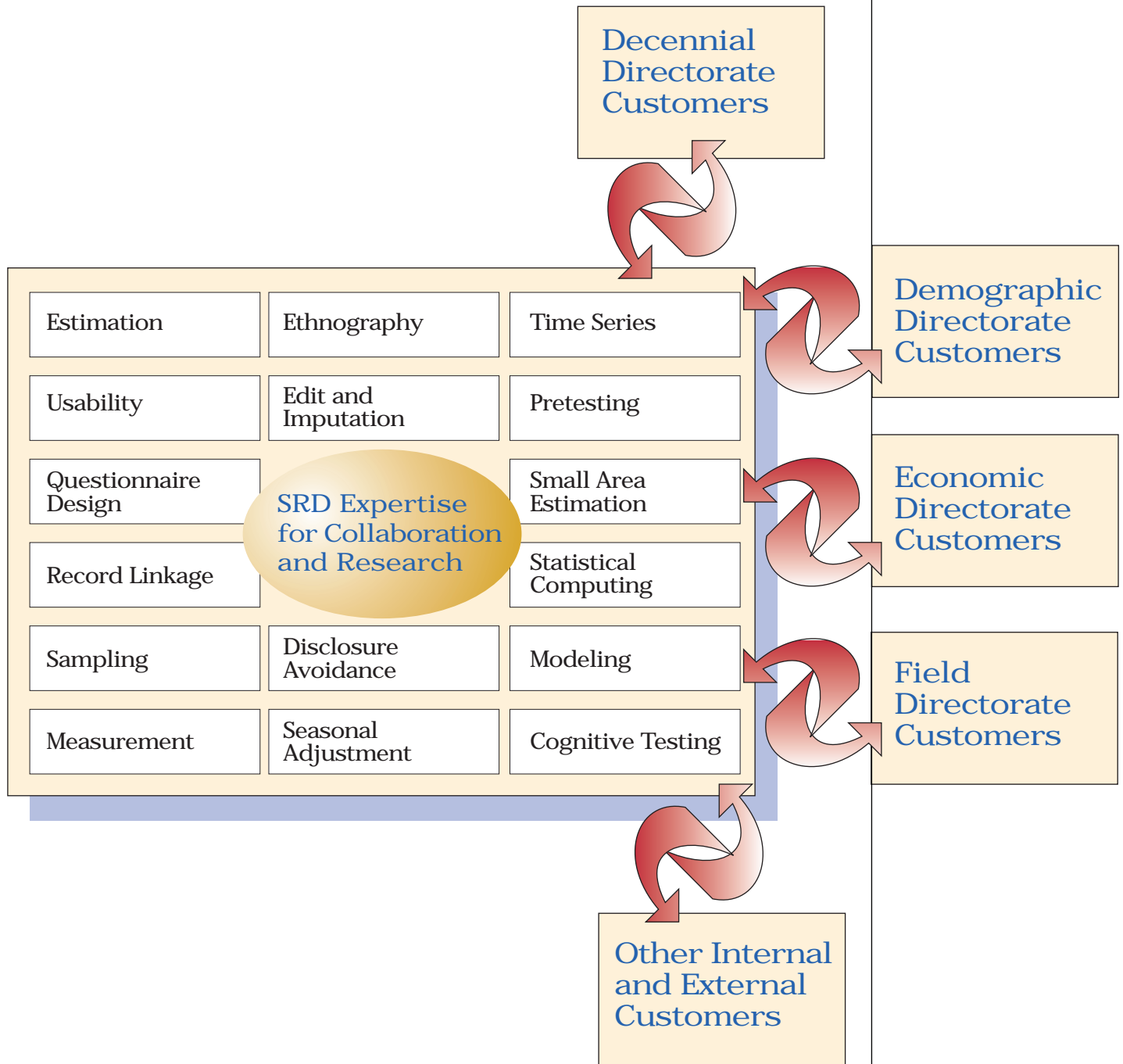


Annual Report *of the* Statistical Research Division

Fiscal Year 2004





U.S. Census Bureau
Statistical Research Division
Federal Building 4
Washington, DC 20233
301-763-1702

We help the Census Bureau improve its processes and products. For fiscal year 2004, this report is an accounting of for whom we did what, why, and how.

Statistical Research Division

Highlights of What We Did...

As a technical resource for the Census Bureau, each researcher and technical member of our division is asked to do three things: *collaboration/consulting*, *research*, and *professional activities and development*. We serve as members on teams for a variety of projects and/or subprojects.

Highlights of a selected sampling of the many activities and results in which Statistical Research Division staff members made contributions during FY 2004 follow, and more details are provided within subsequent pages of this report:

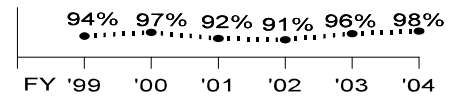
- developed and cognitively tested new formats for a shortened sequence of Hispanic origin, race, and modified ancestry questions for the decennial short form.
- conducted usability testing which led to the improvement of the functionality of the handheld computers including the wording of buttons and messages, decreasing the number of buttons or key strokes, and suggestions for other ways to increase usability.
- identified modifications of edit rules applied to the 2002 American Community Survey data that are being used to bring additional protection against biases.
- produced simulation truth decks to replicate the condition of the count imputation for the Decennial Census as a way of comparing various count imputation methodologies.
- designed and developed a prototype user-interface system for information visualization which will facilitate the identification of records at risk of disclosure by matching and linking microdata files through visualization techniques.
- improved, through cognitive testing, the wording of questions on the National Crime Victimization Survey concerning “identity theft,” “type of identity theft”, and “school crime.”
- helped craft and test new and revised questions for six modules in the American Housing Survey: wheelchair accessibility, initial fees associated with senior housing; housing subsidies; fire safety; neighborhood quality; and residential housing finance.
- co-edited and contributed several chapters to the book - Presser, S., Rothgeb, J., Couper, M., Lessler, J., Martin, E., Martin, J., and Singer, E. (Eds). (2004). *Methods for Testing and Evaluating Survey Questionnaires*, Hoboken, N.J.: John Wiley & Sons, Inc.
- developed bivariate models using data from both the Current Population Survey (Annual Social and Economic Supplement) and the American Community Survey to produce small average improvements in estimates of state poverty ratios for the Small Area Income and Poverty Estimates (SAIPE) Program.
- helped to determine how various weights should be used in the determination of sensitive cells for Commodity Flow Survey tables and helped to develop a microdata weight adjustment method for protecting tables generated from the microdata produced by the Manufacturing and Construction Division.
- consolidated X-12-ARIMA’s diagnostics into a single file; made improvements to X-12-SEATS (including seasonal outliers, pulse regressors, along with better debugged and updated signal extraction routines); developed a method of iterative parametric signal extraction with extreme value adjustment; and developed procedures for estimating stochastic level shift effects in economic time series.
- updated the BigMatch (record linkage) software with more robust routines, especially for decennial applications of unduplication.
- established the SRD Methods Help Desk to provide quick technical assistance for questions or reviews, usually taking less than two days to complete.
- developed, in collaboration with physicists and chemists at the National Institute of Standards and Technology, mutual understanding of the role of statistics and Bayesian methods in tomography and developed a Bayesian method for combining inter-lab studies using chromatography.

How Did We Do...

For a sixth year, we received feedback from our sponsors. Near the end of fiscal year 2004, our efforts on fifty-four of our program (Decennial, Demographic, Economic, External) sponsored projects/subprojects with substantial activity and progress and sponsor feedback (Appendix A) were measured by use of a Project Performance Measurement Questionnaire (Appendix B). Responses to all fifty questionnaires provided the following results (The graph associated with each measure shows the performance measure over the last six fiscal years):

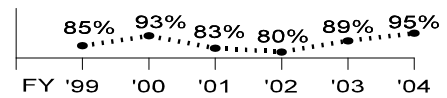
Measure 1. Overall, Work Met Expectations

Percent of FY2004 Program Sponsored Projects/Subprojects where sponsors reported that overall work met their expectations (agree or strongly agree) (53 out of 54) 98%



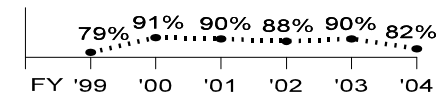
Measure 2. Established Major Deadlines Met

Percent of FY2004 Program Sponsored Projects/Subprojects where sponsors reported that all established major deadlines were met (38 out of 40 responses) 95%



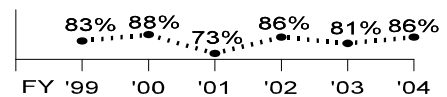
Measure 3a. At Least One Improved Method, Techniques Developed, Solution, or New Insight

Percent of FY2004 Program Sponsored Projects/Subprojects reporting at least one improved method, techniques developed, solution, or new insight (42 out of 51 responses) 82%



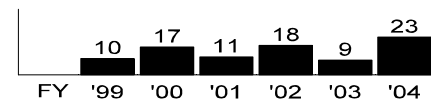
Measure 3b. Plans for Implementation

Of these FY2004 Program Sponsored Projects/Subprojects reporting at least one improved method, techniques developed, solution, or new insight, the percent with plans for implementation (36 out of 42 responses) 86%



Measure 4. Predict Cost Efficiencies

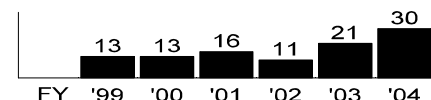
Number of FY2004 Program Sponsored Projects/Subprojects reporting at least one "predicted cost efficiency" 23



From Section 3 of this ANNUAL REPORT, we also have:

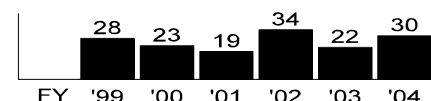
Measure 5. Journal Articles, Publications

Number of peer review journal publications documenting research that appeared (20) or were accepted (10) in FY2004 30



Measure 6. Proceedings, Publications

Number of proceedings publications documenting research that appeared in FY2004 30



Each completed questionnaire and associated details are shared with appropriate staff to help improve our future efforts.

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APPENDIX A

APPENDIX B

1. COLLABORATION

1.1 - 1.2 DECENNIAL TOPICS (Decennial Projects 5906013 and 5902002)

A. Census Questionnaire Design Features

Two of these projects support the evaluation of decennial-related nonresponse and coverage survey research conducted by the Decennial Statistical Studies Division (DSSD) and the Planning, Research, and Evaluation Division (PRED). The third project, also a collaboration with PRED, aims to decrease mail-back response time for the Decennial Census form by embedding “deadline” messages in the mailing package. The first two projects use behavior coding to analyze interviewer/respondent interactions to evaluate decennial follow-up survey questions in the 2004 Non-Response Follow-up Test (NRFU) and the Coverage Research Follow-up Survey (CRFU). Of particular interest in the NRFU is the affect of question administration using the new hand-held computers for interviewers and respondents at the Queens, New York test site, as well as the administration/function of the race/ethnicity questions, due to a new approach that now omits a previously-used response category labeled “some other race.” Furthermore, the NRFU evaluation entails analyzing both the English and Spanish language instruments. Behavior coding of the CRFU, on the other hand, intends to capture problems with coverage questions in interviews conducted both in person and on the telephone at the New York and Georgia test sites. In particular, group quarters questions seem to be difficult to administer due to length, complexity, and sensitivity. The last project, the Deadline Messaging Experiment, is an effort to determine the best types and locations for messages suggesting the mailed census form must be returned by a certain date. Cognitive interviews will be used to determine respondents’ comprehension/interpretation and reaction to messages placed in the mail materials.

NRFU Behavior Coding

During FY 2004, staff designed a behavior coding study of the bilingual (i.e., Spanish and English) Non-Response Follow-up (NRFU) questionnaire, trained behavior coders, monitored the behavior coding process, and delivered to PRED an electronic file of the Spanish notes (and the corresponding English translation) that coders generated regarding problematic sequences of interviewer/respondent interactions during the administration of the computer-assisted interview. We are awaiting the delivery of the data set for analysis.

Behavior coding the CRFU:

During FY 2004, staff designed and presented DSSD with a behavior coding research plan and detailed schedule. Staff identified and defined an appropriate set of behavior codes for this project, and

began designing training and coding materials (e.g., training manual, question guides, coding forms). In order to tailor the behavior coding training to this project, staff began listening to telephone interviews that were already available.

Deadline Messaging:

During FY 2004, staff provided a review of the proposed experimental design of the Deadline Messaging panel and assisted in generating appropriate wording for the deadline messages.

Staff: Ashley Landreth (x38457), Jenny Hunter

B. Short Form Questionnaire Content Other than Race and Ethnicity

This project involves participation in the 2010 Census Content Planning Group and content-related subgroups other than those focusing on race and ethnicity. It also involves consultation and testing on questionnaire content for the 2010 Census and tests leading up to it.

During FY 2004, staff participated in several planning groups and subgroups, including the 2010 Census Content Planning Group, Mobile Computing Device Content Planning Group, and CUF/CEF Requirements Group, 2006 Wording and Content Subgroup, NCT Implementation Group. Staff also worked with the Housing and Household Economic Statistics staff to formulate a plan for adding questions related to assisted living issues on the Group Quarters Vacancy Form. Staff also participated in planning for cognitive testing of changes to the age/date of birth, tenure, and relationship questions for the 2005 National Content Test. Testing is scheduled to begin shortly.

Staff: Terry DeMaio (x34894), Jenny Hunter

C. Development of Race and Ethnicity Questions

Staff will participate in planning and pretesting alternative versions of the race and ethnicity questions used in the Decennial Census. We will develop proposals for cognitive testing of new question formats in conjunction with decennial staff, and lead or engage in cognitive research as needed.

During FY 2004, staff (1) developed new formats for a shortened sequence of Hispanic origin, race, and modified ancestry questions for the decennial short form (these are intended to provide content for the 2005 Census Test); (2) arranged for and carried out cognitive testing of these formats (over 100 cognitive interviews have been accomplished to date); (3) analyzed and presented results of Phase I cognitive tests of these forms; (4) assisted in organizing and facilitating a special one day conference with experts on race and

ethnicity; (5) helped define related cognitive testing for 2005 Census Test; and (6) trained Census Bureau personnel to carry out cognitive interviews on these questions.

Staff: Eleanor Gerber (x34890), Melinda Crowley

1.3 LANGUAGE PLANNING AND DEVELOPMENT

(Decennial Project 5902003)

See Projects 0351, 0924, and 1871 - General Research - Survey Methodology (I) and (J).

1.4 DATA COLLECTION PLANNING AND DEVELOPMENT

(Decennial Project 5903001)

A. Field Research on the Usability of Handheld Computers (HHCs)

The division's role is to collaborate with decennial staff in planning and conducting field research to evaluate various configurations of navigational aids (in addition to the digital maps) for use with the HHCs in upcoming Census Tests. As a basis for making recommendations, staff members propose and implement research designed to identify user-interface configurations that best support enumerator efficiency and accuracy.

During FY 2004, planning continued for field research into the impact of using HHCs on the accuracy and efficiency of enumerators. In conjunction with decennial staff, Field Division staff, Planning, Research, and Evaluation staff, and Digital government investigators from Iowa State University, staff from our division planned an investigation of the relationship, if any, between spatial ability and training drop-out rates. We made progress in developing a cognitive model of the address-mapping-and-listing activity, which the HHC is intended to support. We conducted a study on the relative meaningfulness of icons for use in the HHC's toolbar and presented our recommendations to the decennial staff. We reviewed several iterations of the research plan and participated in detailed planning for the field research, which is scheduled to occur in July 2005. Usability testing led to the improvement of the functionality of the HHCs, including wording of buttons and messages, decreasing the number of buttons or key strokes, and suggestions for other ways to increase usability.

Staff: Betty Murphy, (x34858), Michele Rusch, Juan Pablo Hourcade, Andrea Johnson (FLD), David Earles (GEO), Evan Moffett (DMD), Jim Treat (PRED), Sarah Nusser and Less Miller (Iowa State University)

B. 2004 Overseas Enumeration Test Team/2005 Internet Pre-Test Team

This project focuses on iterative prototyping and development of an Internet form for 2010. The purpose of the 2004 Test was to assess the feasibility of counting U.S. citizens living abroad through self-reporting over the Internet. For the 2004 Test, our division's role was to plan and conduct two rounds of usability and accessibility testing and to make recommendations to improve the design of the 2004 Overseas Enumeration Internet form.

During FY 2004, in evaluating the prototype Internet form for the 2004 Overseas Enumeration Test, our division collaborated with the Decennial Management Division's consultant from the University of Maryland in planning and conducting two rounds of usability and accessibility testing. We provided recommendations on all identified usability issues, including (1) revision placement and design of edit messages and (2) removal of some white space under tabs.

Staff: Betty Murphy (x34858), Larry Malakhoff, Lorraine Randall, Kent Marquis, Kent Norman (University of Maryland), Nika Smith, Claude Steinberg (UserWorks, Inc.)

C. Collaboration with Research on Alternative Designs in Preparation for the 2005 National Census Test/National Census Survey

This pretesting project entailed collaboration with researchers from the University of Michigan in evaluating a topic-based approach to presentation of questions on a Web-based version of the census short form. In contrast to a person-based approach, this form asked questions by topic for all persons in the household, e.g., age and date of birth for all persons on the same page, versus asking all the questions for one person, and then going on to the next person. Findings from the pre-test were needed as input to design decisions for the 2005 National Census Test.

During FY 2004, in evaluating a prototyped, topic-based census form, our division collaborated with researchers from the University of Michigan who were under contract to the Decennial Systems and Contracts Management Office/Decennial Management Division. We conducted usability testing on a set of HTML screens with limited navigational functionality. Favorable results informed the design of the Internet form for the 2005 National Census Test. We documented our methods and findings in a draft report.

Staff: Betty Murphy (x34858), Juan Pablo Hourcade, Lorraine Randall, Mick Couper, Fred Conrad (last two with University of Michigan/Joint Program in Survey Methodology), Claude Steinberg, George Wendall

(UserWorks Inc.)

D. Mobile Computing Devices - 2004 Non-Response Follow-up (NRFU) Usability Evaluation

In the 2004 Census Test, households not responding to the mailed out census questionnaire will be followed-up by enumerators using a hand-held device for displaying questions and recording answers. The mobile device instrument is being programmed by the Technologies Management Office (TMO). The Decennial Management Division (DMD) asked the usability laboratory to assist TMO by conducting three iterative usability evaluations of the instrument itself (not other features such as GPS, receipt and transmission of assignments, etc.) and reporting any problems found.

During FY 2004, staff observed 24 test enumerators use the hand-held device in two iterative usability studies. Staff discovered the major usability problems associated with the device and the instrument. We recommended a number of user-centered design changes to the instrument and device and presented the findings to the clients. Staff wrote a final report of our findings, which included accuracy, efficiency and satisfaction scores along with video clip highlights of the high priority issues. Identified usability problems included (1) efficiency problems with extreme and constant lag time between screens; (2) introductory screens interfered with enumerator's ability to talk immediately with respondent; (3) awkward phrasing and syntax of many questions; and (4) difficulty with accurately recording race for various reasons.

Staff: Erica Olmsted (x34893), Kent Marquis

E. Listing and Mapping Instrument (LAMI) Usability

The purpose of this project is to provide iterative usability evaluations of successive releases of the LAMI software. Since the software is implemented on handheld computers (Toshiba Pocket PCs), there are many design and development issues. Making the best use of limited screen real estate is a major challenge.

During FY 2004, staff conducted an expert review of the LAMI 1.0 user interface and documented our findings in a memorandum to the LAMI design team (led by the Decennial Management Division). We collaborated with staff from the Geography and Field Divisions in developing training and testing materials for usability testing of the LAMI 2.2 user interface. We recruited participants from the Metro Washington area. We planned and conducted usability testing of the LAMI 2.2 user interface, capturing the HHC screen via Microsoft Remote Control. We presented a briefing on our methods and findings to the LAMI design team and documented the entire project in a draft report. The

user interface adequately supported the performance of younger test participants but fell short in meeting the needs and expectations of older participants. We began planning for similar testing of the LAMI 3.1 software.

Staff: Betty Murphy (x34858), Juan Pablo Hourcade, Michelle Rusch, Lorraine Randall, Joyce Farmer, Mohammed Chaudhry, Andrea Johnson and Kathy Reeves (FLD), Teresa Luther and Cindy Falkenstein (GEO)

1.5 STATISTICAL DESIGN AND ESTIMATION (Decennial Projects 5906003)

A. Decennial Editing and Imputation (See Projects 0351, 0924, and 1871 (B), General Research - Statistical Computing Methodology)

B. Decennial Record Linkage (See Projects 0351, 0924, and 1871 (A), General Research - Statistical Computing Methodology)

C. Decennial Record Linkage Support

The purpose of this project is to apply the record linkage software to a variety of projects, primarily in the Decennial area, but also the Demographic and Economic Directorates, including administrative lists.

During FY 2004, staff made improvements to the computer matching system in support of the Special Places/Group Quarters unduplication project and the Master Address File unduplication. Staff supported the Special Places/Group Quarters (SP/GQ) unduplication with a matching run that found duplicates in the file and the corresponding match. Staff also developed a supporting program and algorithms which enhanced displays for easier review. A key result is to allow for multiple duplicates to be grouped together. This allows for quicker review of duplicates which saves the field operatives valuable time.

Staff: Ned Porter (x31798)

D. Research on Item and Count Imputation for Implementation in Census 2010

Research and studies will be undertaken on item and count imputation for implementation in Census 2010.

During FY 2004, the Decennial Statistical Studies Division (DSSD) and Decennial Management Division (DMD) staff agreed that our division and DSSD would construct a "truth deck" to test various count imputation methodologies before the 2006 Test. Staff produced these simulation truth decks to replicate the condition of the count imputation for the decennial census. Staff developed a tool to simulate missing count and missing status for housing units (HU) represented in the 2000

Census HCEF/HCUF. The tool relies on the evaluation of propensity scores for each census HU. The higher the propensity score, the higher the chance of a missing count or missing status. The propensity score is a function of the available variables for the HU under consideration, and on information at the small geography level (blocks).

Jointly with DSSD, staff implemented spatial modeling for imputing the count/status in 2006. Spatial modeling will be evaluated, along with the hot-deck and administrative record substitution prior to the 2006 test. Ultimately, a single methodology will be used for the 2006 test.

Jointly with DMD, staff is experimenting with the New Imputation Methodology (NIM), a nearest-neighbor hot-deck methodology to impute the 100% items. NIM is a candidate for item imputation in the 2006 test.

Staff: Yves Thibaudeau (x31706), Todd Williams, Bor-Chung Chen

E. Decennial Disclosure Avoidance

The purpose of this research is to develop disclosure avoidance methods to be used for Census Bureau publicly available Decennial Census data products. Emphasis will be placed on techniques to implement disclosure limitation at the stage of processing. Disclosure limitation research will be conducted on alternative methods to protect both tabular data and microdata from the Decennial Census. Methods will be developed, tested, evaluated, and documented. We will also aid in the implementation of the methods.

During FY 2004, staff used IOPUS and PERL to manipulate American Community Survey (ACS) data and search for matching records in the Kentucky marriage database. Staff used WebL to manipulate the same data and search for matching records in the Kentucky Board of Medical Licensure. None have been found thus far.

Staff revised the data visualization system IDFinder by fixing bugs in database connection part, changing overall system data structure to improve system performance, fixing bugs in the time series data viewer, and implementing the central data repository handler for efficient communication among the data viewers (scatterplot viewers and time series viewer). This system can be used to search for records with a disclosure risk. It is currently analyzing ACS data.

Staff built imputation models for the American Community Survey public use microdata. Household characteristics are related to the person characteristics of the household members. Modeling focuses on imputing missing characteristics for persons in actual households. Categories of households are defined by

householder's race, age, sex, presence of spouse, and number of people in the household. Missing data are imputed to proceed with three different ways of producing synthetic data: synthesizing whole households; synthesizing everyone in a household by fixing the housing characteristics; and synthesizing uniques and duplicates.

Staff: Laura Zayatz (x34955), Paul Massell, Phil Steel, Sam Hawala

F. Modeling Response

Staff will create block-group and tract-level models for Census 2000 concerning demographic and geographic neighborhood predictors of response by mail and at several stages of enumeration follow-up. The results are of interest to the Field Directorate in planning field operations for Census 2010. Developed models will be applied to data from various tests.

During FY 2004, staff engaged in discussions on model-based imputation and related data-analyses concerning the imputation methodology for the 2010 Census.

Staff: Eric Slud (x34991)

G. Census Unduplication Research

The Census Unduplication Research project begins with the 2004 Census Test with the goal of improving the 2010 Census Unduplication. Initially, the unduplication was completed by the Decennial Statistical Studies Division. The next phase involves the unduplication of the 2006 Test Census by staff, which will incorporate Group Quarters being matched to housing unit data. Ultimately, staff will provide record linkage and modeling technology which will locate more duplicates in the census. Staff began this project in May of 2004.

Staff reviewed census matching output from the 2004 Census Test to assist the Decennial Statistical Studies Division in fine-tuning the rules for determining duplicates for the Coverage Research Follow-up. There was a general consensus on appropriate cutoffs and the matching procedure itself seems generally sound.

Staff: Michael Ikeda (31756), Ned Porter.

1.6 COVERAGE MEASUREMENT PLANNING AND DEVELOPMENT (Decennial Projects 5906004)

A. Coverage Measurement Research

The synthetic method for small area estimation of census coverage will be evaluated using small area random effect modeling at the local census office (LCO) level. Staff will also provide support/assistance

on other coverage measurement issues.

During FY 2004, staff prepared a proposal to evaluate the effectiveness of using random effect small area estimation models for estimating coverage at the local census office level (LCO). This proposal is based on generalizing the synthetic method based on the A.C.E. revision II assumptions. Staff presented an overview of a plan to the Census Coverage Measurement Team of the Decennial Statistical Studies Division (DSSD) and to the Small Area Discussion Group. This project has been approved by DSSD with the addition of staff from DSSD to the research group. A first analysis was performed. Deficiencies due to transforming sample statistics with very small sample sizes were noted. This is being remedied by using maximum likelihood estimates instead of crude sample statistics as input into the model building. This latter work is in progress.

Staff: Don Malec (x31718), Jerry Maples, Mike Ikeda

B. Accuracy of Coverage Measurement

2010 Census Coverage Measurement Research conducts the research necessary to develop methodology for evaluating the coverage of the 2010 Census. This includes planning, designing, and conducting the research, as well as analyzing and synthesizing the results. The focus is on the design of the census coverage measurement survey and estimation of net coverage error. The estimation of overcount and undercount separately has not been done for previous censuses because of the difficulty of obtaining adequate data for unbiased estimates. The first attempt to implement the new methodology is in the 2006 Census Test.

During FY 2004, staff provided technical expertise and experience in the planning of coverage measurement research for the 2010 Census. Staff served on three teams formed to plan and implement census coverage measurement research for the 2010 Census in the 2006 Census Test and with data from A.C.E. Revision II and Census 2000. Staff contributed considerable guidance and technical expertise on the new ways of measuring and estimating coverage error components, including descriptions of the types of estimates that could be made. Staff provided insight, guidance, and detailed recommendations for the design of the new expanded matching operation and its requirements that permit estimating components of coverage error as well as net error. Staff also has been analyzing data from A.C.E. Revision II in collaboration with Abt Associates under R&D2007 contract task for developing methodology to reduce the number and size of extreme estimates of census coverage error for small areas.

Staff: Mary Mulry (x31759)

C. Missing Data in Coverage Measurement

The objective of this work is to conduct research to guide the development and assessment of appropriate imputation for missing data in the Accuracy and Coverage Evaluation (A.C.E.) and other sampling methods used to measure coverage in the Decennial Census.

During FY 2004, staff reviewed and provided comments on the missing data chapter of the A.C.E. technical documentation. Work on this project is completed until further requests.

Staff: Michael Ikeda (x31756), Patrick Cantwell

D. Questionnaire Wording and Automation Team

The purpose of this project is to design the coverage measurement survey instruments for the 2010 Census. These instruments will gather enough data to measure both person and household coverage of the 2010 Census. In preparation for 2010, there will be a 2006 test of the coverage measurement operation in specific sites in conjunction with the 2006 Census Test. For 2006, there will be automated person interview and person follow-up instruments to measure person coverage. Our immediate goals are to create and test these two instruments given requirements from other teams working on coverage measurement planning.

During FY 2004, staff co-led the Questionnaire Wording and Automation Team (QWAT) and took an active role in drafting the person interview instrument flow based on requirements and comments from interested parties. Through the 2007 R&D contracts, staff posted a statement of work requesting cognitive interviews. Staff also managed the project. Westat conducted a total of 45 cognitive interviews in the Washington DC area. Staff conducted a total of 8 interviews via a secure remote connection with the University of Texas PanAmerican Edinburg, TX. National Processing (NPC) staff in Jeffersonville, IN conducted a total of 16 interviews. Three versions of the CCM PI were tested. Summaries of each interview were written and posted on the Decennial Management Division portal. At an interim meeting, Westat presented results from the first 30 cognitive interviews. In conjunction with NPC, the Decennial Statistical Studies Division, Field Division and our division staff, changes were made to the PI. Like the Coverage Research Follow-up (CRFU) we decided to proceed with a topic-based version of the residency questions. We modified this topic-based version slightly, and informed Census Bureau staff of our results. Westat gave a power-point presentation at the end of all the 45 interviews highlighting some of their findings. The findings included (1) the person-based approach of

determining other possible addresses and residency was more burdensome for respondents than the topic-based approach; (2) a global person-based approach seemed to work best, having the benefits of filling each household member's name in the question without the burden of repeating the question for each person; (3) the phrase "living and sleeping" seemed to convey the census concept of usual residence to respondents better than "living or staying"; (4) the phrase "shared custody arrangements" seemed to connote a formal arrangement to respondents; and (5) an additional series of questions was needed to ask about a military job away because these were not included in the answer to the more generic job away questions. We continue to hold QWAT meetings; topics include specifications, screen layout, Blaise standards, and other survey design topics.

Staff: Beth Nichols (x31724), Jenny Hunter, Betty Murphy, Juan-Pablo Hourcade

1.7 COVERAGE IMPROVEMENT PLANNING AND DEVELOPMENT (Decennial Projects 5906006)

A. Decennial Privacy Research

The purpose of this project is to serve on and assist the work of the Privacy Policy and Research Committee (PPRC), and to conduct research to assess public opinion on privacy-related issues, including the increased use of administrative records to assist Decennial Census enumeration.

During FY 2004, staff attended monthly PPRC meetings, and in addition, elicited comments on the following issue papers: Stewardship Officer; Data Intrusion; Data Transmission & Confidentiality Risk Statement; Respectful Treatment of Respondents, and Information Classification. Staff also produced a draft of the Informed Consent Policy, taken from the framework developed earlier in the Informed Consent Issue Paper. Staff also provided documented comments/issues and suggested cognitive interviews may be useful in the future for understanding respondents' reactions to and interpretations of newly proposed language for the Federal Confidentiality Statement, due to the recently enacted Confidential Information Protection and Statistical Efficiency Act (CIPSEA). In addition, staff reviewed and commented on the Record Linkage Communication Plan and the Control Over Access to Survey/Decennial Data with Personal Identifiers Policy.

Staff: Ashley Landreth (x38457), Eleanor Gerber, Jeff Moore

B. Development of Questionnaires for Decennial Coverage Improvement

Staff will develop a set of related data collection instruments which will be used to resolve duplicates in the Decennial Census. The project will begin with a pretest, which staff will participate in evaluating. Staff will participate with decennial staff in revision of the instruments for use by clerical personnel, development of training, and additional pretesting for the 2004 Test, or for other mid-decade tests, and for the 2010 Census.

During FY 2004, staff assisted in the further development of an instrument to improve coverage and provide information to assist in unduplication in the Decennial Census.

Staff drafted, cognitively tested, analyzed results, and provided recommendations on decennial short form questionnaires with improved presentations of the residence instructions designed to improve respondent understanding and coverage and also an interview protocol for cognitively testing these instruments for use in the 2005 Census Test.

Staff presented residence rules research findings to the National Academy of Sciences Panel on Residence Rules in the Decennial Census.

Staff: Eleanor Gerber (x34890)

C. Inter-divisional Decennial 2010 Working Groups on Residence Rules and Coverage Improvement

These overall inter-divisional working groups provide input to the Decennial Management Division for planning successive operations, and tests broadly related coverage research during the decade leading up to the 2010 Census. These groups receive proposals from various subgroups on: within-household coverage, residence rules, imputation, and unduplication.

During FY 2004, for the Residence Rules Working Group, staff conducted several cognitive training sessions for Census Bureau staff here and in Jeffersonville. This widened our pool of cognitive interviewers to conduct cognitive interviews for the Coverage Research Follow-up (CFRU) Questionnaire and for iterative versions of residence rules and coverage questions for census short forms for the 2005 mailout test. In the first round of testing, five alternative census short form questionnaires were developed, tested, and analyzed; two with definitions of usual residence included on the form; one without a usual residence definition; one that was principle-based, and one that had a one-year reference period. Based on the results, we dropped the one-year reference period approach and one of the usual residence approaches. For the second round of cognitive interviews, we developed two principle-based forms, one form presenting a revised definition of usual residence, and the last using a step approach for applying the residence rules. We are testing these in conjunction with

experimental race questions. This testing will be conducted in late October 2004.

In addition, staff arranged with colleagues in other divisions to add questions to other Census Bureau evaluations concerning the performance of residence rule and coverage questions in the 2004 census site test: 1) the 2004 Census Test Non-Response Follow-up (NRFU) Feedback Questionnaire completed by all NRFU enumerators, and 2) the 2004 Census Test Interviewer Debriefing Questionnaire. Staff observed the Queens Interviewer Debriefing with these questions via videoconferencing. Additionally, we did further work on refining research questions on residence rules and coverage for the 2006 Census Test.

Staff also gave presentations and served as resource people at the two meetings of the National Academy of Sciences (NAS) Panel on Residence Rules. Staff took the new questionnaire approach suggested by the NAS panel in late September and modified it to meet Census Bureau needs. If this approach is cleared by decision makers, we may conduct cognitive testing of this approach in November 2004.

In the Coverage Improvement Working Group, the staff representative reviewed research questions on coverage improvement proposed by interdivisional subgroups on residence rules, within-household coverage, duplication, and imputation for both the 2005 and 2006 Census Tests. The staff representative proposed new research to examine whether duplication of persons between housing units (HU) and group quarters may be correlated with the amount of time elapsed from Census Day to the day of actual Group Quarters (GQ) enumeration (sometime between April 1 and May 10). In response to this suggestion for new evaluation and analysis, the staff representative convinced the Population Division (POP) and Decennial Management Division (DMD) to add a new question to the Individual Census Report used in GQ for the 2006 site test, asking for the date the form was completed. Additionally Frank Vitrano embraced this line of research on HU-GQ duplications and time elapsed between Census Day and Enumeration Day, and he convinced POP and DMD to add "a length of stay" questions to the questionnaire used for address listing of Group Quarters, "The Other Living Quarters Validation Questionnaire" to further this analysis.

The staff representative also suggested changes to the Whole Household and Coverage Edit Follow-up (CEFU) Operations and Evaluations. The suggestions were changes to the definition of which count discrepancy cases are in-scope for follow-up interviews, so that households with nonresponse to the person count question (how many people live or stay here), but with completed person pages, could be included in the follow-up in 2004. (This situation occurred in about 4.4% of households in Census 2000, but these were not

included in the Census 2000 CEFU evaluation). There is a cost/benefit tradeoff in including these in a future CEFU operation. Staff also participated with the group in evaluating and ranking objectives for the 2005 and 2006 tests.

Staff: Laurie Schwede (x32611), Eleanor Gerber

1.8 AMERICAN COMMUNITY SURVEY (ACS) (Decennial Project 5935600)

A. ACS Questionnaire Design Measurement

This project provides technical and research support for the development and improvement of ACS data collection instruments used in all modes of data collection available in the ACS. Staff serve on interdivisional working groups and provide technical support in the design, and conduct questionnaire design research for the ACS.

During FY 2004, staff served on the ACS Content Council. This task included the review of issue briefs for the content testing proposal. Staff also provided methodological consultation on the veteran affairs questions, education questions, health insurance questions, labor force questions and group quarters questions.

Staff served on the ACS Language Team. This service included methodological consultation and work with a Census Bureau contractor on the pretesting for the Spanish language ACS brochures for Puerto Rico. Staff began drafting a proposal for the pretesting and improving of the current Spanish language ACS instrument in CAPI/CATI and the mail out/mail back form. Other language research included the use of latent class models to examine the quality of disability data obtained in the ACS from linguistically isolated households.

Staff also served on the ACS Evaluation Team Working Group.

Staff: Manuel de la Puente (x34997), Terry DeMaio, Adam Carle, Yuling Pan, Patti Goerman

B. ACS Small Area Estimation Research

Methods for small area estimates at the tract level will be developed, evaluated, and contrasted with the aim of recommending a production method.

During FY 2004, staff completed work on a hierarchical logistic model of persons and housing units in the ACS. The method is model-based and accounts for housing unit clustering effects. A manuscript was submitted to a peer-reviewed journal. A new design-based method for variance reduction and coverage control based on administrative record matching to the ACS was developed. We are currently waiting a response on a proposal.

Staff: Don Malec (x31718), Jerry Maples, Mike Ikeda

C. ACS - Missing Data and Imputation

This project undertakes research and studies on missing data and imputation for the American Community Survey.

During FY 2004, staff identified edit rules applied to the 2002 ACS data (the most recent data at the time) that could generate biases in the count of some populations. Modifications of the rules to bring additional protection against biases were identified. Modifications are currently in use. Staff also provided expertise in the analysis of the C2SS matching study conclusions of the analysis, in terms of the impact of the Census 2000 imputation rules. Staff supported and worked with a researcher at Yonsei University (Seoul, Korea) in the efforts to develop methods to estimate the sampling variance inflation rates associated with the imputation of the financial items. The initial work focuses on computing estimates of the imputation variance for the financial items on the long form in 2000. The same methodology is applicable to similar items on the ACS.

Staff: Yves Thibaudeau (x31706), Bor-Chung Chen, Todd Williams

D. ACS - Disclosure Limitation (See highlights from Decennial Project 5906003 - E).

E. ACS Weighting Research

The current ACS weighting methodology was designed in 1995 and is composed of a series of 13 steps or adjustments. Staff will investigate the possibility of eliminating or combining steps to simplify the overall process. This will be done by individually eliminating each step in the process to determine the effect elimination has on the weighting and estimation results.

Group quarters (GQ) weighting and estimation has been carried out only once with ACS data for calendar year 1999 when there were 36 counties in sample. At that time, GQ stratification and sampling was done separately for each county. For the full GQ implementation of ACS starting in 2006, a new GQ sort by type within state and selection across the whole state will be used. Now that every county in the nation will be in sample, there is the possibility of weighting GQ persons by state. A research proposal was developed for determining appropriate methodology for estimating the number of persons residing in GQ and their characteristics. It includes investigation of options for weighting GQ persons by county or state and controlling, either by themselves or together with housing unit (HU) person estimates, by county or state.

Files are being obtained and constructed for use in verifying the feasibility of a simulation approach using Census 2000 100% data.

Staff successfully tested the feasibility of quadratic programming software for obtaining single weight for use with both persons in HUs and HUs in ACS by simulating controlling them to external county estimates of population by demographic characteristics and number of HUs. The software was modified to use a C subroutine in order to handle counties of more than 100,000 population. The software and documentation were sent to the Decennial Statistical Studies Division for further research.

Staff: Lynn Weidman (x34902), Michael Ikeda, Julie Tsay

F. American Community Survey (ACS) Usability Study

The purpose of this study is to discover usability problems with the American Community Survey (ACS) domain of Census.gov. Our objective is to assess the efficiency, accuracy, and subjective satisfaction of the site, note the usability violations, and make recommendations for how to improve the site.

During FY 2004, staff completed two usability studies on areas of the ACS web site. For the first usability study, staff observed 7 users work on the metadata areas of the site. We discovered the major usability flaws with the site and made recommendations for improvement. Staff presented the findings in a quick report. For the second usability study, staff observed 8 users work on the AFF/ACS integration website and discovered the primary design problems on the site and proved that test users were not performing in a satisfactory way. Staff drafted a quick report with video clip highlights and presented the findings with our major recommendations on how to fix the design problems to the team. Staff began planning for the next usability study to validate the suggested changes and highlight new design problems.

Staff: Erica Olmsted (x34893)

G. American Community Survey (ACS) Labor Force Questions

The purpose of this project is to develop recommended question wording for inclusion in the ACS 2006 Content Test. Evaluation of the 2000 Decennial Census (of which the ACS questions are extracted) labor force questions indicate that responses to those questions produced lower employment estimates than the CPS. An Office of Management and Budget (OMB) Interagency Subcommittee on ACS Labor Force Questions was created and charged with producing a research plan to develop test wording for

the 2006 ACS content test. Research on which to base development of the revised question wording will be conducted between October and December 2004. The research must be completed, the report developed, and the final approved revised question wording submitted no later than late January 2005.

During FY 2004, the research plan, including expert review of the labor force questions, behavior coding of interviewer-respondent interactions in ACS telephone interviews, debriefings of ACS interviewers, and cognitive interviews is being implemented between October and early December, 2004.

Staff: Jennifer Rothgeb, (x34968)

1.9 DATA INTEGRATION (Demographic Project 0906)

Data integration is the alliance of data originating from different sources. It aims to integrate data across data collection platforms. This project involves identifying data sets available to the public on the Internet at no cost, or a minimal cost, and integrating them. We then compare the integrated data to our public use microdata files to identify any data on our files at increased risk of disclosure. This work will help us to develop new disclosure limitation procedures for entities that are currently vulnerable to reidentification, and develop the expertise to foresee and safeguard against future risks of confidentiality breaches.

During FY 2004, staff designed and developed a prototype user-interface system for information visualization. The system will facilitate the identification of risky records by matching and linking microdata files through visualization techniques. Staff designed the system so that users can easily understand the data, and identify outliers that may be at risk of disclosure. Staff demonstrated the design of the information visualization system to our sponsor and members of the division.

Finally, staff served as contact for a research project, "Sensitive Information in a Wired World" which has a major theme of privacy-preserving data mining and includes research from Yale, NYU, and Stanford.

Staff members showed the difficulties of re-identifying Current Population Survey respondents using professional license databases.

Staff: Sam Hawala (x34956), Hyunmo Kang (University of Maryland), Sharae Daniel

1.10 SIPP METHODS PANEL (Demographic Project 1461)

The SIPP Methods Panel is the R&D vehicle for development of a redesigned SIPP data collection instrument for the 2004 SIPP Panel. Through a

combination of expert review, user needs assessment, secondary data analysis, and laboratory research, Methods Panel (MP) staff carry out the research activities necessary to implement the recommendations of the Continuous Instrument Improvement Group (CIIG).

During FY 2004, staff devoted the majority of their efforts not to research, but to assisting the Demographic Surveys Division in tasks related to implementation of the new Wave 1 and Wave 2+ SIPP core and topical module questionnaires (e.g., instrument testing, reviewing interviewer training, assisting in the refinement of "mapping" specifications, consulting with subject-area experts about instrument design, updating documentation of instrument questions and paths, reviewing output to identify instrument and mapping issues, assisting in the creation of a prototype SIPP instrument authored in Blaise, etc.). We also managed however, to conduct and disseminate research. Staff reprised their 2003 ASA papers describing the new SIPP instruments and their genesis, and demonstrating their success in the MP's field test series at a DC-AAPOR/WSS Seminar ("New Roster Procedures and Probes to Improve Coverage in the Survey of Income and Program Participation," "Asset Ownership, Program Participation, and Asset and Program Income: Improving Reporting in the Survey of Income and Program Participation).") We prepared and presented three papers at the 2004 AAPOR Conference.

Late in FY 04, as 2004 SIPP production data began to become available, staff began analysis to assess the performance of the new Wave 1 SIPP instrument, looking at respondents' use of new instrument features, the quality of basic survey estimates, item nonresponse, seam bias, etc. Much work on these topics remains; in some cases (e.g., seam bias) all of the necessary data are not yet available. Reports on these topics will be issued throughout FY05.

Staff: Jeff Moore (x34975), Donald Burke, Anna Chan, Julia Klein Griffiths, Joanne Pascale

1.11 SURVEY OF INCOME AND PROGRAM PARTICIPATION (SIPP) RESEARCH (Demographic Project 1465)

A. Continuous Instrument Improvement Group (CIIG)

CIIG serves as a vehicle for systematically reviewing the redesigned SIPP data collection instrument to identify data quality problems, for recommending research to address problems arising from instrument design, and for recommending instrument revisions.

There was no activity during FY 2004. In October 2003, the SIPP Executive Committee recommended

that CIIG suspend operations for several months (exact duration to be determined), primarily in order to allow the Demographic Surveys Division/SIPP staff to devote full attention to immediate and pressing tasks related to implementing new instruments for the 2004 SIPP Panel. Suspending CIIG activities also allowed our staff more time to assist in various ways in the instrument transition.

Staff: Jeff Moore (x34975)

B. Longitudinal Weighting

The objective of this project is to design and conduct research required to assess the effectiveness of weighting alternatives for the SIPP longitudinal estimation.

During FY 2004, staff completed a study of the effectiveness of the current SIPP longitudinal nonresponse weight adjustment and of three alternatives. The study identified several of the core survey items for which there is fairly consistent bias in the longitudinal estimates. We found that the weighting alternatives to the current nonresponse adjustment method appear to do a “better” job of compensating for the bias associated with these items. We’ve recommended a revision of the survey’s longitudinal nonresponse adjustment procedure that reflect the careful modeling of response propensity and a more efficient selection of nonresponse weight adjustment cells.

Staff: Leroy Bailey (x34917), Julie Tsay

C. Quick Turnaround Pretesting of Household Surveys

This project involves pretesting new or revised series of questions for insertion into household surveys. The projects are of the short-term, quick turnaround variety rather than long-term research efforts to redesign a survey. Methods used include cognitive testing and other techniques as appropriate.

During FY 2004, staff completed a research report summarizing findings from cognitive testing of National Crime Victimization Survey (NCVS) identity theft questions. Testing showed that the main problem was that respondents were not able to easily divide their victimization experiences into incidents of identity thefts (as written in the questionnaire), and questions for which reporting was requested for the most recent incident of identity theft were difficult for them. According to respondents, a person can experience more than one incident during an episode of identity theft. An incident refers to each individual action that was taken during the period that the identity theft occurred. The period of identity theft is referred to as an “episode” and encompasses all of the individual

incidents or actions that occurred. When the questions were revised to refer to the term “episode” instead of “incident,” respondents had no difficulty in answering or interpreting the question as the sponsor intended.

Staff also completed research on several variations of questions about cohabitation. This research, which showed that heterosexual respondents used the terms boyfriend and girlfriend to introduce their cohabiting partners, while gay and lesbian respondents used the terms partner or domestic partner. Unmarried partner was acceptable to heterosexuals, while gay and lesbian respondents did not like the term. Most respondents, particularly gays and lesbians, preferred to indicate they were living with a partner in the marital status question. However, when asked the standard marital status question which does not have that option, all respondents were able to choose the appropriate response. No respondents stated they were living with a partner when that option was not explicitly offered. The final recommendation made no reference to couples getting married, and it included terms that apply to heterosexuals, gays and lesbians. This recommendation was field tested in QDERS 2004.

Staff completed cognitive research on the NCVS school crime questions. This testing showed that in several questions that contain the phrase “at school,” respondents were interpreting it more narrowly than the sponsor intended. Respondents interpreted the term “bullied” more broadly, including things that sounded like bullying, but which were said in jest.

Staff conducted an informal expert review of the Public Police Contact Survey and finalized the questionnaire for cognitive testing. The cognitive interviewing has begun, but due to methodological issues and budget, it has been put on hold.

Staff also have been working with the Demographic Surveys Division, the Bureau of Justice Statistics, and the Office of Violence Against Women to develop a stalking supplement to the NCVS. Focus group research is currently being planned; this will be followed by cognitive interviews.

Staff served as a member of the Interagency Committee on Disability, seeking to revise the disability questions for the American Community Survey. Staff are conducting cognitive research on these questions jointly with staff from the National Center for Health Statistics. We have completed interviews using a self-administered questionnaire, and a report of results is in preparation.

Staff: Terry DeMaio (x34894), Kristen Hughes, Jennifer Hunter, Lorraine Randall

1.12 AMERICAN HOUSING SURVEY- NATIONAL (Demographic Project 7455)

This project provides questionnaire pretesting assistance for the American Housing Survey (AHS).

During FY 2004, staff worked with the Demographic Surveys Division and Housing and Household Economic Statistics Division to craft and test new and revised questions for six modules in the AHS: wheelchair accessibility; initial fees associated with senior housing; housing subsidies; fire safety; neighborhood quality; and residential housing finance.

The focus of Round 1 pretesting in the spring was to develop questions to measure two things: 1) the level of wheelchair accessibility into and within existing U.S. residential housing stock; and 2) initial fees associated with occupying senior housing. Twenty-one respondents living in senior housing or regular residential housing in the Washington DC metropolitan area participated in this round. A draft report was issued in May.

Round 1 results showed that using strict criteria to assess wheelchair accessibility (e.g., whether a door was at least 32 inches wide) was problematic for respondents. Their responses were often qualified or unreliable. Furthermore, the complexity of interior space in homes (particularly in critical areas such as entrances, hallways, and bathrooms) in relation to the draft questions made it difficult for respondents to address access and interior mobility issues related to wheelchair use. With regard to costs of senior housing, respondents showed they were unfamiliar with the key term "initial fees." In addition, they were unable to distinguish monies paid for particular services from those related to other costs of ownership (e.g., non-refundable down payments.)

Based on Round 1 research, it was decided that additional research would be needed to identify alternative methods to describe wheelchair accessibility through AHS questions. Finally, a larger test with a broader set of senior housing types would be needed to better understand and craft questions about initial fee cost structures. Sponsors decided to postpone adding questions to the AHS on wheelchair accessibility and initial fees pending additional research.

In Round 2 of AHS research, twenty-seven cognitive interviews were conducted with low-income housing respondents in Washington DC metropolitan area, Detroit, MI, and Chicago, IL to evaluate proposed revisions to AHS housing subsidy questions. Results showed that: 1) unfamiliar terms (e.g., voucher, housing authority, rent control, rent stabilization) and new terms (e.g., landlord) presented comprehension problems for respondents; 2) some revised questions (e.g., two screener questions used to have respondents self-identify subsidy status) performed better than the original AHS questions.

A draft report of research results was distributed to sponsors in September 2004. After an internal review

it will be released through SRD's Division Report Series. Final recommendations suggested adding clearer terms, explicitly expressed definitions where ambiguous terms were unavoidable, and a modified question order to reduce false positives and respondent burden. Also, staff encouraged HUD to further clarify their measurement goals for each subsidy question to improve data collection materials for field staff. These recommendations are currently being reviewed by HUD program analysts and census survey managers. Staff anticipates the improvements will be incorporated into the AHS.

Cognitive testing of remaining modules began in 2004 and will continue in FY 2005 and include questions on neighborhood quality, fire safety and residential housing finance. Further research will be done in the area of cost structures related to senior housing, wheelchair accessibility, and other topics identified in requests from HUD through DSD and HHES.

Staff: Eileen O'Brien (x32695)

1.13 EVALUATION OF THE NATIONAL LONG TERM CARE SURVEY PRETEST (Demographic Project TBA)

The National Long Term Care Survey is conducted every five years, and is scheduled to be administered in 2004. Revisions to the survey since its last implementation will be field tested in a pretest. Respondent debriefing questions will be utilized to evaluate the effectiveness of new and revised questions.

During FY 2004, staff evaluated the respondent debriefing data, prepared a report, met with the Demographic Surveys Division and the survey sponsor, and finalized the report. No revisions to the targeted questions are necessary based on analysis of the respondent debriefing data. However, the report stated that the sponsor should consider a long-term research plan in preparation for the 2009 fielding of the survey, because there are several areas of the multiple module survey instrument which could benefit from cognitive laboratory research.

Staff: Jennifer Rothgeb (x34968)

1.14 RESEARCH FOR SMALL AREA INCOME AND POVERTY ESTIMATES (SAIPE) (Demographic Project 7165)

A. Research for Small Area Income and Poverty Estimates (SAIPE)

The purpose of this research is to develop, in collaboration with the Housing and Household Economic Statistics Division (HHES), methods to

produce “reliable” income and poverty estimates for small geographic areas and/or small demographic domains (e.g., poor children age 5-17 for counties). The methods should also produce realistic measures of the accuracy of the estimates (standard errors). The investigation will include assessment of the value of various auxiliary data (from administrative records or surveys) in producing the desired estimates. Also included would be an evaluation of the techniques developed, along with documentation of the methodology.

During FY 2004, staff examined and tested several bivariate models of state poverty ratios for each of four age groups (0-4, 5-17, 18-64, and 65+) using data from both the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) and the Supplementary Surveys of the American Community Survey (ACS). The goal was to see if jointly modeling the CPS ASEC and ACS data would improve estimates of state poverty ratios in the CPS ASEC equation for income years 2000 and 2001. In comparing results from a general bivariate model with those from the current univariate model, we found a small average improvement in state posterior variances. Results were variable for individual states, with some states showing larger improvements, but a few showing substantial variance increases. We examined some more restrictive bivariate models, but chi-squared tests rejected some of these more restrictive models for ages 5-17 and 18-64. However, the tests failed to reject, for all four age groups, a bivariate model that assumed the same regression coefficients excluding intercepts in the CPS ASEC and ACS regression equations. This suggests a systematic difference in level between the CPS ASEC and ACS estimates, but gives no evidence of other differences in the two regression functions. In general, while there is potential for improving the state poverty estimates by using the ACS supplementary survey data in the models, the amount of improvement depends on what we assume about the relative biases in the estimates. Making stronger assumptions leads to more apparent improvement, but the data reject very strong assumptions.

We made an exploratory examination of using IRS poor child tax exemption data in models to predict the number of poor children in school districts. Preliminary results look very promising, and further evaluations are planned of the new proposed methods using historical data sets. We discovered that the predictive power of the IRS income tax data is improved by pre-processing of the data before using it in models. The pre-processing addressed some issues with age/grade ranges of school districts and problems with non-geocodable tax exemptions.

Staff: Elizabeth Huang (x34923), Jerry Maples,

William Bell (M&S)

B. Small Area Estimation Methodology for SAIPE

This work generally concerns the relative merits of small area estimation methods based upon linear (Fay-Herriot) models versus General Linear (mixed-effect logistic) models for log-counts of child-poor and log-rates of child poverty at the level of county SAIPE estimates.

During FY 2004, efforts focused on two investigations: (1) investigation into count models for poverty, including the no-poor-in sample issue (represents a contribution to knowledge of the effect of discreteness for entries with small numbers of poor); (2) investigation into differences between our estimates, the Current Population Survey estimates, and estimates from the 1990 and the 2000 Census (led to a renewed interest in Census 2000/SAIPE comparisons and contribution to thinking about using comparison to census data as a discriminator between models).

Staff: Eric Slud (x34991)

1.15 ANALYSIS AND FORECASTING OF DEMOGRAPHIC TIME SERIES (Demographic Project TBA)

This project will employ time series methods to incorporate probabilistic estimates of forecast uncertainty into annual population projections.

The goal of this project is to produce population forecasts with measures of uncertainty. For fertility data, we addressed correlation across races using Bayesian ARIMA models and the BUGS software. We discussed similar techniques for the mortality data. For immigration data, we produced random walk models for the total numbers of immigrants, and used principal components analysis to forecast immigrant age distributions.

Staff: Tucker McElroy (x33227), William Bell (M&S)

1.16 EDITING METHODS DEVELOPMENT (Economic Project 3320054)

A. Investigation of Selective Editing Procedures for Foreign Trade Programs (FTD)

The purpose of this project is to develop software to improve Economic Directorate projects and processes as requested.

The Foreign Trade Division publishes monthly estimates on imports and exports for all goods traded between the United States and foreign countries. The purpose of this project is to determine the feasibility of developing selective editing strategies for the Census Bureau’s foreign trade programs. In selective editing, a score function and associated critical values are developed for automatically identifying edit failing

records that have a significant impact on the final tabulations. Units with a score larger than the critical values are marked for recontact and follow-up before publication of final tabulations. We completed a thorough review of relevant literature on selective editing. We also reviewed the characteristics of data collected by foreign trade programs and current editing strategies. We distributed a draft of specification requirements, "Developing Selective Editing Strategies for Foreign Trade Programs." We wrote SAS prototype SAS programs implementing two separate score functions. We designed specifications for a sample test data set of representative foreign trade data. We selected a representative test data set comprising cases from various separate commodities within eight different chapters. This is a joint project with the Foreign Trade Division.

Staff: Maria Garcia (x31703), Yves Thibaudeau, Andreana Able Gajcowski (FTD)

1.17 - DISCLOSURE AVOIDANCE METHODS (Economic Project 3420051)

The purpose of this research is to develop disclosure avoidance methods to be used for Census Bureau publicly available economic data products. Emphasis will be placed on techniques to implement disclosure avoidance at the stage of data processing. Disclosure avoidance research will be conducted on alternative methods to cell suppression for selected Economic Surveys. We will also aid in the implementation of the methods.

During FY 2004, staff worked with staff in the Commodity Flow Survey (CFS) Branch of the Service Sector Statistics Division (SSSD) to determine how various weights should be used in the determination of sensitive cells for CFS tables. Staff worked with staff from the Manufacturing and Construction Division on development of a microdata weight adjustment method that is used for protecting tables generated from the microdata.

Staff analyzed sliding protection as a way of protecting cell values in tables and compared it to the currently used method of fixed interval protection. They did a number of computer runs and summarized the findings in two notes: one written with policy groups in mind (e.g., the Disclosure Review Board and Economic Directorate groups); the other with more of the mathematical and computation details. It appears that using sliding protection in our current cell suppression production programs probably doesn't make sense, but if one assumption used in those programs is relaxed in the future, sliding protection would have certain advantages (e.g., fewer suppressions) and so it should be seriously considered.

Staff wrote two reports that evaluated Bureau of

Transportation Statistics (BTS) sponsored software. This software performs confidentiality protection of tabular data using a type of perturbation called CTA (controlled tabular adjustment). The first report focused on tables with count data. The second report concentrated on how the software protected magnitude tables. Staff, along with staff from the Economic Statistical Methods and Programming Division (ESMPD) analyzed each of the five sensitivity rules that apply to such tables. ESMPD staff compared some of the BTS software results with those based on software that was developed at the Census Bureau independently that also implements the CTA method. Staff members detected a number of problems with the BTS software and discussed them with BTS staff.

Staff: Laura Zayatz (x34955), Paul Massell, Phil Steel, Sam Hawala

1.18 - TIME SERIES RESEARCH (Economic Project 3420052)

A. Seasonal Adjustment Support

This is an amalgamation of projects whose composition varies from year to year, but always includes maintenance of the seasonal adjustment and benchmarking software used by the Economic Directorate.

During FY 2004, staff responded to a question from the Demographic Statistical Methods Division on seasonal adjustment methodology and research from the SRD Helpdesk. Seasonal adjustment and X-12-ARIMA support was provided to: Alliance UniChem, Bank Julius Baer and Company, Bank of America, Business Forecast Systems, Catapillar SARL, FGV Brazil, Footfall, Ltd., Ford Motor Company, Henry George Foundation, the Nomura Securities Co., Ltd., Novem Pharmaceuticals, San Jose Mercury News, SAS (Poland), Eviews, J.P. Morgan/Chase, Feanley Consultants (Norway), Infosys, Banks' Shareholdings Purchase Corporation, Amsted Industries, FIBER, Fabick Tractor, STATA, Deutsche Telekom AG, J. Cater Economic Consultants, NERA Economic Consulting, I-N Information Systems, Ltd. (Japan), ING Bank (Portugal), Credit Suisse First Boston (Brazil), CitiGroup, Partnership for New York City, IMF, Council of Economic Advisers, IRS, Bureau of Labor Statistics, Connecticut Center for Economic Analysis, New Jersey Department of Labor, U.S. Federal Reserve, Bureau of Economic Analysis, Federal Reserve Bank of Dallas, U.S. Department of Agriculture, Agency for Workforce Innovations (Florida), Argentine Census Bureau, INEGI (Mexico), Statistics Sweden, Statistics Canada, Economic and Social Research Institute (Japan), National Institute of Statistics (Argentina), Office of National Statistics,

Department of Statistics (Bermuda), Statistics New Zealand, National Statistical Committee of Kyrgyzstan, Australian Bureau of Statistics, Ministerio de Hacienda de Chile, The Department of Statistics of the Republic of Moldova, Eurostat, Statistics Netherlands, INDEC (Argentina), Federal Reserve Bank of South Africa, HMS Treasury (UK), Bank of England, CMHC (Canada), Central Bank of China, Reserve Bank of Australia, Bank of Canada, National Central University (Taiwan), Universidad Carlos III de Madrid, University Austral, Cornell University, University of Bologna, Chiba University, Monash University (Australia) SUNY College of Technology at Alfred, University of California at Santa Clara, Syracuse University.

Staff: Brian Monsell (x31721), Kellie Wills, David Findley (M&S)

B. X-12-ARIMA Development and Evaluation

The goal of this project is a multi-platform computer program for seasonal adjustment, trend estimation, and calendar effect estimation that goes beyond the adjustment capabilities of the Census X-11 and Statistics Canada X-11-ARIMA programs, and provides more effective diagnostics. This fiscal year's goals include: (1) finishing a release version of the program for the general public that includes the automatic time series modeling capability of the TRAMO/SEATS seasonal adjustment program and (2) further improvements to the X-12-ARIMA user interface, output and documentation. In coordination and collaboration with the Time Series Methods Staff (TSMS), the staff will provide internal and/or external training in the use of X-12-ARIMA and the associated programs, such as X-12-Graph, when appropriate.

During FY 2004, staff developed a version of X-12-ARIMA that produces the latest local shrinkage adjustments proposed by Miller and Williams to support research on the effect of shrinkage on seasonal adjustments and consulted with Miller and Williams to alleviate inconsistencies in the original methodology. Staff incorporated a series of changes in X-12-ARIMA's diagnostic output requested by the Time Series Methods Staff (TSMS) of the Economic Statistical Methods and Programming Division (ESMPD), including consolidating diagnostic output into one file and making additional seasonal adjustment and modeling diagnostics available. Additional output tables were also added to the program output, including a new table of total adjustment factors that allows ESMPD staff to use one factor to generate the seasonally adjusted data, no matter what option or pre-adjustments are specified by the user. Staff also produced a version of X-12-ARIMA for Statistics New Zealand, with revised documentation, to allow them to use a single meta file to generate more than one

composite adjustment. Progress was also made on the automatic model identification procedure in Version 0.3; an option was added to allow the program to ignore mixed ARIMA models during the model identification procedure, and errors within the procedure were corrected.

Staff: Brian Monsell (x31721), Richard Gagnon

C. Research on Seasonal Time Series - Modeling and Adjustment Issues

The main goal of this research is to discover new ways in which time series models can be used to improve seasonal and calendar effect adjustments. An important secondary goal is the development or improvement of modeling and adjustment diagnostics. This fiscal year's projects include: 1) collaboration with the Time Series Methods Staff (TSMS) of the Economic Statistical Methods and Programming Division (ESMPD) in the further evaluation of the TRAMO/SEATS model-based seasonal adjustment program; 2) the further development of a version of X-12-ARIMA called SEATS, so that X-12-ARIMA diagnostics can be used to analyze SEATS adjustments, and also so that, when appropriate, SEATS adjustments can be produced by the Economic Directorate.

During FY 2004, staff conducted research projects including: a) evaluating a proposed method for using shrinkage estimators to improve seasonal adjustments which focused on the impact of shrinkage on seasonal adjustment diagnostics and on details of implementing the methodology; b) evaluating an under/over adjustment diagnostic used in a model-based seasonal adjustment program which corrected a substantial bias toward indicating over-adjustment, eventually generating empirical critical values for a t-test for over/underestimation of model based seasonal adjustment and applying this work to a broader set of time series models beyond the airline model; c) developing a method of iterative parametric signal extraction with extreme value adjustment, after deriving the theory for the case of a non-stationary seasonal and trend components within this framework; d) developing procedures for estimating stochastic level shift effects in economic time series while researching numerical and computational issues in the estimation and smoothing routines; e) studying new variants of the "airline" seasonal time series which permit more independence between the properties of the trend component and the properties of the seasonal component, coefficients and evaluating these models on Census Bureau economic series. Staff also continued the development of the regCMPNT software by adding a forecasting module, developing routines to determine if AR, MA or differencing polynomials have roots on the unit circle, and improving the estimation of

covariances for ARMA parameters. The canonical decomposition software developed in Ox was used to test the forecasting module for time series containing multiple components. Staff also updated the source code for the X-12-SEATS prototype by incorporating seasonal outliers and pulse regressors, updating the SEATS code as updates were made available from the SEATS developers, and finishing routines for deriving spectral estimates for the infinite concurrent adjustment filter so that output could be read into other software.

Staff: Donald Martin (x33689), Richard Gagnon, Brian Monsell, Tucker McElroy, Thomas Trimbur, David Findley (M&S), William Bell (M&S)

D. Supporting Documentation and Software for X-12-ARIMA

The purpose of this project is to develop supplementary documentation and supplementary programs for X-12-ARIMA that enable both inexperienced seasonal adjusters and experts to use the program as effectively as their backgrounds permit. This fiscal year's goals include collaborating with the Time Series Methods Staff (TSMS) to develop a new and improved version of the X-12-ARIMA Reference Manual in WordPerfect with an extensive index and other aids not available in the TeX version.

During FY 2004, staff completed the conversion of the X-12-ARIMA Reference Manual from TeX into LaTeX, and posted versions of the quick reference and Reference Manual for Version 0.3 of X-12-ARIMA to the Census Bureau Intranet. An additional version of the documentation was generated where the X-12-ARIMA documentation is split into two functional sections: an Operations Manual and a Technical Details document. Staff submitted two papers for publication in professional journals, "Computation of Asymmetric Signal Extraction Filters and Mean Square Error for ARIMA Component Models" to the *Journal of Time Series Analysis* and "Frequency Domain Analysis of SEATS and X-11-ARIMA Seasonal Adjustment Filters for Short and Moderate-Length Time" to the *Journal of Official Statistics*. Staff revised the paper "An Iterated Parametric Approach to Non-stationary Signal Extraction" and submitted the paper to a special edition of the *Journal Computational Statistics and Data Analysis*. An expanded version of this paper, which includes additional material on computer implementation of the concepts, has been included in the Research Report Series.

Staff: Brian Monsell (x31721)

1.19 BUREAU OF ECONOMIC ANALYSIS (Methodology and Standards Project 8045)

To assist the Bureau of Economic Analysis (BEA)

with improving data quality and response rates to its surveys.

During FY 2004, staff prepared a statement of work for survey methods research. This project focused on the evaluation of both paper and electronic versions of BEA's current and upcoming questionnaires on Outward Direct Investment and Service Sector reports. Other than an expert review of BEA's draft survey of the service economy done by division staff, we decided the remaining work should be managed and conducted by Establishment Methods staff in the Economic Directorate.

Staff: Eileen O'Brien (x32695), Beth Nichols

1.20 POSTAL RATE COMMISSION/STATISTICAL CONSULTING (Methodology and Standards Project 8150)

The work associated with this project will entail the review of testimony, interrogatories, decisions, and other documentation relating to proceedings of the Commission in order to identify major statistical issues and provide relevant consultation. The consultation will include: 1) the briefing of the commissioners and other commission officials on the ramifications and desirable approaches to the identified statistical questions; and 2) the presentation of written summaries of the major findings from all assigned reviews.

During FY 2004, staff reviewed relevant documentation, and attended United States Postal Service briefings on the new methodology for the collection and analysis of city carrier street time cost data. In addition, we assisted the Officer of the Consumer Advocate in developing and evaluating alternative sample designs and implementation and estimation procedures for a proposed mail delivery performance study.

Staff: Leroy Bailey (x34917)

1.21 NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY/BAYESIAN STATISTICAL METHODOLOGY (Methodology and Standards Project 8863)

The purpose of this project is to provide technical expertise to the Statistical Engineering Division of the National Institute of Standards and Technology towards setting up Bayesian methods mainly for the project, "3D Chemical Imaging at the Nanoscale Level."

During FY 2004, staff completed work on a Bayesian method to combine intra-laboratory measurements. We collaborated on an ongoing study of numerical errors in Gibbs sampling. Staff provided technical expertise for developing Bayesian methods for the Project, "3D Chemical Imaging at the Nanoscale Level."

Staff: Don Malec (x31718)

**1.22 PROGRAM DIVISION OVERHEAD
(Census Bureau Project 0251)**

A. Division Leadership and Support

This staff provides leadership and support for the overall operation of the division.

Staff: Tommy Wright (x31702), Hazel Beaton, Alice Bell, Maria Cantwell, Pat Cantwell, Robert Creecy, Manuel de la Puente, Barbara Palumbo

B. Computer Support

The Computer Support staff provides computer support with the goal of providing a statistical computing environment that provides researchers powerful tools to develop new methods and permits them to share information easily and accurately. Hardware includes SUN servers, workstations, and PCs on a NOVELL network.

Staff: Chad Russell (x33215), Tom Petkunas, Mohammed Chaudhry

2. RESEARCH

2.1 - 2.3 GENERAL RESEARCH AND SUPPORT TOPICS (Census Bureau Projects 0351, 0924, 1871)

Statistical Methodology

A. Disclosure Avoidance

The purpose of this research is to develop disclosure avoidance methods to be used for all Census Bureau publicly available data products. Emphasis will be placed on techniques to implement disclosure limitation at the stage of processing. Methods will be developed, tested, evaluated, and documented. We will also aid in the implementation of the methods.

During FY 2004, staff worked on record linkage to determine the potential of disclosure from Longitudinal Employer Household Dynamics (LEHD) synthetic public use files. Staff prepared the matching program "Bigmatch" to disclosure proof of the synthetic data file that is being prepared by LEHD. So far, BigMatch was used for string comparisons, such as names and addresses, or numerical comparisons of age or dates. The metric necessary for comparing numeric variables such as income needed more work and testing.

The Disclosure Review Board reviewed 195 data products. Staff worked with the Demographic Surveys Division (DSD) staff to develop a disclosure avoidance plan and review process for the National Survey of College Graduates. Staff worked with the Housing and Household Economic Statistics staff to develop appropriate disclosure avoidance procedures for SAIPE model parameters. Staff worked with DSD staff to develop disclosure avoidance techniques for the American Housing Survey. They had several problems in applying topcodes. Staff worked with Current Population Survey Staff to resolve disclosure issues with the age topcode, the publication of Primary Sampling Units, the geographic size cut-off, and the effects of sample design. Staff worked with Survey of Income Participation (SIPP) staff to develop disclosure avoidance procedures for certain variables (mainly months) on the SIPP files. They also examined all 11 topical modules searching for any potential disclosure problems.

Staff studied the remote access system at the National Center for Health Statistics. Staff developed a Statement of Work for a Remote Access system that would allow users to query microdata and obtain statistical results without actually seeing the data. One proposal was received. Staff wrote a proposal evaluation and a best value award recommendation. Staff completed an Information Technology (IT) Purchase Plan for the remote access system

development and obtained approval from the IT Governing Board. Staff worked with Jerry Reiter (Duke University) and Arnie Reznick (Office of the Chief Economist) on developing the confidentiality filters for the remote access system.

Staff: Laura Zayatz (x34955), Phil Steel, Paul Massell, Sam Hawala, Sherae Daniel, Hyunmo Kang

B. Seasonal Adjustment (See Economic Project 3420052.)

C. Small Area Estimation-Decennial/Demographic Applications (See highlights of Decennial Project 5906004 (A) and Decennial (ACS) Project 5935600 (B)).

A monthly meeting designed as an open forum for small area research and topics throughout the Census Bureau was established. These meetings are designed as a way to disseminate ideas on small area estimation across the group of small area researchers working on a wide variety of projects across the Census Bureau.

Monthly meetings include nine presentations from Census Bureau staff. We are maintaining a concise documentation of these project presentations for easy referral. Staff prepared a short background report on the early statistically-based small area estimation.

Staff: Don Malec (x31718), Jerry Maples

D. Nonresponse in Longitudinal Surveys

This project requires an extensive examination of relationships between longitudinal survey nonresponse and potential explanatory variables for a variety of survey items. The research objectives are: 1) to apply the results of this investigation in the development of general analytical models which reflect potential survey errors in estimation and analysis ascribed to longitudinal nonresponse, and 2) identify and advance a well-defined process for selecting and evaluating desirable approaches to nonresponse compensation for longitudinal surveys.

See Highlights from Demographic Project 1465(B).

Staff: Leroy Bailey (x34917)

E. Sampling and Estimation Methodology: Household Surveys (See Decennial (ACS) Project 5935600 (E))

F. Sampling and Estimation Methodology: Economic Surveys

The Economic Directorate of the Census Bureau encounters a number of issues in sampling and estimation in which changes might increase the accuracy or efficiency of the survey estimates. These include estimates of low-valued exports not currently reported, alternative estimation for the Quarterly Financial Report, and procedures to address nonresponse and reduce respondent burden in the surveys. Further, general simulation software might be created and structured to eliminate various individual research efforts.

During FY 2004, staff continued efforts to evaluate alternative Quarterly Financial Report (QFR) estimators through a detailed simulation. Staff assisted in developing modeling procedures to simulate data, examining preliminary simulation files to identify potential problems, analyzing simulation output, and documenting results and procedures. The initial phase of the investigation narrowed the alternatives down to three estimators, including the current estimator. A more detailed comparison of the three remaining estimators showed that they generally produced similar results although, on average, there seemed to be a marginal preference overall for the current estimator. The cross-divisional research team is currently planning to recommend the retention of the current QFR estimator. This work is being done with the Company Statistics Division and the Economic Statistical Methods and Programming Division.

Staff also examined the estimation of low-valued exports (LVEs) with staff from Foreign Trade Division (FTD). We demonstrated that either (i) the current method for estimating LVEs severely overestimates the true level, or more likely, (ii) the reporting of LVEs differs markedly between summary and detailed reporters. We briefly investigated reconciliation studies to determine which of the possibilities may be true, devised analyses with computing support from FTD, and described results in a paper made available to interested analysts in FTD and the Bureau of Economic Analysis.

Staff: Mike Ikeda (x31756), Pat Cantwell

G. Disclosure Avoidance for Public-Use Microdata and Tabular Data

Staff investigates methods of microdata masking that preserve analytic properties of public-use microdata and avoid disclosure and methods for disclosure avoidance in tabular data.

During FY 2004, staff wrote the chapters, "Masking and Re-identification Methods for Public-Use Microdata: Overview and Research Problems," and "Re-identification Methods for Masked Microdata" for the monograph (J. Domingo-Ferrer and V. Torra, Eds.), *Privacy in Statistical Databases*, Springer: New

York. Staff wrote the paper, "An Algorithm for Computing Minimal Full-rank sufficient Statistics with Application to Confidentiality Protection." Staff presented the talk "Practical Viability of Multiple Imputation as a Tool for Disclosure Avoidance for Large Scale Recurring Surveys" at the conference *Privacy in Statistical Databases 2004* in Barcelona, Catalonia, Spain.

Staff: William Winkler (x34729), Yves Thibaudeau, William Yancey, Robert Creecy

H. Research and Development Contracts

The Research and Development Contracts are indefinite delivery, indefinite quantity task order contracts for the purpose of obtaining contractor services in highly technical areas to support research and development activities across all Census Bureau programs. The contracts provide a pool of contractors to assist the Census Bureau in conducting research on all survey and census methods and processes to improve our products and services through FY2007. The prime contractors include educational institutions, university supported firms and privately owned firms that concentrate in sample survey research, methodology, and applications to create a pool of specialists/experts to tackle some of the Census Bureau's most difficult problems through research. Many of the prime contractors are teamed with one or more organizations and/or have arrangement with outside experts/consultants to broaden their ability to meet all of the potential needs of the Census Bureau. These 5-year contracts allow Census Bureau divisions and offices to obtain outside advisory and assistance services to support their research and development efforts quickly and easily.

H.1. R&D 2002 Contracts

Contracting Officer's Technical Representative (COTR) service for the Research and Development 2002 Contracts: the multiple contracts were awarded in July 1997 in five technical areas: 1) technology services; 2) assessment, planning and analysis; 3) statistical analysis; 4) methodological research; and 5) minority focused and special populations research.

During the first quarter of FY2004, no new task orders were awarded, and no modifications were made to the task orders. The last active task order was completed. There were 101 task orders awarded under the R&D 2002 contracts, with a monetary value of over 39 million dollars. Most of the work this quarter was concentrated on closing out the task orders; that is, processing final invoices, de-obligating unused funds, and completing evaluations.

This project is complete.

Staff: Ann Dimler (x34996)

H.2. R&D 2002 Contracts Task Orders

Staff provides technical management of two task orders under the R&D 2002 Contracts. One task order is with the National Opinion Research Center (NORC) on sampling and estimation methods. The NORC research was subcontracted to DataMetrics Inc.

For the NORC task order, the research was completed September 30, 2003. During the first quarter, staff received and distributed final reports, processed final invoices, and closed out the task order. For the Research Triangle Institute task order, staff worked with the technical manager to modify the task order with a no-cost 3-month extension to provide additional time to complete the research. The research was completed December 31, 2003.

This project is complete.

Staff: Ann Dimler (x34996)

H.3. R&D 2007 Contracts

The multiple contracts were awarded during FY2002 in six technical areas: 1) assessment, planning, and analysis; 2) data analysis and dissemination; 3) statistical analysis, 4) methodological research, 5) sub-population research, and 6) survey engineering.

During FY 2004, fifteen new task orders were awarded, twenty-eight modifications were awarded, five task orders were completed and one was a stop work order. To date, there have been thirty-three task orders awarded under R&D 2007 contracts, with a monetary value of over \$33.3 million (over \$21.2 million of the \$33.3 million obligated).

Staff: Ann Dimler (x34996)

Statistical Computing Methodology

A. Record Linkage and Analytic Uses of Administrative Lists

Under this project, staff will provide advice, develop computer matching systems, and develop and perform analytic methods for adjusting statistical analyses for computer matching error.

During FY 2004, staff provided new versions of BigMatch software at the request of Decennial Census staff. Staff made updates to AgCensus matching software for finding duplicates in a single file and SRD matching software for finding duplicates across two files. Some of the updates were intended to make more robust routines. Staff provided advice on parameters and cutoffs to the Planning Research, and Evaluation Division related to a project comparing methods for

address matching. Staff wrote the papers, "Record Linkage: Overview of Recent Developments and Applications," "The BigMatch Program for Record Linkage," and "Approximate String Comparator Search Strategies for Very Large Administrative Lists."

Staff: William Yancey (x34891), William Winkler

B. Editing

Under this project, staff will provide advice, develop computer edit/imputation systems in support of demographic and economic projects, implement prototype production systems, and investigate edit/imputation methods.

During FY 2004, staff investigated various cutting plane algorithms for error localization (i.e., finding the minimum number of fields to impute) in situations where not all implicit edits are available. One cutting plane algorithm is due to Garfinkel, Kunnathur, and Liepins (*Operations Research 1986*). Another is due to Winkler and Chen (2002). Garfinkel et al (1986) investigated the cutting plane algorithms as a faster alternative to direct integer programming to find optimal solutions. They observed that their cutting plane algorithm was likely to be too slow for most practical applications. The algorithm of Winkler and Chen is a potentially much faster cutting plane algorithm.

Jointly with the Decennial Management Division staff, staff continues to implement the New Imputation Methodology (NIM), a nearest-neighbor hot-deck methodology, to impute the 100% items. NIM is a candidate for item imputation in the 2006 Test. NIM has the potential to correct the leftover edit failures after running the other imputation methods (administrative record substitution, traditional hot-deck).

Staff sent information and papers to researchers at: RTI, ATT Research, National Science Foundation, University of Maryland, Baltimore County, Statistics Sweden, NORC, National Statistics, UK.

Staff: Yves Thibaudeau (x31706), Bor-Chung Chen, Maria Garcia, Bill Winkler

C. Graphical Methods Research

This project entails the promotion of graphics for exploratory data analysis and quality assurance, and presentations of data or findings. A primary goal is to demonstrate that the use of graphical data analysis is an important and easy to implement tool for discovering patterns within data, and assuring that statistical properties have been maintained. Research will be conducted by examining newly developed and already existing graphical software using current

Census Bureau data. Papers and reports produced by the Census Bureau will be examined to determine if the display of information can be improved using either existing or new graphical techniques. The use of graphics will be encouraged by providing presentations, training, and support where needed.

During FY 2004, a staff member served on the team that produced the Census Bureau's Graphical Standards.

Staff: Pam Ferrari (x34993), Leroy Bailey, Ruben Mera

D. General Variance Estimation Development and Support

This project will develop new methods and interfaces for general variance estimation software including VPLX, WesVar, and SUDAAN. Staff will provide support for complex applications such as the Survey of Income and Program Participation (SIPP) and the Current Population Survey (CPS), create training materials, and provide training for variance estimation software applications.

During FY 2004, staff continued to provide on-going Hot-Line support for variance estimation software to the four program directorates at the Census Bureau. Staff assisted researchers in the Manufacturing and Construction Division in computing standard errors of weighted percent distributions of value in place (VIP) and computing standard errors in transitioning to a new sample design in SOC. Staff assisted the Decennial Directorate in calculating estimated standard errors for a variety of experimental design alternatives supporting the 2005 National Contest Test.

Staff took the first steps toward a new benchmark of variance estimation software by becoming better versed in the features of R, WesVar, and SUDAAN. In that effort, staff hosted a visit from Thomas Lumley of the University of Washington, who presented a seminar on the new survey sampling capabilities of R. He met with Census Bureau staff to learn how R can meet the needs of survey researchers at the Census Bureau.

Staff: Aref Dajani (x31797), Mary Ann Scaggs, Bob Fay (M&S)

E. SRD Portal Development

This project develops a web-based application to provide user controlled knowledge management. Portals will provide access to a wide range of web-enabled applications, bring together diverse data sources, and secure access to existing information, regardless of where the information resides. The division research portal will ultimately become an integrated starting point for accessing all division images and applications.

During FY 2004, a Glossary has been included in

the training tutorial for SRD. When implemented, the search feature will ensure that accurate marking of the topics searched for is accomplished.

The SRD Portal Page was launched and released to the public on April 15, 2004 and replaced the current SRD Web Page, therefore it is accessed both inside and outside our division. The page was created with the new Oracle version 10g Portal. The Edit & Impute data is being created and will be uploaded to the SRD Web Page the week of October 4, 2004.

Staff: Mary Ann Scaggs (x34966), Aref Dajani, Ned Porter

F. Multiple Imputation Feasibility Study

Modern high-speed computer processing makes it possible to identify, retrieve, and represent association patterns among the data available from censuses and surveys. Modern statistical agencies can and should use computing power in concert with state-of-the-art methodologies to compensate for missing data through estimation and imputation in order to improve data quality.

During FY 2004, jointly with the Demographic Surveys Division (DSD), staff investigated the operational aspects in implementing multiple imputation (MI) for large recurring surveys. The investigation focuses on the disclosure limitation capabilities of MI. We also investigated the operational feasibility of producing synthetic files for large recurring surveys.

In a related activity, staff members joined the newly formed subgroup of the Interagency Household Survey Nonresponse Group whose mandate is to investigate the feasibility of MI methodologies in survey processing production environments.

Staff substituted for the late Pat Doyle to present the joint research, conducted at her initiative, at the Privacy in Database Conference.

Staff: Yves Thibaudeau (x31706), Bor-Chung Chen, Todd Williams

G. Optimizing Field Operations

This project is intended to provide the Field Division with a resource for new research in areas that will improve its processes. Over time, research topics may include modeling or forecasting. The first project will study the use of operations research techniques to improve the ability to predict survey costs.

During FY 2004, staff met with staff from Field Division and others to learn what resources are currently used to predict survey costs. A research proposal was prepared, reviewed, and refined for the development of a system to model survey field operations that could be used to predict costs while

varying certain parameters of the operations. Programming was completed for a preliminary simulation model based on conceptual model of field operations. Staff began gathering data from actual field operations to be used in a more complex simulation model.

Staff: Carol Corby (x34889), Bor-Chung Chen

H. Statistical Computation for Linked Employer Household Data (LEHD)

The Linked Employer-Household Data Project is a cooperative effort among all of the areas of the Census Bureau to combine economic data with demographic data. Sources of data include the American Community Survey, IRS, and Social Security data. Using this data, researchers will now be able to perform analyses that help disentangle the effects of choices that firms make from the choices workers make.

During FY 2004, a major improvement in the Conjugate Gradient Program (CG2) for estimating large linear models of person and effects was completed and tested. This program achieves a factor of four speedup compared to the previous version. It may now be possible to consider running national scale models, which seemed impractical before. A variant of the CG2 program CG2MIX, that solves the Henderson equations for large mixed models given the variance components as input was also completed and tested. This program is more than a 77order of magnitude faster than any known program that must estimate the variance components. Large problems would be solved by running a full estimating program such as ASREML on a subset of the data to get the variance components and then running CG2MIX to get estimates of the fixed effects, and person and firm random effects.

The Conjugate Gradient Program, CG2, for estimating large linear models of person and firm effects was modified to allow single precision input. This allows larger problems to be solved while minimally impacting accuracy by virtue of reducing the input file size.

Staff: Rob Creecy (x33207)

Survey Methodology

A. Usability Research and Testing

During FY 2004, Noldus logging software was upgraded to the newest version. The lab now has possession of a wireless PDA/Cell phone camera for use in usability testing here and in the field. Systems 1-2 were rewired to allow easier control of the face and overhead cameras. Staff worked on the floor plan and design of the usability, accessibility, and remote testing

labs to be installed in the new building under construction.

Staff: Joyce Farmer (x34922), Leslie Brownrigg, Larry Malakhoff, Betty Murphy, Erica Olmsted, Lorraine Randall, Juan Pablo Hourcade.

A.1. Usability Issues in the Design of Electronic Forms for Economic Data Collection

The purpose of this research is to identify usable design solutions that will allow establishment respondents to complete electronic forms quickly and accurately with little perceived cognitive burden. In laboratory testing, test respondents will work with mocked-up survey prototypes incorporating different design options for the issues of interest. Staff from the Economic Directorate have been involved in identifying the issues and crafting the test plan. The laboratory research conducted at the University of Maryland (UMD) is conceived of as the initial phase of a multi-year effort to investigate electronic form design issues in the establishment context. Later phases may include a test in the field during production or in an experimental panel.

During FY 2004, data analysis was completed and results were presented at the FCSM Conference and in the proceedings for that conference. We found that many of the design changes tested did not affect data accuracy or respondent burden. Two design layouts improved accuracy. Using a “stacked” design over a matrix design when the matrix was larger than the computer screen improved the accuracy of the data reported. Also, improved user accuracy was found when question text was modified to include key words reminding respondents to report a particular type of data. In addition to the 65 University of Maryland students who were the participants in the study, eight additional non-student subjects were run. For the most part, their mean accuracy scores were within two standard deviations of the student scores suggesting that the student data could possibly generalize to the non-student population.

Staff: Beth Nichols (x31724), Betty Murphy, University of Maryland Human-Computer Interaction Lab

A.2. User-Centered Design Knowledge Base

To raise awareness and assist the practice of usability and user-centered design at the Census Bureau, and maintain control over the quality and consistency of information disseminated by the Usability Lab, this project will develop, organize, implement, and maintain a formal knowledge base. Information in the knowledge base will be disseminated to people who design and acquire

hardware, software, Web pages, and Intranet pages for the Census Bureau. The dissemination will be via documents (such as standards and style guides), via Intranet sites, in courses, and with templates for designing Web pages.

During FY 2004, staff proposed an effort that would result in development of 50 content elements for a usability site located on SRD's Intranet site. This proposal is on hold until a group leader for the Human Factors and Usability Research Group is hired.

Staff: Beth Nichols (x31724), Betty Murphy, Erica Olmsted, Larry Malakhoff

A.3. Eye-Tracking Study

The purpose of this study is to evaluate the usability of various websites based on users' visual movements. The ERICA eye tracking system uses a small camera that tracks users' eye movements as they scan a web page. The specific web pages being examined are the census.gov main page, three second level census.gov pages, and three prototypes for a Housing and Household Economic Statistics Division's disability web site. For the census.gov pages, users will be given simple search tasks where they will select a given link. The tasks for the disability prototypes will involve finding data within the site.

During FY 2004, ten Census Bureau employees participated in the eye tracking study. Staff detailed usability problems in a final report which included recommendations for creating more usable pages in the future. Staff also made recommendations for future eye-tracking studies wherein the lab considers using newer eye-tracking technology. This study is complete.

Staff: Aaron Miller (x34971), Erica Olmsted

A.4. Quality Management Repository

The purpose of this joint project is to evaluate the usability of new features for a Census Bureau Intranet site, the Quality Management Repository. Developed by the Computer Assisted Survey and Research Office, this site is intended to enable internal users to share, manage, and disseminate the Census Bureau's best practices, standards, and guidelines in quality management. Usability is key to actual usage and user-satisfaction levels.

During FY 2004, this project was completed.

Staff: Erica Olmsted (x34893), Betty Murphy

A.5. Automated Listing and Mapping Instrument

The Usability Lab aims to investigate the usability of the Demographic Area Address Listing (DAAL) process that includes laptop software called Automated Listing and Mapping Instrument (ALMI).

During FY 2004, staff completed work on the ALMI study by revising and editing the final report. The report focused on the design of the instrument and the areas where users had difficulties. The report recommended a number of ways that the design team could improve the instrument.

Staff: Erica Olmsted (x34893), Aaron Miller, Juan-Pablo Hourcade

A.6. Housing and Household Economic Statistics (HHES) Information Architecture

The purpose of this project is to incorporate user-centered design principles in a systematic way as we begin the redesign of the HHES poverty, disability, and health insurance Web sites. A goal of the project is to establish a blueprint for incorporating usability and user-centered design features into all the HHES sites that are scheduled to be redesigned.

During FY2004, staff conducted iterative usability tests with 24 internal users on two domains of the HHES web site, poverty and disability. Staff found a number of usability problems and made recommendations for improving the domains. Staff presented the findings which included accuracy and efficiency scores, as well as the high priority usability violations. Staff recommended further user-centered design improvements along with more iterative studies on the implemented changes.

Staff: Erica Olmsted (x34893), Aaron Miller, Juan-Pablo Hourcade

A.7. Usability Study of the Computer Assisted Survey Research Office (CASRO's) Intranet Oracle Portal Website

The purpose of this project is to incorporate user-centered design principles in a systematic way in the design of an Intranet portal. Our objectives are to make the site usable for all users, and to have high accuracy, efficiency, and satisfaction ratings by users.

During FY 2004, staff helped plan a card sorting study with 6 different users. We then assisted analyzing the results and recommended the primary categories for the prototype web site. Based on the card sorting findings, we assisted in developing the prototype of the initial page of the Intranet portal. Staff helped plan the low-fidelity prototype testing and then assisted in interpreting the usability results and made recommendations for future testing. This project is complete.

Staff: Erica Olmsted (x34893)

A.8. Information Visualization Research

This research aims to explore and implement data visualization techniques and tools for users of

Census Bureau data in collaboration with Dr. Ben Shneiderman and colleagues at the University of Maryland's Human-Computer Interaction Laboratory (HCIL).

During FY 2004, the contractor completed a prototype tool that enables users to explore choropleth maps through sound. The contractor also conducted a study that suggests visually impaired users could use the tool to identify patterns by "hearing" a choropleth map.

Staff: Juan-Pablo Hourcade (x33690), University of Maryland's HCIL

A.9. Datamaps

This research is creating an application that allows users to interact with Census Bureau data through the use of dynamic queries. Users see and interact with data on scatterplots, maps, and tables, while filtering data through the use of sliders.

During FY 2004, the contractor added features that make users aware of missing or misleading data (e.g., when a county's numbers include those of adjacent counties). The contractor also completed minor design changes to make the tool ready to receive new data sets.

Staff: Juan-Pablo Hourcade (x33690), Erica Olmsted, Tom Petkunas, Virginia Tech University's Department of Computer Science

A.10. Interfaces to Census Bureau Data Designed for Children

This research aims to build educational environments for elementary school children. These educational environments will be designed to give access to Census Bureau data, facilitate the learning of useful skills and information, and generate

positive attitudes in children, teachers, and parents toward the Census Bureau. Cooperative inquiry techniques that partner adult researchers with children will be used to generate design ideas. These ideas will, in addition, be useful for the development of user interfaces for other populations, such as the elderly, and those without much statistical or geographical knowledge.

During FY 2004, staff conducted several design sessions with a group of children hosted by the contractor to obtain ideas and specifications for the software. These sessions yielded specific design ideas for a game that enables children to access Census Bureau data with age-appropriate interfaces, and teaches them about the available data and how to access it. We evaluated the feasibility of using Macromedia Flash MX 2004 Professional as a platform to develop the game and found that it did not provide appropriate support for the required features.

Staff: Juan-Pablo Hourcade (x33690), Aaron Miller, Kevin Buffardi, Elizabeth Brown, University of Maryland's Human-Computer Interaction Laboratory

A.11. Support for New Statistical Abstract Website

Staff is supporting the design of a new website for the *Statistical Abstract of the United States* as it moves from giving access through a PDF version of its printed publication to a document based portal.

During FY 2004, staff conducted a card-sorting study to establish top-level categories for browsing topics in the *Statistical Abstract*. We studied the current indexing of the *Statistical Abstract* to better understand the multi-dimensionality of its topics. Based on our findings, we suggested interface designs that take into account this multi-dimensionality.

Staff: Juan-Pablo Hourcade (x33690), Erica Olmsted, Aaron Miller

A.12. Desktop Applications Accessibility

This project focuses on accessibility of desktop applications by blind and low vision users in accordance with the Section 508 regulations.

Landview 5 During FY 2004, staff completed gathering and annotating screen shots from the Landview 5 mapping application. These screen shots will be included in a Usability Lab memorandum with the accessibility evaluation findings and sent to the Geography Division (GEO).

X-12 Installer Staff continued in the evaluation of the X-12 installer program. A fourth version of the X-12 installer program was tested with Winscreamer accessibility software and violations were manually checked with the JAWS screen reader. These findings were reported to the researcher in a Usability Lab memorandum. The comments were then forwarded about the latest version on to Installshield for their action. This project is complete.

Staff: Larry Malakhoff (x33688)

A.13. Web Applications Accessibility

This project focuses on accessibility of Internet and Intranet applications by blind and low vision users in accordance with the Section 508 regulations.

American FactFinder

During FY 2004, staff continued to work with the Systems Support Division on checking the accessibility of the American FactFinder web site. Staff used InFocus accessibility evaluation software to identify violations, and then verified them with a manual check with the Job Access with Speech (JAWS) screen reader. A report on the accessibility of the American FactFinder web site was sent to the

sponsor, the Data Access and Dissemination Systems Office (DADSO). The report found that screen reader users could not hear java script elements without corresponding NOSCRIPT tags, bypass the navigation bars with a skip link, hear column sub-headers in the geographic comparison tables, and open on-line PDF documents with Acrobat 6. Staff investigated the issue of screen reader software and its ability to read column sub-header text in geographic comparison tables. Staff identified a contractor that could address this issue and forwarded it on to the sponsor.

ACSD Service Center

Accessibility testing was done on 19 different forms on the Administrative and Customer Services Division (ACSD) web page. This web site permits Census Bureau employees to complete different forms to request services. Results were sent to ACSD. They showed that the forms were accessible except for the calendar date selector function. Staff collaborated with ACSD programmers to simplify areas of the form where the data entry task was redundant or overly complex.

Equal Employment Opportunity Advisory Committee (EEOAC)

Results about the accessibility of the EEOAC web site were sent to the sponsor, the Service Sector Statistics Division (SSSD). Staff met with the sponsor and several EEOAC members to discuss how to present all information consistently throughout the site. Screen reader users could not bypass the navigation bar with a skip link. Typographical and formatting errors were noted, and recommendations for addressing them was passed on to the sponsor. This project is complete.

Australian Census

As part of a special request, staff performed an accessibility evaluation of the Australian Census form and associated help and FAQ screens. The form consisted of two questionnaires; for person or persons, and dwelling. Results showed that both questionnaires used a format of asking the question, giving instructions, then presenting response options. The down side of this approach is that by the time the screen reader gets to the responses options, the survey user may have forgotten the question. The questionnaires used "person" when asking about individuals. Once the gender of the individual is determined, the more user-friendly "his" or "her" should have been used. Rules should be created to display certain instructions based on earlier responses for some questions. This project is complete.

North American Product Classification System (NAPCS)

A report about the accessibility of the NAPCS was delivered to SSSD. Screen reader users could not bypass the left navigation bar with a skip link, hear column headers and row stubs for the three county agenda table, use a server side button, and navigate

tables within PDF documents. The sponsor agreed to convert PDF materials to more accessible HTML. Staff will follow up with a supplemental report to confirm changes were made properly as soon as the sponsor requests an accessibility check on the site.

Teacher Follow-Up Survey (TFS)

Staff began working with staff from the Demographic Surveys Division for usability and accessibility testing of the screen based web survey of teachers. Staff reviewed the accessibility and usability of the web survey in June and presented these findings to the sponsor in July, prior to the subject testing. This project is complete.

2005 Census Test

Staff worked to ensure that sample code using Javascript was accessible for using the Census Short Form on the Internet.

Share-A-Ride

Staff from the Administrative and Customer Services Division contacted division staff to conduct accessibility and usability testing on a car/van pooling web site to be announced this October. We collaborated in design of the web site to allow different search types and drafted a usability test plan. Specifically, we determined wording and content for pre and post questionnaires for use with test subjects for usability testing. We designed task scenarios and came to an agreement about acceptable user accuracy.

Economic Census Help Web Site

This quarter, staff from the Economic Planning and Coordination Division requested that an accessibility evaluation be performed on the 2002 Economic Census Help Web site. There were no accessibility violations that could be classified as high priority. A report was sent to the sponsor detailing usability problems on each screen for screen reader users and their resolution. This project is complete.

Harvester Survey Web Site

Staff from the Governments Division requested that an accessibility evaluation be performed on the Harvester survey web site which collects data on inmate population in jails. It was determined the questionnaire was not accessible because the task of summing and recalling component counts was not usable to screen reader users. In some cases, there were no labels for answer fields. Instructions were not provided as needed, question by question. Instead, instructions were given for the stem of the question, but none of the leaves. A sighted user can glance back at the "stem" to get context. A screen reader user cannot "glance back" easily because they need to back-tab or up-arrow to hear the relevant text.

GIDS Surveyor

Staff from the Economic Planning and Coordination Division requested that an accessibility evaluation be performed on the GIDS Surveyor web

questionnaire. The report detailed aspects of GIDS Surveyor that were classified as inaccessible. A screen reader user could not perform functions that required them to: hear instructions on most of the download wizard screens; hear instructions about completing the questionnaire; hear labels for data entry fields; hear questionnaire help topics.

This application failed in its purpose to provide comparable access to blind or low vision computer users for three reasons. First, the download wizard instructions were not accessible. Next, the instructions to complete the form were presented as a scanned image rather than accessible text. Third, the user was not provided labels for data entry fields to complete the survey. Compliance with the law requires that content equivalent to what a sighted user sees be available to blind users. Staff directed the sponsor to the Section 408 coordinator to resolve how compliance will be addressed. This project is complete.

Staff: Larry Malakhoff (x33688)

A.14. User-Interface Standards and Guidelines

The IT Standards and Uniform Products Program recruited an inter-divisional team for the purpose of reviewing and revising two IT standards on Web sites and applications. The major objective is to produce an up-to-date source of user-interface requirements and recommendations for developers of Web-based sites and applications. Our division's role is to serve as a team member in developing and reviewing content for the revised standard. In a related activity, our division is providing feedback to the Australian Bureau of Statistics (ABS) on the usability and accessibility of their paper and Web-based data collection forms.

During FY 2004, staff contributed to the work of the Standards Development Team (SDT) in revising Standards 15 and 20, essentially integrating them into one document, IT 15.0.2: *Web Development Requirements and Guidelines*. Staff led the revision of material on Web-site navigation and provided new material on the design of Web-based forms. In a related effort, we continued to conduct an expert review of the Web-based census forms for the Australian Bureau of Statistics.

Staff: Betty Murphy (x34858), Beth Nichols, Larry Malakhoff, Terry DeMaio, Erica Olmsted

A.15. Redesign of the Census Bureau Intranet

The purpose of this project is to reorganize the content of the Census Bureau's Intranet so that similar content is grouped together under functional categories. The current organization by agency structure works against new employees being able to find information they need. Our division's role is to provide usability input to the redesign of the Intranet Redesign Team

(Director's Office, Systems Support Division, and the Computer Assisted Survey Research Office (CASRO)).

During FY 2004, staff planned and conducted a card-sorting study to provide user input to the redesign effort. We documented our methods, results, and recommendations in *Human-Computer Interaction Memorandum Series #68*. Subsequently, we collaborated with staff from CASRO in conducting usability testing of two sets of prototype screens developed by a software contractor. This testing entailed eye-tracking, thinking-aloud, and debriefing methods. Eye-tracking results complemented observations and participant comments. We documented our methods, results, and recommendations in *Human Computer Interaction Series Memorandum #73*.

Staff: Betty Murphy (x34858), Aaron Miller, Michael Rosen, Susan Ciochetto (CASRO), Lorraine Randall

A.16. Small Area Income and Poverty Estimation (SAIPE) Usability Evaluation

This project consists of two usability evaluations on two different SAIPE sites: the first site is scheduled to be replaced by the second. The purpose of this project is twofold. The first objective is to benchmark performance (accuracy, efficiency, and satisfaction measures) and to discover usability problems on the first site. The usability findings from the first site will be used to heuristically evaluate the second site before its release so that similar issues between designs can be addressed before the second site goes live. The second object is to assess performance on the new SAIPE site (accuracy, efficiency, and satisfaction measures) and discover usability violations and recommend ways to improve performance on the site.

During FY 2004, staff found usability problems with the SAIPE web site and created a quick report which contained usability issues, performance measures, video clips from testing sessions, and recommendations for improving the site. This project is complete.

Staff: Michael Rosen (x31601), Erica Olmsted

A.17. Prototype Evaluation for the Census.gov Main Page

This project involves evaluating three different designs of the Census.gov main page in a usability and eye tracking session. The goal of this project is to compare performance of the design features realized in each of the prototypes in order to provide direction for future releases of the Census.gov main page. Accuracy, efficiency, satisfaction, and eye tracking measures will be recorded for each session.

During FY 2004, staff worked to develop task scenarios, test design, and user profiles. This project is on hold until further notice.

Staff: Michael Rosen (x31601)

A.18. Usability Evaluation of Linux Desktop

Staff is supporting the Economic Statistical Methods and Programming Division in a pilot test of Linux desktops by evaluating the usability of the systems.

During FY 2004, staff conducted task analysis exercised with pilot testers to better understand their needs. Based on these exercises, we began work on questionnaires to evaluate pilot tester satisfaction with the Linux systems.

Staff: Juan Pablo Hourcade (x33690), Tia Harris (ESMPD)

A.19. Interaction Design Support for 2006 NRFU Instrument

Staff is supporting the design of user interactions for the 2006 NRFU instrument through a variety of activities.

During FY 2004, staff made plans for conducting contextual inquiry exercise with groups of users and programmers. We also began work on software for evaluating the abilities of older adults with hand-held computers.

Staff: Juan Pablo Hourcade (x33690), Betty Murphy, Manuel de la Puente

B. Questionnaire Pretesting

This project involves coordinating the Census Bureau's generic clearance for questionnaire pretesting research. Pretesting activities in all areas of the Census Bureau may use the clearance if they meet the eligibility criteria.

During FY 2004, thirty-six letters describing activities conducted under the generic clearance for pretesting research were prepared. Pretesting activities in all areas of the Census Bureau may use the clearance if they meet the eligibility criteria.

Staff submitted an annual report to the Office of Management and Budget (OMB) summarizing the research that was conducted under the generic clearance between September 2002 and August 2003.

Staff also requested and received OMB approval to extend the generic clearance for the questionnaire pretesting research for another three years, until August 31, 2007.

Staff: Terry DeMaio (x34894), Ashley Landreth

C.1. Questionnaire Design Experimental Research Surveys 2000 (QDERS)

QDERS 2000 is an omnibus survey designed to facilitate independent research related to questionnaire design issues, interviewer training, and other survey methodological issues. The QDERS 2000 was conducted from the Hagerstown Telephone Center in September 2000 using an RDD sample. Five researchers conducted questionnaire design experiments, and two researchers conducted interviewer training experiments.

During FY 2004, a brief summary of QDERS 2000 was contained in a paper prepared for the QUEST International Group Meeting. This project is complete.

Staff: Jennifer Rothgeb (x24896), Joanne Pascale, Jeff Moore, Eileen O'Brien, Ashley Landreth

C.2. Questionnaire Design Experimental Research Survey - 2002/2003 (QDERS)

QDERS 2002 is an omnibus survey designed to facilitate independent research related to questionnaire design issues and other survey methodology issues. The QDERS 2002 was conducted from the Tucson Telephone Center in June/July 2002 using an RDD sample. Three researchers conducting questionnaire design and survey methods experiments are participating.

During FY 2004, staff requested assistance from the Demographic Surveys Division (DSD) and met with it to discuss processing QDERS 2003 through TRANSCASES. DSD completed its file manipulations and sent instructions on how to process the data.

Staff processed the data files through TRANSCASES and produced a SAS dataset for involved researchers. In addition, four hundred taped interviews were behavior coded at the Hagerstown Telephone Center. Keying preparations were completed and the behavior coding data were keyed at the National Processing Center. Staff received an ASCII data file.

Staff conducted analysis of one of the experiments (health insurance) and reported the results in an AAPOR presentation.

Staff: Jennifer Rothgeb (x34986), Joanne Pascale, Ashley Landreth, Terry DeMaio

C.3. Questionnaire Design Experimental Research Survey - 2004 (QDERS)

QDERS 2004 is an omnibus survey designed to facilitate independent research related to questionnaire design issues and other survey methodology issues. The QDERS 2004 will be conducted from the Hagerstown Telephone Center and the Jeffersonville

Telephone Center using a Random Digit Dialing (RDD) sample. Three researchers conducting questionnaire design and survey methods experiments are participating. Researchers from our division are collaborating internally with staff from the Demographic Surveys Division (DSD), Population Division, and externally with staff from the Department of Health and Human Services and the Social Security Administration. Four Questionnaire treatments were administered during QDERS.

During FY 2004, data collection was conducted between mid-April and mid-June. Data collection went extremely smoothly. The use of the higher level RDD sample (with more pre-screening) seemed to improve data collection and also may have contributed to the higher response rates this year. Response rates were 43% - 59% (depending on how cases of unknown eligibility are treated). Recent analysis by the Demographic Statistical Methods Division indicated that the higher level sample produced a higher proportion of in-scope cases which resulted in a more productive sample.

Analysis of one of the experiments (testing new informed consent questions) has been completed by DSD. The QDERS data on this topic was able to fill a gap surrounding how best to gain informed consent for data linkage and the public's willingness to grant that consent. DSD reported that approaches requesting only the last four digits of the Social Security Number (SSN) had lower refusal rates than directly asking for SSN. The next step in this research would be to test this approach in a personal visit survey.

Analysis of the other QDERS experiments will be conducted and results reported in project reports and conference papers.

Staff: Jennifer Rothgeb (x34986), Joanne Pascale, Jenny Hunter, Nancy Bates (DSD)

D. Evaluating Pretesting Techniques for Finding and Fixing Questionnaire Problems

The objective of this research is to determine how well laboratory question testing methods predict the types of problems that will actually be experienced in the field, and to what extent the laboratory testing contributes to improved questions. This project includes research to determine not only the relative effectiveness of different methods for detecting questionnaire problems, but will also evaluate the methods in terms of their ability to provide information on question wording repairs.

The book, *Methods for Testing and Evaluating Survey Questionnaires*, in which these results are reported was published in June by Wiley, Inter-Science. The chapter is entitled, "Does Pretesting Make a Difference? An Experimental Test."

Staff met with external collaborators and discussed ideas for follow-up research. A research proposal for additional research will be developed.

Staff: Jennifer Rothgeb (x34986), Gordon Willis (National Cancer Institute), Barbara Forsyth (Westat)

E. Ethnography : Methods and Culture

Staff will apply ethnographic research methods to ground key Census Bureau concepts, processes, and operations in the evidence of direct observations in socio-cultural context.

See various projects throughout this report. Also, in response to requests from the National Marine Fisheries Service (NMFS/NOAA/Commerce), staff began discussing a collaborative (Census Bureau/NMFS) effort to appraise census and survey coverage of fishers and related fisheries - dependent occupations and tests to pilot new methods to enumerate and survey fishers. The test would compare extending the "shipboard" mode to U.S. registered fishing vessels with a "marina" personal enumeration mode based on docked vessels. Fishing vessels may be a more strategic unit of enumeration for fishers who do not maintain permanent homes, rather pursue a perpetually mobile lifestyle, living aboard the vessels where they work and temporarily in transient quarters and ad hoc situations during stays on land between fishing trips. NMFS social scientists have a legal responsibility to determine the effect of regulations to preserve and regenerate biological fishing stocks on the U.S. communities dependent on fishing. They and their sea grant researchers independently discovered discrepancies between population counts of fishers and other fisheries-dependent occupations represented in census data and estimates based on rapid assessment and ethnosurveys of fishing communities. NMFS previously conducted one of the ethnographic social network tracing studies on a Memorandum of Understanding. Next steps may include NMFS requests and review of special tabulations and sponsorship or collaboration in field work to pilot the vessel and dock methods.

Staff: Leslie Brownrigg (x34995)

F. Refusal Aversion Training

As unit and item non-response rates for household surveys continue to increase, survey researchers are now focusing on the development of innovative methods to improve these rates. One area of interest is the interviewer-respondent interaction and its influence on survey participation and response quality.

During FY 2004, staff provided ongoing technical support for additional surveys and evaluations of

Census Response Achievement Field Training (CRAFT), disseminating research findings to the research community, and advising other organizations on their testing and adoption of CRAFT.

CRAFT was implemented in the National Health Interview Survey in January 2004 and the Survey of Income and Program Participation in February 2004. Staff efforts included the following: 1) Conducting and distributing results from a focus group with Field Representatives about respondents' concerns about personal security [our division incorporated those findings in modules of the home study, computer based training (CBT), Field Representative's (FRs) handbook and trainer materials (training manual, class exercises, and slides)]; 2) Producing a complete redesign of the refusal aversion training to meet the time and budget constraints of the production survey environment while preserving the integrity of the method which produced positive results in the research phase of the project [this required reducing eight hours of experimental classroom training to one hour of home study (a CBT and handbook), and four hours of intensive classroom training (trainer manual, class exercises, and overhead slide revisions)]; and 3) Content and technical support of a Train the Trainer module, trainer selection criteria, and training evaluation measures.

Field staff that would be administering CRAFT in the regional offices were trained at a supervisors conference in December 2003; FRs were trained in Regional Offices (ROs) or sub-units of ROs in January 2004. A final report summarizing the research findings, the adoption and implementation considerations will be finalized and distributed to the Census Bureau and the research community in the fall of 04.

Although these methods were expected to increase response rates in the production environment, preliminary results suggest a slight decrease in NHIS response rates from a comparable period a year ago and mixed results in the SIPP. Regarding SIPP, about half the ROs showed response rate improvements from 2 to 5 percentage points in Wave 2+ sample contacts. Comparing Wave 1 response rates from 2001 to 2004, there is an overall decline.

To properly evaluate any effect of CRAFT on interviewer behavior through response rate measures however, our division will have to look at first contact cooperation rates rather than response rates. Other factors need to be controlled for as well: new sample areas versus old (PSU response rate propensities); FR experience (e.g., there were 400 FRs in SIPP that were either new to the Census Bureau, new to SIPP); trainer effects; instrument effects (new questionnaire, new CAI system, etc.); and other administrative changes in doorstep procedures (changes in presenting privacy and confidentiality information from previous year/designs). Staff expects to begin final analysis and reports of the

implementation pending DSD and Field Division preparation of and access to data files identifying survey outcomes by respondent CASEID and interviewer level variables (e.g., trained, personnel data, census experience, NHIS experience, tenure, and other variables associate with interview outcome).

Staff provided ongoing research support or technical assistance to several efforts outside the Census Bureau: Office of National Statistics, London; Nielson Media Research; Westat; the Centers for Disease Control, Atlanta; Sociology Department, University of Montreal; Alan Newman Research; ICR International Communications Research; the Mellman Group; RTI International; University of Tennessee, Knoxville; Deakin Computer Assisted Research Facility, Deakin University, Australia; Mathematica Policy Research; and the Institute for Social Research, Ann Arbor.

Staff: Eileen O'Brien (x32695)

G. Research on Conversational Norms and Response Behavior

Questionnaires are designed to serve as a "script" for a conversational interaction; as such, they often violate conversational norms. When scripts ignore norms, interviewers are forced to choose between initiating an awkward and unsatisfactory interaction on the one hand, or ignoring the "read-every-question-exactly-as-worded" mantra, on the other. Constructing questionnaires that adhere to conversational norms, and training interviewers to detect and avoid violations of norms, should lead to greater satisfaction with the interview experience between both parties, and a more positive regard for the value of the survey. Greater satisfaction and a more positive assessment of the value should lead, in turn, to reduced non-response and panel attrition.

A review of the literature on conversational norms that described how such norms may relate to the quality of interactions, the extent to which current survey questions and question series align with or violate such norms, and the degree to which response quality may be improved by a design modeled from natural interactions or conversations was completed.

Staff: Eileen O'Brien (x32695), Jeff Moore, Yuling Pan

H. Privacy and Confidentiality Research

Previous research and recent media coverage of Census 2002 suggest that some people hold a negative perception of the Census Bureau regarding issues of privacy and confidentiality. Some individuals feel that questions asked by the Census Bureau are an invasion of their privacy and don't trust the Census Bureau to

keep data confidential. Further, there is some indication that these people are less likely to respond to the Census Bureau's censuses and surveys. As the premier United States data collection agency, the Census Bureau needs to maintain the trust of the American public in order to ensure its cooperation.

During FY 2004, staff held discussions for examining privacy and confidentiality language.

Staff: Eleanor Gerber (x34890), Melinda Crowley, Ashley Landreth

I. Language: Continuities in Research on the Foreign-born Population and Immigration Issues

This research effort calls for the application of varied qualitative research methods to solving problems that will improve the Census Bureau's ability to collect and provide timely, relevant, and quality data about the social and economic circumstances of the foreign-born population in the United States. It will conduct collaborative research with anthropologists, sociolinguists, and other behavioral scientists on foreign-born persons from different national origins to assess the barriers they experience to participation in the census and demographic surveys.

During FY 2004, staff continued research to better understand how recent immigrants respond to Census Bureau surveys. Preliminary research in this area was conducted by staff with Chinese speaking respondents earlier in the fiscal year. Staff presented results at three national conferences.

Staff: Yuling Pan (x34950), Eleanor Gerber, Kristen Hughes

J. Language: Interdisciplinary Research on Language and Sociolinguistic Issues Relevant to Survey Methodology

There is a need for both qualitative and quantitative interdisciplinary research on how to best develop and successfully use non-English language collection instruments and other survey materials. Interdisciplinary research is also needed to determine the quality of the data that respondents with little or no knowledge of English provide the Census Bureau using both non-English and English language data collection instruments.

During FY 2004, staff finalized research on a Census Bureau guideline for the translation of data collection instruments and related materials. Presentations on this topic were made at the Census Bureau Advisory Committee Meetings and feedback was obtained. This feedback was used to finalize a Census Bureau Guideline on translation issued in April 2004.

Staff began research for the development of a Census Bureau Guideline on interpretation. This research entails field observations and working with members of the International Workshop on Comparative Survey Design and Implementation. A Census Bureau post-doctoral fellow in our division began research on the methodological aspects of pretesting data collection instruments in languages other than English.

Staff: Manuel de la Puente (x34997), Yuling Pan, Patti Goerman

K. Analyzing the Data from Cognitive Interviews

This research project focuses on the process by which cognitive interviews are conducted and analyzed by survey research organizations. The objective is to conduct an experiment to evaluate different types of interviewing and analytic procedures in terms of the substantive conclusions that are drawn, and the recommendations for questionnaire revisions that they produce. This will facilitate a comparison of the analysis procedures used by the Census Bureau versus those used by other organizations.

During FY 2004, field data collected in QDERS 2003 to evaluate the performance of three alternative questionnaires were behavior coded at the Hagerstown Telephone Center. Analysis of these data has not yet begun. Staff also prepared a paper evaluating the performance of the three expert reviewers who participated in the original project, which was presented at QUEST 2003, and the Sixth International Conference on Social Science Methodology in Amsterdam.

Staff: Terry DeMaio (x34894), Ashley Landreth,

L. Research Method Comparison for Computer Crime Questions

This project involves comparing three methods of pretesting used on the National Crime Victimization Survey computer crime questions. The three methods consist of cognitive interviews, respondent debriefing, and behavior coding.

During FY 2004, staff finalized the results which show that all three methods (that is, cognitive interviewing, respondent debriefing, and behavior coding) successfully identified questionnaire problems. However, no one method consistently identified all problems in the series of computer crime questions. Although each survey pretesting method has weaknesses associated with it, employing several different methods increases the likelihood of identifying problems in a questionnaire and shedding light on the nature of those problems.

Staff: Kristen Hughes (x38458)

M. Measurement Bias Research

Responses to census and survey questions may partly be a function of sub-population group membership rather than a direct function of respondents' true values on the questions of interest. The purpose of this research is to employ modern and classical psychometric models and theory to address this form of measurement bias.

Fiscal year 2004 saw the creation of the Measurement Bias Research Program. Analyses addressed internal validity on the American Community Survey (ACS) disability items, establishing measurement invariance across individuals living in Linguistically Isolated and non-Linguistically households. With respect to the internal validity of these items these results show that the ACS collects data of similar quality across linguistically isolated and non-linguistically isolated households. Using data from a National Institute on Alcohol Abuse and Alcoholism (NIAAA) sponsored survey, the National Longitudinal Alcohol Epidemiological Survey (NLAES) research tested whether Hispanics with a limited knowledge of English should be combined with English speaking Hispanics. Findings, presented at the 12th annual Meeting of the Society for Prevention Research, suggested that, for some items, this grouping may not be valid. During this period, a quantitative model to assess the impact of statistically significant measurement bias was developed and implemented. Staff also initiated a projected examining the internal validity of multidimensional poverty measurement in the Survey of Income and Program Participation.

Staff: Adam C. Carle (x31836)

N. SRD Methods Help Desk

The SRD Methods Help Desk is a resource of technical assistance which benefits the Census Bureau. Designed for relatively quick questions or reviews taking usually less than two days to complete, the Help Desk is managed by a core group within the division. The consultants consist of nearly the entire division staff covering their respective areas of expertise.

The SRD Methods Help Desk was created and launched in October 2003. Staff consultants contribute their time and professional skills to complete the Help Desk's assured success. A total of 19 cases in the first year of service have been received from five directorates and 10 divisions. The overall response from our clients has been most satisfactory.

Staff: Aref Dajani (x31797), Donald Malec, Judi Norvell, Yuling Pan, division staff members.

Research Assistance

This staff provides research assistance, technical

assistance, and secretarial support for the various research efforts.

Staff: Tina Arbogast, Maria Cantwell, Judi Norvell, Gloria Prout, Lorraine Randall, Nita Rasmann

3. PUBLICATIONS

3.1 JOURNAL ARTICLES, PUBLICATIONS

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- Turkeimer, F.E., Hinz, R., Gunn, R.N., Aston, J.A.D., Gunn, S.R., and Cunningham, V.J. (2003). "Rank-shaping Regularization of Exponential Spectral Analysis for Application to Functional Parametric Mapping," *Physics in Medicine and Biology*, 48, 3819-3841.
- Winkler, W.E. (In Press). "Discussion of 'The Sensitivity of Economic Statistics to Coding Errors in Personal Identifiers'," by J. Abowd and L. Vilhuber, *Journal of Business and Economics Statistics*.
- Winkler, W.E. (2004). "Methods for Evaluating and Creating Data Quality," *Information Systems (2004)*, 29 (7), 531-550.

3.2 BOOKS/BOOK CHAPTERS

- Chassin, L., Carle, A.C., and Kumpfer, K. (2004). "Fostering Resilience in Children of Alcoholics," in K. Maton, C. Schellenbach, B. Leadbeater, and A. Solarz (Eds.), *Fostering Resilient Children, Youth, Families, and Communities: Strengths-Based Research Policy*, American Psychological Society, Washington, DC.
- DeMaio, T. and Landreth, A. (2004). "Do Different Cognitive Interview Techniques Produce Different Results?," in S. Presser, J.M. Rothgeb, M. Couper, J.T. Lessler, E. Martin, J. Martin, E. Singer (Eds.), *Methods for Testing and Evaluating Survey Questionnaires*, Hoboken, N.J.: John Wiley & Sons, Inc, 89-108.
- Forsyth, B., Rothgeb, J., and Willis, G. (2004). "Does Pretesting Make a Difference? An Experimental Test," in *Methods for Testing and Evaluating Survey Questionnaires*, (Eds.) S. Presser, J. Rothgeb, M. Couper, J. Lessler, E. Martin, J. Martin, and E. Singer, Hoboken, N.J.: John Wiley & Sons, Inc., 525-546.
- Hourcade, J.P. (In Press). "Design for Children," in G. Salvendy (Ed.), *Handbook of Human Factors and Ergonomics (3rd Edition)*. New York: Wiley.
- Moore, J., Pascale, J., Doyle, P., Chan, A., and Griffiths, J.K. (2004). "Using Field Experiments to Improve Instrument Design: The SIPP Methods Panel Project," in *Methods for Testing and Evaluation, Survey Questionnaires*, (Eds.) S. Presser, J. Rothgeb, M. Couper, J. Lessler, E. Martin, J. Martin, and E. Singh, Hoboken, N.J.: John Wiley & Sons, Inc, 189-207.
- Presser, S., Rothgeb, J., Couper, M., Lessler, J., Martin, E., Martin J., and Singer, E. (Eds). (2004). *Methods for Testing and Evaluating Survey Questionnaires*, Hoboken, N.J.: John Wiley & Sons, Inc.
- Winkler, W.E. (To Appear). "Sample Allocation and Stratification," in (P.S.R.S Rao and M. Katzoff, Eds.), *Handbook of Sampling Procedures*, Wiley: New York.
- Winkler, W.E. (2004). "Masking and Re-identification Methods for Public-Use Microdata: Overview and Research Problems," in (J. Domingo-Ferrer and V. Torra, Eds.), *Privacy in Statistical Databases*, Springer: New York, 231-246.
- Winkler, W.E. (2004). "Re-identification Methods for Masked Microdata," in (J. Domingo-Ferrer and V. Torra, eds.), *Privacy in Statistical Databases*, Springer: New York, 216-230.
- Winkler, W.E. (To Appear). "Record Linkage Overview of Recent Developments and Applications," in (S. Biffignandi, ed.), *Combining Data from Different Sources - Applications of Record Linkage Methodology and Estimation Using Administrative Data*, ISTAT: Rome.

3.3 PROCEEDINGS PAPERS

Proceedings of the 2003 Federal Forecasters Conference, Washington, DC, September 18, 2003.

- Aston, J. and Koopmans, S.J. (2003). "An Implementation of Component Models for Seasonal Adjustment Using the SsfPack Software Module of Ox."

Proceedings of Statistics Canada's International Methodology Symposium, October 28-31, 2003.

- Massell, P. (To Appear). "Statistical Disclosure Control for Tables: Determining which Method to Use."

Proceedings of the Human Factors and Ergonomics Society 48th Annual Meeting, New Orleans, LA.

- Norman, K.L. and Murphy, E.D. (2004). "Usability Testing of an Internet Form for the 2004 Overseas Enumeration Test: Iterative Testing Using Think-Aloud and Retrospective Report Methods," 1493-1497.

2003 American Association for Public Opinion Research Meeting, Nashville, Tennessee, May 14-16, 2003.

2003 Proceedings of the American Statistical Association.

- Chan, A. and Moore, J. (2003). "Educational Attainment and Vocational/Technical Training: Questionnaire Design and Data Quality," 44-51.
- Gerber, E. (2003). "Respondents' Understanding of Confidentiality Language," 86-93.

2003 Joint Statistical Meetings (American Statistical Association), San Francisco, CA, August 3-7, 2003.

2003 Proceedings of the American Statistical Association.

- Byrne, R., Beaghen, M., and Mulry, M.H. (2003). "Clerical Review of Census Duplicates," 768-773.
- Cantwell, P., Fescina, R., and McCullough, M. (2003). "Estimating Low-Valued Exports from the U.S.," 803-810.
- Chan, A. (2003). "New Roster Procedures and Probes to Improve Coverage in the Survey of Income Program Participation," 854-861.
- Chen, B.C. and Winkler, W. (2003). "Preorder and Set Covering in the DISCRETE Edit System," 890-895.
- Dajani, A. and Mathew, T. (2003). "Comparison of Some Tests in the One-Way ANOVA with Unequal Error Variances," 1149-1155.
- Hogan, H., Bell, W., Weidman, L., and Schirm, A. (2003). "Integrating Survey, Demographic, and Modeling Methods," 1831-1842.
- Kim, J. and Wei, R. (2003). "Trends and Distribution of Mortality from Heart Disease: United States," 2153-2157.
- Martin, D.E.K. (2003). "A Recursive Method of Computing Probabilities for Compound Patterns in Multi-State Higher-Order Markovian Trials," 2692-2696.
- Martin, E. and Gerber, E. (2003). "Methodological Influences on Comparability of Race Measurements: Several Cautionary Examples," 2697-2704.
- Massell, P. (2003). "Comparing Cell Perturbation to Cell Suppression for Statistical Disclosure Control of Tables," 2737-2743.
- Monsell, B., Aston, J.A.D., and Koopman, S. (2003). "Toward X-13?," 2870-2877.
- Moore, J. and Griffiths, J. (2003). "Asset Ownership, Program Participation, and Asset and Program Income: Improving Reporting in the Survey of Income and Programs Participation," 2896-2903.
- Mulry, M. and Petroni, R. (2003). "Evaluation of the A.C.E. Revision II Estimates of Census 2000 Coverage Error," 2960-2965.
- Mulry, M., Zu Wallack, R., and Spencer, B. (2003). "Loss Function Analysis for A.C.E. Revision II Estimates of Census 2000," 2966-2971.
- Olmsted, E. and Salibi, S. (2003). "Information Architecture: Methods to Suggest Usable Navigation Strategies for Federal Web Sites," 3076-3081.
- Pascale, J. (2003). "Improving the Health Insurance Section of the Survey of Income and Program Participation," 3208-3215.
- Schwede, L. (2003). "Rostering, Residence Rules, and Coverage: Where We've Been and Where We're Going," 3739-3746.
- Slud, E. (2003). "Comparison of Models for Household Response in the 1990 and 2000 Census," 3937-3944.
- Steel, P. (2003). "The Feasibility of Geographic Aggregation of Some Blocks in Census 2010," 4056-4063.
- Wills, K., Aston, J., Findley, D., and Martin, D.E.K. (2003). "Generalizations of the Box-Jenkins Airline Model with Frequency-Specific Seasonal Coefficients," 4571-4578.
- Winkler, W. (2003). "A Contingency Table Model for Imputing Data Satisfying Analytic Constraints," 4579-4588.
- Yancey, W. (2003). "An Adaptive String Comparator for Record Linkage," 4648-4655.

Proceedings of the Federal Committee on Statistical Methodology Conference, Washington, DC, April 26, 2004.

- Mulry, M.H. (2004) "Census and Administrative Records Duplication Study," 36-43.
- Murphy, E.D. (2004). "Security Responses."

Proceedings of the International Professional Communication Conference, Minneapolis, MN, September 28, 2004.

- Olmsted, E. (2004). "The Use of Handheld Devices to Collect Census Data Considers the Usability of a Small Handheld Device to Collect a U.S. Census Survey," 131-138.

3.4 STATISTICAL RESEARCH DIVISION RESEARCH REPORTS

RR (Statistics #2003-07), William Winkler, “A Contingency-Table Model for Imputing Data Satisfying Analytic Constraints,” November 21, 2003.

RR (Statistics #2004-01), William Yancey, “Improving EM Algorithm Estimates for Record Linkage Parameters,” February 18, 2004.

RR (Statistics #2004-02), William Yancey, “An Adaptive String Comparator for Record Linkage,” February 19, 2004.

RR (Statistics #2004-03), William Winkler, “Re-identification Methods for Masked Microdata,” April 21, 2004.

RR (Survey Methodology #2004-01), Jeffrey Moore, “Exploiting Computer Automation to Improve the Interview Process and Increase Survey Cooperation,” August 10, 2004.

RR (Statistics #2004-04), José Dulá, James Fagan, and Paul Massell. “Tabular Statistical Disclosure Control: Optimization Techniques in Suppression and Controlled Tabular Adjustment,” September 23, 2004.

RR (Statistics #2004-05), Tucker McElroy and Andrew Sutcliff, “An Iterated Parametric Approach to Nonstationary Signal Extraction,” September 30, 2004.

3.5 STATISTICAL RESEARCH DIVISION STUDIES

SS (Survey Methodology #2004-01), Pam McGovern, “A Quality Assessment of Data Collected in the American Community Survey (ACS) from Households with Low English Proficiency,” June 22, 2004.

SS (Survey Methodology #2004-02), Kristen Hughes, “Final Report of Cognitive Research on the New Identity Theft Questions for the 2004 National Crime Victimization Survey,” August 5, 2004.

SS (Statistics #2004-01), Pamela Ferrari, “Updated Eligibility Criteria for the Urban Park and Recreation Recovery Program Heritage Conservation and Recreation Service U.S. Department of the Interior,” September 30, 2004.

3.6 OTHER REPORTS

de la Puente, M. and Pan, Y. 2004. “Census Bureau Guideline: Language Translation of Data Collection Instruments and Supporting Materials.”

Garcia, M. “Implied Edit Generation and Error Localization for Ratio and Balancing Edits,” *UN Economic Commission for Europe Work Session on Statistical Data Editing*, October, 2003, Madrid, Spain, <http://www.unec.org/stats/documents/2003/10/sdew/27/e/pdf>.

Hunter, J. “Report on Cognitive Testing of Cohabitation Questions,” December 1, 2003.

Murphy, E.D., Norman, K.L., Malakhoff, L.A., and Smith, N. “Usability and Accessibility Testing of the Internet Form for the 2004 Overseas Enumeration Test,” *Human Computer Interaction Memorandum Series #64*, June 29, 2004.

Murphy, E.D. and Miller A. “U.S. Census Bureau Intranet Redesign: Card-Sorting Methods, Results, and Recommendations,” *Human-Computer Interaction Memorandum Series #68*, March 30, 2004.

Rothgeb, J.M. “Results for the National Long Term Care Survey (NCLTS) Pretest Respondent Debriefing Evaluation,” report submitted to the Demographic Surveys Division, June 25, 2004.

Rusch, M.L., Murphy, E.D., and Hourcade, J.P. “Icon Design Study Questionnaire and Results: LAMI Version 1.0,” *Human Computer Interaction Memorandum Series #71*, August 3, 2004.

Ciochetto, S.M. and Murphy, E.D. “U.S. Census Bureau Intranet Redesign Usability Test - Round 1.” *Human-Computer Interaction Memorandum Series #73*, September 20, 2004.

4. TALKS AND PRESENTATIONS

2003 Conference of the Association of Public Data Users, Washington, DC, October 20-22, 2003.

- Laura Zayatz, “Census Bureau Disclosure Review Board.”

UN Economic Commission for Europe Work Session on Statistical Data Editing, Madrid, Spain, October 21, 2004.

- Bor-Chung Chen, “A Comparison of ACS If-then-else, NIM, and DISCRETE Edit and Imputation Systems using ACS Data.”
- Bill Winkler, “A Contingency Table Model for Imputing Data Satisfying Analytic Constraints.”

QUEST 2003 Workshop, Mannheim, Germany, October 21-23, 2003.

- Terry DeMaio, “Examining Expert Reviews as a Pretest Method.”
- Jennifer Rothgeb, “A Valuable Vehicle for Question Testing in a Field Environment: The U.S. Census Bureau’s Questionnaire Design Experimental Research Survey.”

Census Bureau Advisory Committee of Professional Associations, Washington, DC, October 23-24, 2004.

- Manuel de la Puente, “Overview of Translation Guideline: Issues and Scope.”

Federal Forecasters Conference, Washington, DC, October 27, 2003.

- John Aston, “An Implementation of Component Models for Seasonal Adjustment Using the SsfPack Software Model of Ox.”

Institute for Information Systems, Free University of Berlin, Berlin, Germany, October 29, 2003.

- Bill Winkler, “Record Linkage.”

Statistics Canada’s International Methodology Symposium, Gatineau, Quebec, Canada, October 29, 2003.

- Paul Massell, “Statistical Disclosure Control for Tables: Determining which Method to Use.”

Econometrics Institute, Free University, Berlin, Germany, October 30, 2003.

- Bill Winkler, “Microdata Confidentiality.”

Statistics Talks, Department of Decision Sciences, University of Texas at Arlington, Arlington, TX, November 4, 2003.

- Mary Mulry, “Census Data for Business Use.”

Data Mining Seminar, Computer Science Department, University of Maryland, November 5, 2003.

- Bill Winkler, “Record Linkage.”

NISS Seminar Series, National Institute of Statistical Sciences, Research Triangle Park, NC, November 10, 2003.

- John Aston, “A Non-Gaussian Airline Model for Seasonal Adjustment.”

Federal Committee on Statistical Methodology Research Conference, Arlington, VA, November 17-19, 2003.

- Mary Mulry, Susan Bean, Mark Bauder, Tom Mule, Rita Petroni, and Deborah Wagner, “Census and Administrative Records Duplication Study.”
- Manuel de la Puente and Yuling Pan, “An Overview of Proposed Census Bureau Guideline for the Translation of Data Collection Instruments and Supporting Materials.”
- Kristen Hughes, “Comparing Pretesting Methods: Cognitive Interviewing, Respondent Debriefing, and Behavior Coding.”
- Elizabeth Nichols, Elizabeth Murphy, Cyntica Eaton, Kent Norman, and Anna Rivadeneira, “Design Issues in Web-Based Electronic Business Surveys.”
- Yuling Pan, “The Role of Sociolinguistics in Federal Survey Development.”
- Deborah Rose and Manuel de la Puente, “Guideline Implementation: Translating a New Canadian/U.S. Health Survey into Spanish.”
- Eric Slud, “Assessing Fit of SAIPE Models to Census and CPS County Child-Poverty Rates.”
- Bill Winkler, Discussant, “Record Linkage.”

131st Annual American Public Health Association, San Francisco, CA, November 17, 2003.

- Adam Carle, Poster Presentation, “Latent Traits, Measurement Invariance, Psychopathology, and Public Health: Measurement Bias in Tests of Psychopathology and its Relation to Public Health Research.”

Conference on Making Statistics More Effective in Schools and Business (MSMESB), Georgetown University, Washington, DC, November 22, 2003.

- Tommy Wright, “Seven Top Things a Student Should Take A way from the First Business Statistics Course.”

Public Responsibility in Medicine and Research Annual Conference, Washington, DC, December 6, 2003.

- Phil Steel, Panel Member, “Confidentiality and Non-disclosure in Social and Behavioral Science Research: What is the IRB Responsibility when NIH Requires Data Sharing?”

Computational Sciences’ Seminar, George Mason University, Fairfax, VA, February 13, 2004.

- William Winkler, “Record Linkage and Machine Learning.”

FedCASIC, Washington, DC, March 3, 2004.

- Erica Olmsted, “Usability Testing of a Census Survey on a Mobile Computing Device.”

National Center for Health Statistics Seminar, Hyattsville, MD, March 11, 2004.

- Phil Steel, “Disclosure Risk and the Checklist on Disclosure Potential of Data.”

Statistics Seminar, Joint Program on Survey Methodology, University of Maryland, College Park, MD, March 11, 2004.

- Bill Winkler, “Record Linkage and Machine Learning.”

Population Association of America Meeting, Boston, MA, March 31-April 3, 2004.

- Laurie Schwede, Poster Presentation, “Households and Families in Six Race/Ethnic Groups: Issues for Surveys Identified in Qualitative Studies.”

Annual Meeting of the Society for Applied Anthropology, Dallas, TX, March 31-April 4, 2004.

- Leslie Brownrigg, “Amazonian Natives: (Social Network) Structures of Auto Defense, Advocacy, and Antagonists.”
- Leslie Brownrigg, Federal Anthropologist Topical Internet Group Panel.

Second International Workshop on Comparative Survey Design and Implementation, Paris, France, April 1-3, 2004.

- Manuel de la Puente and Yuling Pan, “Preliminary Content Analysis of Translation Guidelines and Best Practices Available on the World Wide Web.”

National Research Council NIST Panel Review, Gaithersburg, MD, April 20, 2004.

- Don Malec, “3D Chemical Imaging at the Nanoscale.”

Washington Statistical Society Short Course: Privacy, Confidentiality, and the Protection of Health Data - A Statistical Perspective, Washington, DC, April 27, 2004.

- Phil Steel, “Disclosure Risk.”

2004 Annual Conference of the American Association for Applied Linguistics, Portland Oregon, May 1-4, 2004.

- Yuling Pan, “Opening the Circumference of Census Taking: A Nexus Analysis.”

Washington Statistical Society, Washington, DC, May 5, 2004.

- Thomas Trimbur, discussant for “Combining Filter Design with Model-Based Filtering (A Model-Based Perspective)” by Agostin Maravall.

Society for Technical Communication Conference, Baltimore, MD, May 10, 2004.

- Elizabeth Murphy, “Progression on ‘Usability Testing at the U.S. Census Bureau.’”

American Association for Public Opinion Research Meeting, Phoenix, AZ, May 13-16, 2004.

- Amy Anderson, Elizabeth Murphy, Elizabeth Nichols, Richard Sigman, and Diane Wilimack, "Designing Edits for Electronic, Economic Surveys: Issues and Guidelines."
- Anna Chan, "Catch Me if You Can: Tenuously Attached Household Members in a Longitudinal Survey."
- Manuel de la Puente, Discussant, "Overview of Translation Guideline: Issues and Scope."
- Jennifer Hunter, "The Search for an Appropriate Measure of Cohabitation."
- Ashley Landreth, "Survey Letters: A Respondent's Perspective."
- Jeff Moore, poster presentation, "Exploiting Computer Automation to Improve the Interview Process and Increase Survey Cooperation," and discussant for "Measurement Effect."
- Elizabeth Murphy, panel member Roundtable on "Best Practices in Cognitive and Usability Testing."
- Yuling Pan, "Cognitive Interviews in Language Other Than English: Methodological and Research Issues."
- Joanne Pascale, "Medicaid and Medicare Reporting in Surveys: An Experiment on Order Effects and Program Definitions."
- Laurie Schwede, "Household Types and Relationships in Six Race/Ethnic Groups: Conceptual and Methodological Issues for Censuses and Surveys."

United Nations Economic Commission for Europe Workshop on the Generations and Gender Programme, Spetses, Greece, May 26, 2004.

- Laurie Schwede, "Complex Households and Relationships in the United States and Implications for Censuses and Surveys."

Annual Society for Prevention Research Meeting, Quebec City, Canada, May 26-28, 2004.

- Adam Carle, "Latent Variable Models: An Empirical Tool in Cross-Cultural Measurement," "Measurement Bias and Prevention Research, An Empirical Example Demonstrating the Use of Confirmatory Factor Analysis, a Latent Variable Approach," poster presentation, "Demographic Differences in Child Abuse Reporting: Examining Differences in the Level of Violence at Which Individuals Report."

Fed/Web, Washington, DC, May 26, 2004.

- Erica Olmsted, "Usability Testing at the Census Bureau."

Washington Statistical Society Seminar, Washington, DC, May 28, 2004.

- Bill Winkler, Discussant, "Modifications of Chernikova's Algorithm and Error Localization in Linear Editing," by Stanley Weng (NASS).

Privacy in Statistical Databases 2004, Barcelona, Spain, June 10-11, 2004.

- Yves Thibaudeau, "Practical Viability of Multiple Imputation as a Tool for Disclosure Avoidance for Large Scale Recurring Surveys."
- Bill Winkler, "Re-identification Methods for Masked Microdata."
- Bill Winkler, "Masking and Re-identification for Public-Use Microdata: Overview and Research Problems."

Statistics New Zealand, Wellington, New Zealand, June 29 - July 2, 2004.

- Brian Monsell, "Further Developments in X-12-SEATS;" "Tools for X-12-ARIMA."

Statistics New Zealand, Christchurch, New Zealand, July 1, 2004.

- Brian Monsell, "Tools for X-12-ARIMA."

International Symposium of Forecasters, Sydney, Australia, July 7, 2004.

- Brian Monsell, "Further Developments in X-12-SEATS."

Australian Bureau of Statistics, Canberra, Australia, July 8, 2004.

- Brian Monsell, "X-12-ARIMA: What's New?"

Annual Convention of the American Psychological Association, Honolulu, Hawaii, July 28-August 1, 2004.

- Jennifer Hunter, “Gathering Data on Cohabitation and America’s Families.”

Joint Statistical Meetings, American Statistical Association, Toronto, Ontario (Canada), August 8-12, 2004.

- Leroy Bailey, “Weighting Alternatives to Compensate for Longitudinal Nonresponse in the Survey of Income and Program Participation.”
- Pat Cantwell, discussant of papers in session on “Wholesale and Retail Trade Surveys: Accomplishments and Challenges.”
- Bor-Chung Chen and William Winkler, “The Cutting Plane Algorithm in the Error Localization Problem.”
- Robert Creecy, “Combining Data Augmentation and Over-relaxation to Speed Up the EM Algorithm.”
- Melinda Crowley, “The Cross-Cultural Legacy of Generation X: An Evaluation of Contemporary Civic and Government Engagement, Social Trust, and the Decennial Census.”
- Elizabeth Dimler, “Contracting for Research and Development Services.”
- Roxanne Feldpausch, Kellie Wills, and Catherine Hood, “Span Diagnostics for Model-based Seasonal Adjustment.”
- David Findley, Kellie Wills, and Tucker McElroy, “Modifications of SEATS Diagnostics for Under-and Overestimation.”
- Maria Garcia, “Implicit Linear Inequality Edits Generation and Error Localization in the SPEER Edit System.”
- William Guthrie, Hung-kung Liu, Donald Malec, and Grace Yang, “Ranking the Sources of Numerical Error in MCMC Computation.”
- Elizabeth Huang and William Bell, “An Empirical Study on Using ACS Supplementary Survey Data in SAIPE State Poverty Models.”
- Hung-kung Liu, William Guthrie, Donald Malec, and Grace Yang, “An Update on the NIST Statistical Reference Datasets for MCMC.”
- Jerry Maples and William Bell, “Investigating the Uses of IRS Tax Data in the SAIPE School District Poverty Estimates.”
- Donald Martin and William Bell, “Time Varying Trading-day Effects in Seasonal Adjustment of Time Series.”
- Paul Massell, “Comparing Statistical Disclosure Control Methods for Tables: Identifying the Key Factors.”
- Tucker McElroy, “An Iterated Parametric Approach to Nonstationary Signal Extraction.”
- Brian Monsell, “Further Developments in X-12-SEATS.”
- Mary Mulry, “Methodological Lessons from Census 2000 Coverage Error Measurement.”
- Eric Slud, “Small-area Estimation Errors in SAIPE Using GLMM vs. FH Models.”
- Philip Steel, “Motivating Standards for Disclosure Avoidance.”
- Jeffrey Stratton, John Finamore, and Todd Williams, “Comparison of Two Imputation Methods in the Survey of Doctorate Recipients.”
- Yves Thibaudeau and William Winkler, “Full Rank Minimal Sufficient Statistics for Disclosure Limitation and Variance Estimation: A Practical Way to Release Count Information.”
- Thomas Trimbur, “Robust Estimation of Trend and Seasonal Components in the Presence of Outliers and Level Shifts.”
- William Winkler, “Approximate String Comparator Search Strategies for Very Large Administrative Lists.”
- William Winkler, discussant of “The Sensitivity of Economic Statistics to Coding Errors in Personal Identifiers” by Vilhube and Abowd.
- Tommy Wright and Cynthia Clark, “Impact of the NSF/ASA Research Fellowship Program on the Research Programs of Federal Statistical Agencies.”
- William Yancey, “The BigMatch Program for Record Linkage.”
- Laura Zayatz, panel member, “Legal Requirements and Ethical Behavior: The Case of Certifying Statistical De-identification.”

Sixth International Conference on Social Science Methodology, Recent Developments and Applications in Social Research Methodology, Amsterdam, The Netherlands, August 17-20, 2004.

- Theresa DeMaio and Ashley Landreth, “Examining Expert Reviews as a Pretest Method.”

Workshop on Data Cleaning, Record Linkage and Object Identification, Association on Computing Machinery International Conference on Knowledge Discovery and Data Mining, Washington, DC, August 27, 2003.

- William Winkler, “Data Cleaning Methods.”

University of Essex Seminar, Essex, United Kingdom, September 16-17, 2004.

- Joanne Pascale and Nancy Bates, “Dependent Interviewing in the U.S. Census Bureau’s Survey of Income and Program Participation (SIPP).”

NBER/NSF Time Series Conference, Dallas, Texas, September 17-18, 2004.

- Tucker McElroy, poster: “On the Bias of Signal Extraction from Multiplicative Models.”
- Thomas Trimbur, poster: “Cyclical Components in Economic Time Series: a Bayesian Approach.”

5. STATISTICAL RESEARCH DIVISION SEMINAR SERIES

Seminar Series Team: Barbara Palumbo, Joanne Pascale, Yves Thibaudeau, Julie Tsay

Maria Garcia, SRD, Census Bureau, "Implied Edit Generation and Error Localization for Ratio and Balancing Edits," October 1, 2003.

John Aston, SRD, Census Bureau, "A Non-Gaussian Airline Model for Seasonal Adjustment," October 21, 2003.

Adam Carle, SRD, Census Bureau, "Using Latent Variable Models to Assess Non-Sampling Error and Measurement Bias in Survey Research," November 6, 2003.

Bridget Grant, National Institutes of Health, "Overview of Wave 1 and Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) and the 2004-2005 NESARC Incentive Experiment," November 12, 2003.

C. Matthew Snipp, Stanford University, J.Gregory Robinson, Population Division, Census Bureau, Howard Hogan, ESMPD, Census Bureau, "Toward the Integration of Demographic, Survey, and Modeling Methods," December 2, 2003.

Hyunmo Kang, University of Maryland, College Park, "Dynamic Personal Media Management and Exploration with Semantic Regions," December 15, 2003.

John Aston, SRD, Bureau of the Census, "An Implementation of Component Models for Seasonal Adjustment Using the SsfPack Software Module of Ox," January 7, 2004.

Jai W. Choi, National Center for Health Statistics/Centers for Disease Control, "A Nonparametric Bayesian Analysis for Binary Data from a Small Area Under Nonignorable Nonresponse," January 20, 2004.

Calvin Beale, U.S. Department of Agriculture, "Reflections on 50+ Years as a Federal Statistician," February 25, 2004.

Ingo Ruczinski, Department of Biostatistics, Johns Hopkins University, "Logic Regression," March 4, 2004.

Matt Gregas, School of Statistics, University of Minnesota, "Nonparametric Estimation of the Intensity Function with Applications to Neuroscience, April 13, 2004.

Mary M. Louie, Brigham & Women's Hospital and Harvard Medical School, "A Multiscale Approach to Disease Mapping," April 14, 2004.

Thomas Trimbur, SRD, Census Bureau, "General Model-Based Filters for Extracting Cycles and Trends in Economic Time Series," April 15, 2004.

Dan Steinberg, Salford Systems, "Data Mining Software: CART, MARS, TREENET," April 30, 2004.

Cavin Capps, DSD, Census Bureau, "Tools for Retrieving and Analyzing Information from Multiple Data Sources at the U.S. Census Bureau," May 5, 2004.

Agustin Maravall, Banco de Espana, "An Application of Forecasting to Quality Control of Periodically Reported Data," May 6, 2004.

Rae Lesser Blumberg and William R. Kenan, Jr, University of Virginia, "The Interlinked Growth of Minorities and Complex Households: A New Wrinkle for Coverage?" June 3, 2004.

Thomas Lumley, University of Washington, Seattle, "Survey Analysis Software for R," June 8, 2004.

Richard Valliant, Joint Program in Survey Methodology, University of Michigan, "Balanced Sampling with Applications to Accounting Populations," June 22, 2004.

Gary Marchionini, University of North Carolina at Chapel Hill, "Toward Dynamic Architectures for Census Bureau Websites," June 30, 2004.

Steven Belz, Eastman Kodak Company, "Improving the Human Factors Process: A Presentation in Two Parts," July 28, 2004.

Susanne M. Furman, IBM, "A Look at Programmers Communicating Through Program Indentation," July 28, 2004.

Jae-Kwang Kim, Yonsei University (Seoul, Korea), "Variance Estimation for Median and Domain Estimators After Imputation," August 17, 2004.

Mark Zhang, Australian Bureau of Statistics, "Trend Estimates Using Cointegration Error Correction Model," August 19, 2004.

Kim Maiden, Client Support Office, Census Bureau, "HCI Design Guidelines and Principles for Web-based Survey Instruments Using ASP.Net," August 31, 2004.

Ami Becker, Lextant Corporation, "The Role of Personas in Product Design and Usability," September 8, 2004.

Joseph Cannon, Kutztown University of Pennsylvania, "Approximation of Marginal Probabilities in Bayesian Belief Networks," September 14, 2004.

Robert E. Fay, III, Census Bureau, "The Seven Communication Standards of Highly Successful Scientific Disciplines," September 14, 2004.

6. PERSONNEL ITEMS

6.1 HONORS/AWARDS/SPECIAL RECOGNITION

Statistics Section Award, American Public Health Association

- **Joanne Pascale** - for outstanding contributions to biostatistics and public health through steadfast support of the Statistics Section of the American Public Health Association and for excellence in work on survey quality at the Census Bureau.

Fellow, American Statistical Association

- **Eric Slud** - for outstanding contributions to the theory of survival analysis, semi-parametric methods, reliability, and probability, and for effective teaching and mentoring of students.

Customer Service Award

- **Terry DeMaio** - for expert and timely leadership each year in coordinating all and conducting some of the many projects performed under the Census Bureau's OMB Generic Clearance for Questionnaire Pretesting Research.

6.2 SIGNIFICANT SERVICE TO PROFESSION

Leslie Brownrigg

- Chair, Session on Advocacy for Indigenous People, Annual Meeting of the Society for Applied Anthropology.

Pat Cantwell

- Associate Editor, *Journal of Official Statistics* and *Survey Methodology*.
- Methodology Section Chair, Washington Statistical Society.
- Refereed a paper for the *Journal of the American Statistical Association*.
- Booth Manager, Councils of Chapters and Sections, JSM 2004.
- Member, Council of Sections Nominations Committee, American Statistical Association.

Adam Carle

- Refereed a paper for the *Journal of Applied Developmental Psychology*.
- Reviewed a research method book for Wiley Publishers.
- Invited Participant, Meeting on Item Response Theory on Several Federal Agencies (National Cancer Institute, National Center for Health Statistics).
- Reviewer, papers submitted to the National Cancer Institute's Item Response Theory Conference.
- Reviewed 8 papers for presentation at the American Public Health Association meetings.
- Psychometric and Research Methods Expert, Department of Education RFP Review Panel.

Anna Chan

- Chair, AAPOR paper session.

Bor-Chung Chen

- Refereed a paper for *Survey Methodology*.

Manuel de la Puente

- Past-President, District of Columbia Sociological Society.
- Member, Nominations Committee of the American Sociological Association.
- Member, American Sociological Association Working Group on the Definition of Race.
- Invited Discussant, 2004 meeting of American Association for Public Opinion Research.
- Refereed a paper for *Public Opinion Quarterly*.
- Organizer, Session at American Sociological Association Annual Meeting (2004).
- Session Organizer, Federal Committee on Statistical Methodology Research Conference.

- Board Member, Federal Executive Institute Alumni Association (FEIAA)
- Elected Member, American Sociological Association Nominations Committee.

Terry DeMaio

- Reviewed papers for *Public Opinion Quarterly*, *Medical Care*, and *Journal of Official Statistics*.
- Editorial Board, *Public Opinion Quarterly*.

Sam Hawala

- Member, Confidentiality and Data Access Committee.
- Member, National Center for Education Statistics Disclosure Review Board.

Juan Pablo Hourcade

- Refereed papers for *Interacting with Computer Journal* and *Human Computer Interaction Journal*.
- Member, NSF Review Panel for Proposals on Advanced Learning Technologies.
- Papers Chair, Interaction Design and Children 2004 Conference.
- Reviewer, CHI 2004 papers.

Mike Ikeda

- Refereed a paper for *The American Statistician*.

Don Malec

- Refereed papers for *Statistics in Medicine*, *Journal of Statistics (JOS)*, *Journal of the American Statistical Association*, *Survey Methodology*, and *The American Statistician*.

Donald Martin

- Member, American Statistical Association Committee on Minorities in Statistics.
- Refereed papers for *4OR*, *Quarterly Journal of the Belgian, French, and Italian Operations Research Societies*, and *Journal of Operational Research*.

Paul Massell

- Member, Confidentiality and Data Access Committee.
- Member, Bureau of Transportation Statistics Disclosure Review Board.

Tucker McElroy

- Refereed a paper for the *Journal of Computational Statistics and Data Analysis*.

Brian Monsell

- Webmaster and *AMSTAT* Online Assistant Editor of the Business and Economic Statistics Section of American Statistical Association.
- Organized and Chaired, Federal Forecasters Conference session.
- Publications Chair Elect, Business and Economic Statistics Section of the American Statistical Association.
- Chaired Session, International Symposium of Forecasters.
- Organized and Chaired, multiple sessions at the Joint Statistical Meetings.

Jeff Moore

- Refereed papers for *Public Opinion Quarterly* and *Survey Methodology*.
- Member, Merit Staffing Review Panel, Bureau of Labor Statistics.

Mary Mulry

- Associate Editor, *The American Statistician*.
- Refereed a paper for *The Journal of Official Statistics*.

Elizabeth Murphy

- Member, DC-Special Interest Group on Computer-Human Interaction (CHI).
- Reviewed submissions for the CHI'04 Conference.
- Reviewed a paper for the *Journal of Official Statistics*.

- Session co-chair, Human Factors and Ergonomics Society 48th Annual Meeting.

Eileen O'Brien

- Organizer, AAPOR 2004 Invited Session.
- Member, ASA Survey Review Committee.
- DC-AAPOR Program Chair, 2003-2004.
- Refereed a paper for *Journal of Official Statistics*.

Yuling Pan

- Refereed a book manuscript for John Benjamin's Publishing Company.
- Refereed a paper for *Journal of Linguistic Anthropology*.

Joanne Pascale

- Associate Editor, Special QDET Conference Issue, *Journal of Official Statistics*.
- Invited Participant, Meeting on CPS Health Insurance Data of Several Institutions (U. of Minnesota, Mathematica Policy Research, Urban Institute, Census Bureau).

Jennifer Rothgeb

- Member, Planning Committee for QUEST 2003 International Work Group Workshop.
- Elected Associate Secretary-Treasurer, American Association of Public Opinion Research.
- Reviewed a paper for *Public Opinion Quarterly*.
- Member, Planning Committee for QUEST 2005 International Work Group Workshop, Statistics Netherlands.
- Chair, AAPOR Session.
- Member, Interagency Steering Committee for Q-Bank Development.

Eric Slud

- Associate Editor, *Journal of the Royal Statistical Society, Series B (Methodological)*.

Phil Steel

- Vice Chair, Confidentiality and Data Access Committee.
- Member, American Statistical Association's Committee on Privacy and Confidentiality.
- Organizer, American Statistical Association Session.

Yves Thibaudeau

- Refereed a paper for *The American Statistician*.

Thomas Trimbur

- Refereed papers for *Journal of Computational Statistics and Data Analysis*, *Journal of Applied Econometrics*, and the *Econometrics Journal*.

Lynn Weidman

- Refereed a paper for *Metron*.

Kellie Wills

- Member, Membership Retention and Recruitment Committee, American Statistical Association.

Bill Winkler

- Refereed papers for *Information Systems*, *Data Cleaning and Record Linkage*, *Survey Methodology*, *IEEE Transactions on Knowledge and Data Engineering*.
- Member, Program Committee, Privacy in Statistical Databases, 2004.
- Member, Ph.D. Thesis Review Committee for Candidate in Computer Engineering at University of Rome.
- Organizer, Session on Record Linkage, 2004 ASA Annual Meeting.
- Refereed papers for *Survey Methodology*, *IEEE Transactions on Data and Knowledge Engineering* and 8 papers for the monograph, *Privacy in Statistical Databases*.
- Editorial Board, *Journal of Privacy Technology*.

- Organizing Committee, “Privacy in Statistical Databases.”

Tommy Wright

- Refereed papers for *The American Statistician*.
- Peer Reviewer of Report Sponsored by the U.S. Environmental Protection Agency.
- Associate Editor, *The American Statistician*.
- Associate Editor, *The American Journal of Mathematical and Management Sciences*.

Laura Zayatz

- Member, Confidentiality and Data Access Committee.
- Member, Interagency Team on Implementation Guidance for the Confidentiality Information Protection and Statistical Efficiency Act of 2002.
- Member, Program Committee, Privacy in Statistical Databases 2004.
- Member, Advisory Board of *Journal of Privacy Technology*.
- Refereed a paper for *Journal of Official Statistics*.

6.3 PERSONNEL NOTES

Thomas Trimbur joined the Time Series Research Group as a Postdoctoral Researcher.

Kwon Soon Moon is visiting the Census Bureau and joined our Time Series Research Group from the Korean National Statistics Office.

Aaron Miller (a graduate student in human factors and applied cognition at George Mason University) joined our Human Factors and Usability Research Group.

Bill LaPlant retired from the Census Bureau.

Kent Marquis retired from the Census Bureau.

John Aston’s two year National Institutes of Statistical Sciences Postdoctoral Fellowship ended.

Bonnie Keegan joined the Time Series Research Group on a detail assignment from the Manufacturing and Construction Division.

Kellie Wills accepted a position with the Corporate Executive Board.

Summer Visitors:

Joint Program in Survey Methodology Junior Fellows:

- Elizabeth Brown (senior in mathematics and English at Claremont McKenna College).
- Donald Burke (senior in economics at University of Virginia).
- Emilee Pressman (senior in sociology at Brown University).

LaToya Barnett (graduate student in sociology at the Catholic University).

Kevin Buffardi (graduate student in human-computer interaction at DePaul University).

Sherae Daniel (graduate student in decision and information technology at University of Maryland, College Park).

Karie Grow (sophomore in accounting at University of Maryland, College Park).

Huilin Li (graduate student in statistics at University of Maryland, College Park).

Victor Lopez (graduate student in mathematics (statistics) at University of Puerto Rico, Mayaguez).

Michael Rosen (graduate student in English-Technical Writing at University of Central Florida).

Michelle Rusch (graduate student in human-computer interaction at Iowa State University).

Patti Goerman joined the Questionnaire Pretesting for Household Surveys as a Postdoctoral Researcher.

APPENDIX A

**Statistical Research Division's FY 2004 Program Sponsored Projects/Subprojects
With Substantial Activity and Progress and Sponsor Feedback
(Basis for PERFORMANCE MEASURES)**

| Project # | Project/Subproject Sponsor(s) | SRD Contact | Sponsor Contact |
|-----------|--|---------------------------|--------------------|
| | DECENNIAL | | |
| 5906013 | Content Testing | | |
| 5902002 | Content Planning and Development | | |
| | 1. <i>Census Questionnaire Design Features (Behavior Coding)</i> | Ashley Landreth . . | Courtney Stapleton |
| | 2. <i>Census Questionnaire Design Features (Deadline Messaging)</i> | Ashley Landreth | LaVerne Collins |
| | 3. <i>Short Form Questionnaire Content Other than Race & Ethnicity</i> | Terry DeMaio | Jane Ingold |
| | 4. <i>Development of Race and Ethnicity Questions</i> | Eleanor Gerber | Nancy Gordon |
| 5902003 | 5. <i>Language Planning & Development</i> | Yuling Pan | Jane Ingold |
| 5903001 | Data Collection Planning and Development | | |
| | 6. <i>Handheld Computers</i> | Betty Murphy | David Earles |
| | 7. <i>Response Options Strategy Working Group/2004 Overseas Enumeration Test Team</i> | Betty Murphy | Jennifer Lins |
| | 8. <i>Collaboration with Research on Alternative Designs</i> | Betty Murphy | Jennifer Lins |
| | 9. <i>Mobile Computing Devices - 2004 Non-response Follow-up Usability Evaluation</i> | Erica Olmsted | Darlene Monaco |
| 5906003 | Statistical Design and Estimation | | |
| | 10. <i>Decennial Editing and Imputation</i> | Yves Thibaudeau . . | Inez ly-Hsiu Chen |
| | 11. <i>Decennial Record Linkage</i> | William Winkler | Maureen Lynch |
| | 12. <i>Decennial Record Linkage Support</i> | Ned Porter | David Whitford |
| | 13. <i>Research on Item and Count Imputation for Implementation in Census 2010</i> | Yves Thibaudeau . . | Inez ly-Hsiu Chen |
| | 14. <i>Decennial Disclosure Limitation</i> | Laura Zayatz | Marie Pees |
| 5906004 | Coverage Measurement Planning and Development | | |
| | 15. <i>Coverage Measurement Research</i> | Don Malec | Rick Griffin |
| | 16. <i>Accuracy of Coverage Measurement</i> | Mary Mulry | Donna Kostanich |
| | 17. <i>Questionnaire Wording and Automation Team</i> | Beth Nichols | David Whitford |
| 5906006 | Coverage Improvement Planning and Development | | |
| | 18. <i>Decennial Privacy Research</i> | Ashley Landreth | Jerry Gates |
| | 19. <i>Development of Questionnaires for Decennial Coverage Improvement</i> | Eleanor Gerber | Edwin Byerly |
| | 20. <i>Inter-divisional Decennial 2010 Working Group on Residence Rules and Coverage Improvement</i> | Laurie Schwede | Frank Vitrano |
| 5935600 | American Community Survey (ACS) | | |
| | 21. <i>ACS Questionnaire Design Measurement</i> | Manuel de la Puente . . | Debbie Griffin |
| | 22. <i>ACS Small Area Estimation Research</i> | Don Malec | Dave Hubble |
| | 23. <i>ACS Missing Data and Imputation</i> | Yves Thibaudeau | Debbie Griffin |
| | 24. <i>ACS Disclosure Limitation</i> | Laura Zayatz | Marie Pees |
| | 25. <i>ACS Weighting Simplification Research</i> | Lynn Weidman | Freddie Navarro |
| | 26. <i>ACS Usability Study</i> | Erica Olmsted | Margaret Gill |
| | DEMOGRAPHIC | | |
| 0906 | 27. <i>Data Integration</i> | Sam Hawala | Larry Cahoon |
| 1461 | 28. <i>SIPP Methods Panel</i> | Jeff Moore | Heather Holbert |
| 1465 | Survey of Income and Program Participation (SIPP) Research | | |
| | 29. <i>Longitudinal Weighting</i> | Leroy Bailey | Tracy Mattingly |
| | 30. <i>National Crime Victimization Survey Pretesting</i> | Terry DeMaio | Marilyn Monahan |
| 7455 | 31. <i>American Housing Survey - National</i> | Eileen O'Brien | Craig Pritzl |
| TBA | 32. <i>Evaluation of the National Long Term Care Survey Pretest</i> | Jennifer Rothgeb . . . | Ron Dopkowski |
| 7165 | Research for Small Area Income and Poverty Estimates (SAIPE) | | |
| | 33. <i>Research for Small Area Income and Poverty Estimates</i> | Elizabeth Huang . . | David Waddington |
| | 34. <i>Small Area Estimation Methodology for SAIPE</i> | Eric Slud | Robin Fisher |
| TBA | 35. <i>Analysis and Forecasting of Demographic Time Series</i> | Tucker McElroy | Fred Hollmann |

| | | |
|-----------------------------------|--|--|
| 3320054 3420051 3420052 | ECONOMIC 36. <i>Editing Methods Development (Investigation of Selective Editing Procedures for Foreign Trade Programs)</i> 37. <i>Disclosure Avoidance Methods</i> Time Series Research 38. <i>X-12 ARIMA Development and Evaluation</i> 39. <i>Research on Seasonal Time Series-Modeling and Adjustment Issues</i> ... | Maria Garcia Debra Coaxum Paul Massell Bruce Goldhirsch Brian Monsell Catherine Hood Donald Martin Catherine Hood |
| 8045 8150 8863 Other | METHODOLOGY AND STANDARDS 40. <i>Bureau of Economic Analysis</i> 41. <i>Postal Rate Commission/Statistical Consulting</i> 42. <i>National Institute of Standards and Technology/Bayesian Statistical Methodology</i> Usability/Field Related/Measurement Bias 43. <i>Housing and Household Economic Statistics Information Architecture</i> . 44. <i>Usability Study of the CASRO Intranet Oracle Portal Website</i> 45. <i>Interfaces to Census Bureau Data Designed for Children</i> 46. <i>Support for New Statistical Abstract Website</i> 47. <i>Web Applications Accessibility - American FactFinder</i> 48. <i>Web Applications Accessibility - ACSD Forms</i> 49. <i>Web-Applications Accessibility - North American Product Classification System</i> 50. <i>Redesign of the Census Bureau Intranet</i> 51. <i>Optimizing Field Operations</i> 52. <i>Refusal Aversion Training (CRAFT)</i> 53. <i>Refusal Aversion Training (Interviewer Behavior)</i> 54. <i>Measurement Bias Research</i> | Eileen O'Brien Diane Willimack Leroy Bailey Shelley Dreifuss Don Malec Nell Sedransk Erica Olmsted Lori Guido Erica Olmsted Lucy Dalzell Juan Pablo Hourcade . Enrique Gomez Juan Pablo Hourcade .. Lars Johanson Larry Malakhoff Marian Brady Larry Malakhoff Susan Boyer Larry Malakhoff ... Susan Carodiskey Betty Murphy Carol Bateman Bor-Chung Chen Dick Blass Eileen O'Brien Andrea Piani Eileen O'Brien Rick Bitzer Adam Carle Kathy Short |

APPENDIX B



FY 2004 PROJECT PERFORMANCE MEASUREMENT QUESTIONNAIRE STATISTICAL RESEARCH DIVISION Methodology and Standards Directorate

Dear

In a continuing effort to obtain and document feedback from program area sponsors of our projects or subprojects, the Statistical Research Division will attempt for the sixth year to provide seven measures of performance, this time for the fiscal year 2004. For FY 2004, the measures of performance for our division are:

- Measure 1. Overall, Work Met Expectations: Percent of FY 2004 Program Sponsored Projects/Subprojects where sponsors reported that work met their expectations.
Measure 2. Established Major Deadlines Met: Percent of FY 2004 Program Sponsored Projects/Subprojects where sponsors reported that all established major deadlines were met.
Measure 3a. At Least One Improved Method, Techniques Developed, Solution, or New Insight: Percent of FY 2004 Program Sponsored Projects/Subprojects reporting at least one improved method, techniques developed, solution, or new insight.
Measure 3b. Plans for Implementation: Of the FY 2004 Program Sponsored Projects/Subprojects reporting at least one improved method, techniques developed, solution, or new insight, the percent with plans for implementation.
Measure 4. Predict Cost Efficiencies: Number of FY 2004 Program Sponsored Projects/Subprojects reporting at least one "predicted cost efficiency."
Measure 5. Journal Articles, Publications: Number of journal articles (peer review) and publications documenting research that appeared or were accepted in FY 2004.
Measure 6. Proceedings Publications: Number of proceedings publications documenting research that appeared in FY 2004.

These measures will be based on response to the five questions on this form from our sponsors as well as from members of our division and will be used to help improve our efforts.

To construct these seven measures for our division, we will combine the information for all of our program area sponsored projects or subprojects obtained during September 27 thru October 8, 2004 using this questionnaire. Your feedback is requested for:

Project Number and Name: _____

Sponsoring Division(s): _____

After all information has been provided, the SRD Contact _____ will ensure that the signatures are obtained in the order indicated on the last page of this questionnaire.

We very much appreciate your assistance in this undertaking.

Tommy Wright Date
Chief, Statistical Research Division

Brief Project Description (SRD Contact will provide from Division's Quarterly Report):

Brief Description of Results/Products from FY 2004 (SRD Contact will provide):

(over)

Statistical Research Division



