. The eight nodes of the NSF-Census Research Network (NCRN) are holding a technical mini-symposium on Thursday and Friday, May 22-23, 2014. There are two half-day sessions and breakout sessions Thursday afternoon.

Presentations will highlight research performed by the NCRN nodes, with opportunity for questions and comments from agency researchers.

The Thursday half-day session will focus on Data Documentation Initiative (DDI) metadata within the federal statistical system. William Block, Cornell, will be the organizer of this research focus. There will be three papers presented along with a discussion time.

After lunch, there will be breakout sessions. These sessions will include:

- Summer Work Group for Employer List Linkage
- Individual meetings with Census personnel

- Another breakout session that is still to be determined

Friday's half-day session will concentrate on "Designing a questionnaire for the 21st century: Adaptive design and other survey topics."

Details of the workshop and registration is on the [NCRN website](#).



U.S. Census Bureau Headquarters Building (Photo courtesy of the U.S. Census Bureau.)

NCRN Hosts Monthly Virtual Seminars

NCRN is hosting monthly virtual seminars to discuss research methodology and share ideas amongst the eight research nodes that are participating in the NCRN grant. The Virtual Seminar is held at different locations throughout the network, every first Wednesday of the month. Nodes participate using videoconferencing equipment. Participants can ask questions through the live video feed.

Participation via videoconference is open to interested parties, in particular at other non-NCRN universities and statistical agencies at the federal, state, and local level, as long as equipment requirements can be satisfied. A streaming version of the NCRN Virtual Seminar is available simultaneously, but does not allow for interaction with the seminar participants. A recorded version of the Virtual Seminar will generally be available shortly afterwards, and will be posted in our Library of NCRN Virtual Seminars.

Previous seminars included presentations by Rebecca Steorts (NCRN-CMU) on "[Blocking by Locality Sensitive Hashing for Entity Resolution](#)," John Abowd (NCRN-Cornell)

on "[Boosting Models for Edit, Imputation and Prediction of Multiple Response Outcomes](#)," and Jared Murray (NCRN-Duke) on "[Hierarchically Coupled Mixture Models with Local Dependence for Imputing Mixed Data](#)."

A list of upcoming seminars may be found at: <http://www.ncrn.info/events/virtual-seminar>. For more information about the virtual seminars and how to participate, contact: info@ncrn.info.

SAMSI Hosted Workshop on Censuses and Surveys

Researchers from the NCRN network presented some of their ongoing research at a SAMSI mid-program workshop of the Computational Methods in the Social Sciences program. The meeting occurred on January 8 -- 10, 2014, at the Bureau of Labor Statistics in Washington, DC. The workshop was organized by **Jerry Reiter (PI NCRN Duke/NISS)**, **Steve Fienberg (PI NCRN CMU)**, Connie Citro, Mike Cohen, and John Eltinge. It focused on computational methods for censuses and surveys, with particular emphasis on longitudinal data, missing data, integrating information from multiple sources, and record linkage techniques. NCRN-affiliated speakers included **Scott Holan (PI NCRN Missouri)**, **Daniel Manrique-Vallier**, **Beka Steorts**, **Hang Kim**, **Jared Murray**, **Tracy Schifeling**, and **Mauricio Sadinle**. Poster presentations were given by researchers from NCRN nodes at CMU, Nebraska - Lincoln, and Northwestern. The meeting included participants from academia, government, and industry, including three invited presentations from staff members of the Bureau of the Census. For details of the workshop, see <http://www.samsi.info/workshop/2013-14-cmss-computational-methods-censuses-and-surveys-january-8-10-2014>



Steve Fienberg, (PI-NCRN CMU), was one of the organizers of the SAMSI workshop.

TCRN and University of Michigan Hosted SIPP Workshop

From February 28 - March 2, 2014 the Triangle Census Research Network (TCRN) and the Duke Initiative in Survey Methodology at the Social Science Research Institute at Duke University, in collaboration with the Institute for Social Research at the University of Michigan hosted a three-day workshop introducing participants to the use of micro-data from the Survey of Income and Program Participation (SIPP). Funding for the workshop was provided via a grant from the National Science Foundation and the US Bureau of the Census to the TCRN.

The SIPP collects longitudinal data on respondents' income, labor force activity, household composition, health, migration, and eligibility for and participation in programs (e.g. TANF, WIC, Medicare, Medicaid, and numerous others). As such, it provides unique opportunities to examine the social and economic well-being of U.S. residents, and changes in residents' experiences over time. The workshop was crafted to impart an understanding of how SIPP data are collected and how they can be accessed, and offered participants opportunities to extract, work with, and analyze microdata files from the public-use SIPP, thereby providing the necessary foundations for participants to conduct their own SIPP-based research project. Thirty-four scholars attended the workshop, including 22 doctoral students, 7 faculty members, and 5 other researchers; partici-

pants traveled from 17 U.S. states, the District of Columbia, and abroad to attend.

The workshop included lectures to provide an overview of SIPP dataset, hands-on interactive sessions to allow participants to analyze microdata files, a panel of experts to discuss methodological challenges and opportunities in using SIPP, a scholar presentation to illustrate substantive research using SIPP, presentations on the restricted-use and synthetic SIPP data files, and small working group sessions to brainstorm individual research projects. H. Luke Shaefer, Assistant Professor of Social Work at the University of Michigan and National Poverty Center (NPC) Research Affiliate led the workshop; participants also heard from

- John Abowd, Edmund Ezra Day Professor of Economics, Cornell University and Principal Investigator, Cornell NSF-Census Research Network Node
- Robert Belli, Professor of Psychology and Director, Survey Research and Methodology Program, University of Nebraska – Lincoln
- Gale Boyd, Executive Director, Triangle Census Research Data Center
- D. Sunshine Hillygus, Associate Professor of Politi-

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SIPP Workshop (Continued)

cal Science, Duke University and Director, Duke Initiative on Survey Methodology

- Jerry Reiter, Mrs. Alexander Hehmeyer Professor of Statistical Science, Duke University and Principal Investigator, Triangle Census Research Network
- Matthew Rutledge, Research Economist, Boston College Center for Retirement Research
- Lara Shore-Sheppard, Professor of Economics, Williams College
- Martha Stinson, Economist, U.S. Census Bureau.

The [full program](#) is available online.

Selected participants' feedback:

"This training provided a first-rate introduction to the SIPP...The hands-on portion with technical assistance available made it suitable for participants with a wide range of

experience and familiarity with its use. I especially appreciated the in-depth look at past research papers that used the SIPP since that helped spark thinking about creative and unique ways of incorporating it into my research."

"This hands-on workshop has been a wonderful learning experience. The sessions were extremely helpful in learning to navigate the data set and I look forward to using the SIPP in my future research."

"Overall, my participation in this workshop was a very worthwhile experience that helped expand my methodological tool kit and showed me endless possibilities for using SIPP in my future research."

"As a junior faculty member on the tenure track, I don't often get that focused time away to dive into data analysis. Even better than the amazing instruction and help was the rest of the group – meeting future collaborators and making great connections with people in my field and outside my field."

Latest NCRN-Related Publications

H. J. Kim, J. P. Reiter, Q. Wang, L. H. Cox, A. F. Karr. Multiple imputation of missing or faulty values under linear constraints. In *Journal of Business and Economic Statistics*. Submitted, volume forthcoming,

D. Manrique-Vallier, J.P. Reiter. Bayesian multiple imputation for large-scale categorical data with structural zeros. In *Survey Methodology*. Submitted, volume forthcoming, pages forthcoming.

Belli, R. F., Bilgen, I., & Al Baghal, T. (2013). Memory, communication, and data quality in calendar interviews. *Public Opinion Quarterly*, 77, 194-219.

Olson, K. and Parkhurst, B. (2013). "Collecting paradata for measurement error evaluation." *Improving Surveys with Paradata: Analytic Uses of Process Information*, Frauke Kreuter (editor), John Wiley and Sons. Pp. 43-72.

Belli, R. F., (2014). "Autobiographical memory dynamics in survey research". In T. J. Perfect and D. S. Lindsay (eds.) *SAGE Handbook of Applied Memory*. Thousand Oaks, CA: Sage.

McCutcheon, A. L., Rao, K., and Kaminska, O. (2014). "The Untold Story of Multi-Mode (Online and Mail) Consumer Panels: From Optimal Recruitment to Retention and Attrition." In M. Callegaro, R. Baker, J. Bethlehem, A. Göritz, J. Krosnick, and P. Lavrakas (eds.) *Online Panel Surveys: An Interdisciplinary Approach*. Wiley.

Belli, R.F. "SIPP: From Conventional Questionnaire to Event History Calendar Interviewing." Workshop on "Conducting Research using the Survey of Income and Program Participation (SIPP)." Presented at Duke University, Social Science Research Institute, Durham, NC, February 2014.

McCutcheon, A.L. (2014). "Web Surveys, Online Panels, and Paradata: Automating Adaptive Design." Presented at *Conference on Methodological Innovations in the Study of Elections in Europe and Beyond*. Texas A&M University. February 2014.

Stuart, Leonard Cleve. (2013). *User Modeling via Machine Learning and Rule-based Reasoning to Understand and Predict Errors in Survey Systems. (Master's Thesis)*. University of Nebraska-Lincoln, Department of Computer Science.

Charoenruk, N., Parkhurst, B., Ay, M., & Belli, R. F. (2012, November). *Interviewer variance of interviewer and respondent behaviors: A new frontier in analyzing the interviewer-respondent interaction*. Paper presented at the annual conference of the Midwest Association for Public Opinion Research, Chicago, Illinois.

Phillips, A. L., Al Baghal, T., & Belli, R. F. (2012, November). *Troubles with time-use: Examining potential indicators of error in the ATUS*. Paper presented at the annual conference of the Midwest Association for Public Opinion Research, Chicago, Illinois.

Walton, L, Stange, M., Powell, R., & Belli, R. F. (2012, November). *Exploring interviewer and respondent interactions: An innovative behavior coding approach*. Paper presented at the annual conference of the Midwest Association for Public Opinion Research, Chicago.

Publications Continued

Lee, J. & Al Baghal, T. (2013, May). *Examining response time outliers through paradata in Online Panel Surveys*. Paper presented at the annual conference for the American Association of Public Opinion Research, Boston, Massachusetts.

Powell, R. J., Córdova Cazar, A. L., and Lee, J. (2013, May). *Examination of Question Complexity Through Paradata*. Paper presented at the annual conference for the American Association of Public Opinion Research, Boston, Massachusetts.

Ruther, N., Al Baghal, T., Eck, A., Stuart, L., Phillips, L., Belli, R., & Soh, L.K. (2013, May). *Examining the relationship between error and behavior in the American Time Use Survey using audit trail paradata*. Paper presented at the annual conference for the American Association of Public Opinion Research, Boston, Massachusetts.

Córdova-Cazar, A. L. (2013, May). *Examining item nonresponse through paradata and respondent characteristics: A multilevel approach*. Paper presented at the annual conference for the American Association of Public Opinion Research, Boston, Massachusetts.

McCutcheon, A.L. & Al Baghal, T. (2013, May). *Predicting survey breakoff in Internet survey panels*. Paper presented at the annual conference for the American Association of Public Opinion Research, Boston, Massachusetts.

Wang, M., McCutcheon, A. L., & Ruppner, L. (2013, May). *Using “no opinion” responses to detect survey satisficing: An analysis of paradata*. Paper presented at the annual conference for the American Association of Public Opinion Research, Boston, Massachusetts.

Olson, Kristen and Kirchner, A. (2014, May). *Changes in Interviewers-related Error Over the Course of the Field Period: An Empirical Examination using Paradata*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Olson, K. and Smyth, J. (2014, May). *The Effect of CATI Questionnaire Design Features on Response Timing*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Kirchner, A. and Powell, R. (2014, May). *‘Good Respondent, Bad Respondent’? Assessing Response Quality in Internet Surveys*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

McCutcheon, Allan L. (2014, May). *Survey Breakoff in Online Panels*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Powell, R. and Kirchner, A. (2014, May). *Achieving Balance: Understanding the Relationship between Complexity and Response Quality*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Wang, M. (2014, May). *An Investigation of Survey Satisficing among Devices to Complete a Survey: Comparing Computers and Mobile-Devices*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

McCutcheon, A.L., Rao, K., and Kaminska, O. (2014, May). *The Untold Story of Multi-Mode (online and mail) Consumer Panels: From Optimal Recruitment to Retention and Attrition*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Atkin, G., Arunachalam, H., Eck, A., Soh, L-K., and Belli, R.F. (2014, May). *Designing an Intelligent Time Diary Instrument: Visualization, Dynamic Feedback, and Error Prevention and Mitigation*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Countryman, A., Córdova Cazar, A.L., Deal, C., and Belli, R.F. (2014, May). *Call Back Later: The Association of Recruitment Contact and Error in the American Time Use Survey*. Poster presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Belli, R.F. and Charoenruk, N. (2014, May). *Interviewers Variance and Prevalence of Verbal Behaviors in Calendar and Conventional Interviewing*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Córdova Cazar, A.L., Belli, R.F. (2014, May). *The Use of Paradata (in Time Use Surveys) to Better Evaluate Data Quality*. Paper presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Eck, A., Stuart, L., Atkin, G., Soh, L-K., McCutcheon, A.L., and Belli, R.F. (2014, May). *Making Sense of Paradata: Challenges Faced and Lessons Learned*. Poster presented at the annual conference for the American Association of Public Opinion Research, Anaheim, California.

Olson, Kristen and Antje Kirchner. (2014, August). *Changes in interviewer-related error over the course of the field period: An empirical examination using paradata and behavior codes*. Paper to be presented at the Joint Statistical Meetings, Boston, Massachusetts.