

**Methodology and Standards Directorate**

**Annual Report  
of the  
Statistical Research  
Division**

**Fiscal Year 2001**

**Decennial  
Directorate  
Customers**

Estimation	Ethnography	Time Series
Usability	Edit and Imputation	Pretesting
Questionnaire Design	<b>SRD Expertise for Collaboration and Research</b>	Small Area Estimation
Record Linkage		Statistical Computing
Sampling	Technology	Metadata
Measurement	Seasonal Adjustment	Human Factors

**Demographic  
Directorate  
Customers**

**Economic  
Directorate  
Customers**

**Field  
Directorate  
Customers**

**Other Internal  
and External  
Customers**



**U.S. Census Bureau**  
**Statistical Research Division**  
**Federal Building 4**  
**Washington, DC 20233**  
**301-457-1030**

*We help the Census Bureau improve its processes and products. For fiscal year 2001, this report is an accounting of for whom we did what, why, when, 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 2001 follow, and more details are provided within subsequent pages of this report:

- finalized the disclosure limitation plans for Tier 3 of American FactFinder and the Census 2000 PUMS.
- enhanced three and four dimensional cell suppression auditing programs to allow for rounded data and non-traditional additive relationships.
- constructed a research file for the Sacramento Census 2000 Dress Rehearsal site.
- revised estimators of variance for weighting areas under both the 100% Census and the Accuracy and Coverage Evaluation long form control scenarios (for housing units only).
- completed development of a small area estimation method that accounts for unknown within small area sampling variances.
- made a new version of our program (provisionally named X-12-ARIMA/SEATS that combines X-12-ARIMA with the leading fully model-based seasonal adjustment program, SEATS (from the Bank of Spain) to incorporate the new features of SEATS2001, to implement additional features of SEATS' companion modeling program TRAMO, and to prepare for a better integration of the output from SEATS 2001 and X-12-ARIMA.
- created "BigMatch" software for matching moderate size lists having 100 million records against large administrative lists having upwards of 4 billion records. (Because the big file does not require sorting, the software saves as much as 60 days CPU time on sorts of a billion-record file.)
- applied nearest neighbor imputation method of edit/imputation system to the American Community Survey.
- developed Web based VPLX support to include full documentation with examples of usage.
- attained true corporate status for the metadata project.
- conducted usability testing and/or expert reviews of Census Bureau electronic questionnaires, applications, and Web sites.
- conducted twenty-four (24) pretesting activities across the decennial, demographic, and economic areas.
- completed pilot study on interviewer Refusal Aversion Training and began an experimental test of Refusal Aversion Training for National Health Interview Survey interviewers.
- demonstrated through the Alternative Questionnaire Experiment in Census 2000 that the graphic (color, brightness, shape, and location), numeric, and symbolic languages of a questionnaire matter just as much as the words or verbal language of the questionnaire.
- shared results from ethnographic research conducted during Census 2000 on several topics including: ethnographic social network tracing, mobile populations, enumeration barriers specific to colonias, complex households and relationships, civic engagement for generation X, and protecting

privacy.

- expanded methodology for a total error model for the dual system estimator.
- used SIPP Methods Panel results to identify important improvements in SIPP instrument. However, analyses of some testing revealed that interviewers (or Field Representatives) with more SIPP experience were much more likely to display a general preference for the control instrument, the one with which they were very familiar.
- implemented new models for the year 2001 state poverty ratio and median income production for SAIPE.

# *How Did We Do...*

For a third year and near the end of fiscal year 2001, our efforts on fifty (50) of our program (Decennial, Demographic, Economic, CASRO) sponsored projects/subprojects with substantial activity and progress (Appendix A) were measured by use of a Project Performance Measurement Questionnaire (Appendix B). Responses to all fifty (50) questionnaires were obtained with the following results:

*Measure 1. Overall, Work Met Expectations*

Percent of FY 2001 Program Sponsored Projects/Subprojects where sponsors reported that work met their expectations (agree or strongly agree) (46 out of 50 ) ..... 92%

*Measure 2. Established Major Deadlines Met*

Percent of FY 2001 Program Sponsored Projects/Subprojects where sponsors reported that all established major deadlines were met (34 out of 41 responses) ..... 83%

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

Percent of FY 2001 Program Sponsored Projects/Subprojects reporting at least one improved method, techniques developed, solution, or new insight (45 out of 50 responses) ..... 90%

*Measure 3b. Plans for Implementation*

Of these FY 2001 Program Sponsored Projects/Subprojects reporting at least one improved method, techniques developed, solution, or new insight, the percent with plans for implementation (33 out of 45 responses) ..... 73%

*Measure 4. Predict Cost Efficiencies*

Number of FY 2001 Program Sponsored Projects/Subprojects reporting at least one “predicted cost efficiency” ..... 11

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

*Measure 5. Journal Articles, Publications*

Number of journal articles (peer review) publications documenting research that appeared (9) or were accepted (7) in FY 2001 ..... 16

*Measure 6. Proceedings, Publications*

Number of proceedings publications documenting research that appeared in FY 2001 ..... 19

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

# TABLE OF CONTENTS

<b>1. COLLABORATION</b> .....	1
Decennial Directorate .....	1
1.1 Project 6120 - Coverage Requirements	
1.2 Project 6121 - Statistical Requirements	
1.3 Project 6352 - Coverage Measurement A.C.E.	
1.4 Project 6367 - Census 2000 Evaluation Projects	
1.5 Project 6511 - Metadata Tools	
1.6 Project 6607 - Coding Operations	
Demographic Directorate .....	7
1.7 Project 0906 - Current Population Survey	
1.8 Project 1461 - SIPP 2000 Methods Panel	
1.9 Project 1465 - Survey of Income and Program Participation Research	
1.10 Project 1467 - Survey of Program Dynamics	
1.11 Project 7192 - School Crime Supplement	
1.12 Project 7455 - American Housing Survey	
1.13 Project 4000 - 2000 Sample Redesign Research	
1.14 Project 4200 - Continuous Measurement/American Community Survey	
1.15 Project 7165 - NCES Poverty Statistics	
Economic Directorate .....	13
1.16 Project 3491051 - Disclosure Limitation Methods	
1.17 Project 3491052 - Time Series Research	
Methodology and Standards Directorate .....	15
1.18 Project 7676 - Statistical Consulting/Postal Rate Commission	
1.19 Project 4100 - CASIC	
Census Bureau .....	16
1.20 Project 0251 - Program Division Overhead	
<b>2. RESEARCH</b> .....	17
2.1 Project 0351 - General Research and Support - Census Bureau	
2.2 Project 1871 - General Research - Methodology and Standards Directorate	
<b>3. PUBLICATIONS</b> .....	30
3.1 Journal Articles, Publications	
3.2 Books/Book Chapters	
3.3 Proceedings Papers	
3.4 Statistical Research Division Research Reports	
3.5 Other Reports	
<b>4. TALKS AND PRESENTATIONS</b> .....	34
<b>5. STATISTICAL RESEARCH DIVISION SEMINAR SERIES</b> .....	39
<b>6. PERSONNEL ITEMS</b> .....	41
6.1 Honors/Awards/Special Recognition	
6.2 Significant Service to Profession	
6.3 Personnel Notes	

**APPENDIX A**

**APPENDIX B**

# 1. COLLABORATION

## 1.1 - 1.6 DECENNIAL TOPICS (Decennial Projects)

### A. Transparent File Research

This research involves development of methods to construct a Decennial Census data file in which the effects of sampling and estimation are transparent to the data user. Data files of interest include both short and long form data.

During FY2001, staff finished developing methodology and software for Transparent File construction for the Census 2000 Dress Rehearsal. Staff completed construction of a transparent file for the Sacramento Dress Rehearsal site. A progress report on transparent file research through the Sacramento Dress Rehearsal work was distributed for comments.

Staff modified the Dress Rehearsal software for use on Census 2000 data and began creating a Census 2000 transparent file for the state of New Jersey.

*Staff:* Cary Isaki (x4915), Julie Tsay, Michael Ikeda

### B. Decennial Edit/Imputation Research

(For FY 2001 progress, see Demographic Project 4200-G.)

*Staff:* Bill Winkler (x4729), Bor-Chung Chen, Yves Thibaudeau, Todd Williams

### C. Decennial Coverage Research

The objective is to provide short-term research and statistical support to the Decennial Statistical Studies Division (DSSD) in preparation for the implementation and assessment of the Accuracy and Coverage Evaluation Survey (A.C.E.).

During FY2001, staff developed quick methods using artificial populations to provide a correction term to the loss function analysis (which leaves out synthetic error) for evaluating census undercount adjustment at the State, congressional district, and county levels. Methods were implemented, and three reports were prepared in a timely manner for the ESCAP decision making process on census adjustment. This project included formulation, methodological development, writing technical drafts, and extensive SAS programming. Staff began preparation for a journal manuscript of results. Staff also began discussion of future collaboration on hierarchical modeling research (See Research/ Statistical Methodology-C).

*Staff:* Donald Malec (x4892)

### D. Alternative Questionnaire Experiment (AQE2000)

The objectives of AQE2000 are to continue efforts to develop a user-friendly mail package that can be

accurately completed by respondents. The AQE2000 includes a test of: 1) the 1990 versus 2000 race/Hispanic origin questions on the short form; 2) the presentation of the residency rules on the short form; and 3) the long form's branching instructions. This experiment was implemented in Census 2000.

During FY2001, staff demonstrated that the changes made to either the residency rules or the branching instructions improved the quality of the data obtained. We showed that the experimental residency rule form had significantly fewer omissions in low coverage areas of the country, and the Detection Method of Branching led to significantly fewer navigational errors (either errors of commission or omission). Thus, we recommended that these methods be adopted in the future (both in the decennial short form and the American Community Survey (ACS), which is slated to replace the decennial long form). We presented these results at the Joint Statistical Meetings (JSM) and prepared papers for submission to the JSM proceedings. We also began to work on our individual draft reports, which will later be combined into one final AQE2000 report.

A broader, and therefore more important finding of the AQE2000 is that the graphic (color, brightness, shape, and location), numeric, and symbolic languages of a questionnaire matter just as much as the words or verbal language of the questionnaire. The AQE2000 demonstrates that the significance of this finding needs to take on greater importance at the Census Bureau, that we are making progress in understanding and identifying the broader underlying principles of questionnaire design, which include these other languages, and that we need to continue in these efforts.

*Staff:* Cleo Redline (x4994), Eleanor Gerber, Manuel de la Puente, Aref Dajani, Mary Ann Scaggs, Yves Thibaudeau

### E. Response Mode & Incentive Experiment (RM&IE)

This project explores the use of response incentive and alternative modes of data collection for the Census short form. Our division is coordinating the work of a data analysis contractor.

During FY2001, Westat, the contractor, conducted an Internet Usage Survey with persons offered the Internet option for responding to Census 2000, but who responded by mail or CATI instead. Analysis showed that people didn't use the Internet because they didn't know about it, or thought it was easier to use the paper form.

Westat conducted an analysis of the response data generated by the project and wrote a preliminary report. Our division coordinated the analysis and investigation tasks between Westat and Census Bureau



divisions, including the Planning, Research, and Evaluation Division, the Decennial Systems and Contracts Management Office, the Decennial Management Division, the Financial and Administrative Systems Division, and our division by conducting bi-weekly meetings to update team members about Westat's progress, and to investigate any problems. It was determined that one experimental panel had questionnaire mail-out or mail-back problems. An analysis plan was created to overcome the problem and work began on recomputing the response rates in September.

*Staff:* Larry Malakhoff (x3688)

#### **F. A.C.E. Missing Data Research and Development**

The objective of this work is to conduct research to guide the development of appropriate imputation for missing data in the Accuracy and Coverage Evaluation (A.C.E.).

During FY2001, staff finished planning for the Census 2000 A.C.E. missing data system and provided information to the Decennial Statistical Studies Division on assorted issues related to the missing data system. Staff made final revisions to the A.C.E. missing data system and to some analysis and verification programs for the system. Final versions of the preliminary outcome code specifications, the final outcome code and interview status code specifications, the missing data requirements, and the missing data procedures specification were released. Staff implemented the missing data system on the production data and assisted in the verification and analysis of the results. The paper, "Missing Data Procedures for the Census 2000 Accuracy and Coverage Evaluation Sample" was presented at the 2001 Joint Statistical Meetings.

Staff provided consulting support to the Planning, Research, and Evaluation Division on assorted issues related to the evaluation of A.C.E. missing data procedures for Census 2000. Staff modified the production A.C.E. missing data system to run on data from four of the evaluations and also implemented the modified system on the evaluation data and assisted in the verification.

*Staff:* Mike Ikeda (x4864)

#### **G. Census 2000 Research & Development Contracts**

The purpose of the project is to provide technical management and consultation on tasks for the Census 2000 Research and Development contracts with the National Opinion Research Center (NORC) and Research Triangle Institute (RTI). The NORC task is research on sampling and estimation methods for the Decennial Census. The NORC research was subcontracted to DataMetrics Inc. The RTI task is research on Incentive Use by Federal Agencies.

For the NORC task order, several DataMetrics researchers gave on-site presentations on their research. A meeting was held at the American Statistical Association Convention with DataMetrics researchers and Census Bureau staff to discuss progress on the research. The task was modified to add three new research projects: MAF performance measures and standards, Unduplication Methodologies, and Regression model alternatives. For the RTI task order, a draft bibliography on Incentive Use was drafted.

*Staff:* Ann Vacca (x4996)

#### **H. Privacy Implications of the Decennial Census**

The goal of this project is to conduct a qualitative study of belief structures that influence survey respondents' perceptions of and reactions to survey information requests, focusing on privacy concerns. A team of ethnographers will use a combination of observation, interview debriefing, and semi-structured cognitive interviews to explore how respondents assess the consequences of survey participation and survey response, their sense of information ownership, their reactions to confidentiality statements, and their reasons for choosing to participate in survey data collection activities.

Data collection in 80 ethnographic interviews was completed by staff and four collaborating ethnographers. Summaries for these interviews were prepared, and reports for the work of the collaborating ethnographers were finalized. Preliminary findings were presented at the annual meetings of the American Anthropological Association. The title of the session was "Protecting Privacy: Personal Information, Technology, and Trust in Government." A presentation of findings was made at the Joint Statistical Meetings of the American Statistical Association in a paper entitled, "Images of Government Data Collection: An Ethnographic View." A chapter for a Census Bureau sponsored volume ("Confidentiality, Disclosure and Data Access: Theory and Practical Application of Statistical Agencies") was accepted and finalized. The title of the chapter is "Privacy Schemas and Data Collection: An Ethnographic Account." Analysis of the findings is continuing.

*Staff:* Eleanor Gerber (x4890), Melinda Crowley

#### **I. Complex Households and Relationships in the Decennial Census and in Ethnographic Studies**

This ethnographic research project has three primary objectives: 1) to explore the range and functioning of complex households within different ethnic groups in the United States; 2) to examine how the response categories of the decennial relationship question capture the emerging diversity of household types; and 3) to compare the household composition and relationship information collected by the ethnographic

interviews to those collected in Census 2000. This comparison is designed to assess how well census methods, questions, relationship categories, and household composition typologies describe the emerging diversity of household types in the United States. Seven ethnographers were selected to conduct 6 small-scale ethnographic interviewing sub-projects among African Americans, Hispanics, Caucasians, Koreans, Navajo Indians and Inupiaq Eskimos..

During FY2001, staff made a videotape of our September 8, 2000 Complex Households Symposium available to the Planning, Research, and Evaluation Division and others in the Census Bureau. We worked with the ethnographers to finalize all of their reports and executive summaries. We organized and chaired a session on Census Bureau research on complex households in different race/ethnic groups at the American Anthropological Association Annual Meetings and presented a summary paper in that session. We presented a poster session at the American Association for Public Opinion Research Annual Meeting comparing rostering by respondents on a self-administered census form with rostering through ethnographic interviewing on the same date. We geocoded respondents' addresses and obtained unedited Census 2000 person record (HCUF) data extracts for our respondents, and matched the Census 2000 households to the households in our ethnographic study.

Staff submitted a prospectus for a book on complex households, and the publisher suggested some changes. We arranged and chaired a symposium of all the ethnographers to discuss the research and to plan the possible book and discuss common themes.

*Staff:* Laurie Schwede (x2611), Anna Chan

#### **J. Generation X Speaks Out on Censuses, Surveys, and Civic Engagement: An Ethnographic Approach**

The purpose of this nationwide ethnographic research is to examine civic engagement behaviors and attitudes towards censuses and surveys among gen-Xers (individuals born during the years 1968-1979) from varied socio-economic backgrounds and ethnicities, including individuals from hard-to-enumerate categories (such as young, minority males). Patterns of civic engagement have consequences for government data collection efforts in terms of survey nonresponse, trust and privacy concerns, policy-oriented issues and effective educational outreach campaigns. Baby Boomers and Millennial Generation individuals will also be interviewed in order that comparative life-cycle experiences and cultural explanations emerge in regard to census and survey nonresponse, government engagement, and civic responsibility and obligation.

During FY2001, staff conducted a total of 150 in-depth, ethnographic interviews. To date, six preliminary reports have been completed and are

currently under PRED review. This ethnographic research demonstrates that culture, social status, and government distrust impact decennial undercoverage issues. Preliminary research findings reveal that: unfavorable attitudes towards the government are not extended towards the decennial census; the decennial census is viewed as an important civic quest; respondents communicated a lack of faith in the Census Bureau's pledge of confidentiality; U.S. citizens and non-citizens are equally likely to comply with the decennial census; and respondents not knowing about or understanding the decennial census contributes to undercount challenges. Some examples of the recommendations that have been made to date, based on this ethnographic research, include: emphasizing the decennial census as a family activity; building trust with historically under-enumerated communities throughout the decade; and establishing local Census Bureau operations in "data-starved" communities.

Staff have also presented preliminary findings at the following professional conferences: The American Anthropological Association's Annual Conference in San Francisco; a two-day Statistical Research Division Symposium at the Census Bureau; the Washington Association for Professional Anthropologists; and the National Corporation's research forum on Building a Research Agency for National Community Service in Minneapolis, MN. Extensive data analyses is ongoing and continued expert collaboration is in progress.

*Staff:* Melinda Crowley (x2726), Eleanor Gerber, Yves Thibaudeau

#### **K. Enumeration Barriers Specific to Colonias in the Context of Census 2000**

The objective of this ethnographic research is to examine potential barriers to census enumeration in selected colonias along the US/Mexico border in the context of Census 2000. This objective will be accomplished through: a) participant observation; b) ethnographic interviews; c) focus groups with colonia residents, census enumerators and crew leaders; and d) in-depth interviews with colonia residents. The field work will be conducted by professional ethnographers from outside the Census Bureau working under purchase orders and staff from our division and the Planning, Research, and Evaluation Division (PRED). Specific issues to be examined in this project include: irregular housing; knowledge of English and literacy; concerns regarding confidentiality of census data; and complex and fluid household structure. Products from this research will include ethnographic reports authored by ethnographers from outside the Census Bureau, and a final report, authored by staff from our division and PRED, summarizing all relevant findings. This report will also make recommendations for improving the census enumeration of colonias.

During FY2001, four ethnographic reports were

received from ethnographers who worked collaboratively with staff in the following locations: El Paso County, TX; Riverside County, CA; and Dona Ana County, NM. Staff prepared and delivered presentations on research findings at two national conferences, advisory committee meetings, and regional research conferences. Staff began work on a first draft of a report which will summarize findings from the four ethnographic reports as well as focus groups of Census 2000 enumerators and crew leaders conducted by staff.

*Staff:* Manuel de la Puente (x4997)

#### **L. Comparative Ethnographic Research on Mobile Populations**

This project conducts and reviews research and technology to recommend or develop applications, methods, outreach, and communications appropriate for population groups defined in categories other than “race” or ethnicity which are identified as requiring special methods for listing, enumeration, and/or enumeration support. Examples include people in migratory or seasonal occupations, communities of language other than English such as recent immigrants, institutions, and group quarters (GQ), or rural remote or other areas difficult to enumerate by conventional methods and those who require accommodations or tailored approaches.

During FY2001, staff organized a two-day workshop and SRD seminar for the four contract researchers working on the project.

Staff completed the field work phase on the network tracing demonstration project, “Mobility Patterns in a Longitudinal Perspective,” collecting kin and affiliation network data on highly mobile individuals, families, and travel cohorts through interviews and administrative records.

*Staff:* Matt Salo (x4922)

#### **M. Ethnographic Social Network Tracing in the Context of Census 2000**

This evaluation project applies ethnographic field and analysis methods to trace the domiciles of people interacting in social networks over a six month period overlapping Census Day 2000. (*Decennial Evaluation J-2*)

In FY 2001, we made several discoveries : 1) Errors and omissions in TIGER and the MAF make it difficult for Census Bureau geographical clerks to geocode some addresses correctly, even with more detailed location information and supplemental maps. This discovery has implications for the attribution of population from addresses on all census form types which required geocoding. 2) Transient Quarters (TQs) such as campgrounds, marina docks, and bargain motels were systematically omitted as “units of enumeration” in Census 2000 and were the leading reason why highly mobile people, who change domiciles often, frequently

stay in various TQs, and have no home to which they periodically return, were apparently under enumerated in Census 2000. 3) Highly mobile people who return (after absences elsewhere) to the same household group and same domicile tend to experience a higher rate of inclusion (match) in Census 2000 than highly mobile people who do not return after absences to the same set of co-residents or to a different address/location. This finding reflects on decisions that household respondents make about which absent co-residents they include by proxy. 4) Highly mobile people who change their place of immediate domicile often are much more likely to be omitted in the census than to be duplicated at two or more of their occasional abodes. 5) Among the thousands of HCUF person records extracted as “search universes” for the ethnographic sites, we observed a higher frequency of duplicate person records (for non-sample cases) in partial household duplication sets first, enumerated in two MAF housing units assigned sequential identification numbers and geocoded to the same block; second, in two housing units geocoded to the same census block, and third, in housing units geocoded to nearby blocks, and finally, individual duplicate and triplicate records in housing units and (SUES) geocoded to the same or an adjacent county at a different address and in a different relationship to the first person listed (p1). These results overlap with the analysis of the census duplicates detected in the A.C.E. E-sample universe.

*Staff:* Leslie Brownrigg (x4995), Elena Fazio

#### **N. Evaluation of the Decennial Frame of Group Quarters and Sources**

This project evaluates the coverage, content, comparability, and sources of information used to construct the Decennial list of Special Places/Group Quarters (SP/GQ) through linkage and matching with the contemporary Business Register (BR) and examination of contributing sources. The SP/GQ list is built separately and with different sources and methods from the Master Address File list of housing units. *Decennial Evaluation E4.*

The schedule established for the evaluation of the SP/GQ and Sources in FY 01 was delayed by at least six months to allow participating divisions to satisfy newly instituted requirements and precautions for handling electronic extracts from the Census Bureau’s Business Register economic frame. (These procedures were developed in late 2000, so were unforeseeable when the project was designed in 1998-1999.) The data sets processed or delivered or residing in serial ASCII (for the convenience of UNIX C++ programs) cannot be directly imported into SAS or SPSS. Reformatting this data for analysis remains incomplete, and more extensive post coding and data editing were required than anticipated. Each post-code must be piloted and tested. Formatting (primary and appendix) tables for

presentation in the report (for example, from SAS or SPSS output logs) is also time-consuming. Although once dataediting procedures or table formats are established, material for editing or formatting on screen could be handed to a research assistant or contractor.

Business Register (SSEL) records of service industry establishments in the selected 97 SIC codes identified in this project are an excellent source for listing group quarters. Use of the Business Register source would increase many-fold the number of health sector special places that contain or are domiciliary institutional group quarters such as residential treatment and protective group homes. Less than a third of the universe of health institutional group quarters was ever listed in Census 2000 SP/GQ frame, although evidence was found that some were misclassified as ordinary housing units. This result was expected and predicted. Despite a large number of transactions (adds/deletes) and item changes in Special Place and Group Quarter inventory operations between the Fall 1999 edition and the final (July-August) 2000 edition of the SP/GQ Decennial frame, the net result is a loss of SP/GQ, affecting all types of truly domiciliary Group Quarters. The only "type" of place on the SP/GQ frame that nets a gain (of "adds") between the editions is the ephemeral generally non-structure "type" of "outdoor locations." Outdoor locations are neither domiciliary Group Quarters nor Service Based units of enumeration and were largely suggested by urban homeless advocate partners; more than 5K "outdoor locations" were inserted and were enumerated with low population yields per place. The gain of "outdoor locations" is outweighed by deletion from the frame of the SP/GQ of more than 10K Transient Quarters. Transient Quarters are more permanently organized, clearly domiciliary, and often built-structure "special places" like campgrounds, boarding houses, hotels, and motels. The Transient Quarters ever listed on the Census 2000 SP/GQ is a fraction (about 1/10th) of the universe carried on the Business Register. The Business Records are not a rich source for correctional institutional group quarters (despite the proliferation during the 1990s of private correctional businesses). The Internet (public source) frame was more complete and shows better potential as a source for information to list correctional institutional group quarters. Based on the selected states for which independent frames were developed and matched, public Internet postings appear to be a more complete source for correctional GQs (and businesses) than either the SP/GQ or the BR. SP/GQ coverage of correctional institutions (including prisons with large populations) was incomplete. Cases of the enumeration of correctional institutions as housing units were uncovered (in addition to thousands of nursing and other institutional homes). The common convention of naming correctional institutions, beginning with the county or city name of the jurisdiction and the use of postal box style addresses

also common among correctional institutions confounded matching on name and address and produced the highest rate of false matches. The spontaneous field conversion of institutional group quarters (e.g., nursing homes, juvenile facilities, and correctional institutions) into ordinary "housing units" listings, although misclassifications, demonstrate the feasibility of integrating whole units that are GQs and units within GQ into the MAF address listing model.

*Staff:* Leslie Brownrigg (x4995), Ned Porter, Aref Dajani, Mary Ann Scaggs, Tina Arbogast

#### **O. Evaluation of Responses to the Question on Race**

The Census Quality Survey will create a data base to serve as a bridge for data users between the Census 2000 race question (which allowed multiple marks) and the previous race question, (which allowed a single mark). This survey will consist of a mailout questionnaire followed by a telephone reinterview. A split panel design will be followed in which half of the respondents will receive the multiple mark question in the mail, and a single mark question in the follow-up. The order will be reversed for respondents in the second panel.

During FY2001, several questions were drafted, revised, and finalized, including two versions of a Non-Response Follow-Up form, two versions of a Telephone Recontact form and two versions of a Personal Visit Recontact form. Staff commented on other survey instruments and documents associated with this project, and reviewed interviewer training materials and procedures. Cognitive testing of critical survey instruments was monitored and facilitated. Staff participated in creating plans for the analysis of the survey results. Behavior coding to evaluate the quality of the Telephone Recontact interviews was designed, and its implementation by a contractor was facilitated and monitored.

*Staff:* Eleanor Gerber (x4890), Kristen Hughes, Jennifer Rothgeb, Catherine Keeley

#### **P. Research on Enumerating American Indians**

The objective of the project is to identify factors that contribute to census omissions or erroneous enumerations of American Indians. Additionally, the project is also intended to provide insight into how to best enumerate American Indians on and off reservations in Census 2000.

During FY2001, a contract researcher completed Census 2000 coverage assessment of a sample of some of the more mobile individuals and families in the urban Oakland, CA area Indian community, and prepared a final report currently being evaluated by staff and peers.

*Staff:* Matt Salo (x4992)

#### **Q. Automated Industry/Occupation (I&O) Coding**

The purpose of this project is to conduct an automated coding research program that identifies and assesses the latest methodologies and technologies for the classification of survey and census data. This research includes developing prototypes, standards, and tools, educating agency personnel about the latest technologies, and assisting with the implementation of these new methodologies.

During FY2001, staff provided support and consulting services to both the Decennial area and the Housing and Household Economic Statistics Division (HHES). The Decennial Automated I&O Coding System was successfully installed, and all decennial industry and occupation responses have been processed by the Decennial Systems and Contracts Management Office. The coding of all residual cases was completed at the National Processing Center. Research has begun on post census use of the automated coder. Staff assisted HHES personnel in writing an ASA paper describing the project.

*Staff:* Marty Appel (x4860), Tom Petkunas

#### **R. Administrative Records Linkage Support**

The purpose of this project is to assist in the matching of the Social Security File (NUMIDENT) with the Current Population Survey File. The ultimate goal is to assign Social Security Numbers to files where people do not have them (e.g. Current Population Survey). Other assistance is provided.

During FY2001, staff provided record linkage and matching support for the Duplicate Review Board. The software helped identify many duplicates in Census 2000. String matching support was also provided. Staff's software was adapted to assist in Robert Fay's identification of duplicates in Census 2000. Record linkage and prep support was provided for the Special Places/Group Quarters matching with the Business Register.

*Staff:* Ned Porter (x4729)

#### **S. Decennial Privacy Research**

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

During FY2001, the staff continued to investigate the effects of public attitudes and perceptions about privacy and confidentiality on Census Bureau activities, and to research methods to address respondent concerns, and discourage nonresponse behavior. The staff continued work on the interviewer Refusal Aversion Training Project (see *Interviewer Refusal Aversion Training*, under Section J: ADDITIONAL

TOPICS). Staff continued to consult with the Methodology and Standards Council, the Policy Office, and the American FactFinder staff to create confidentiality and statistical reliability statements for American FactFinder and other Census Bureau documents. Staff participated in Privacy Policy and Research Committee sub-groups to design Census Bureau Privacy Principles and a Privacy Research Initiative at the Census Bureau. Staff chaired the Interagency Household Survey Nonresponse Group sub-group on Privacy and Confidentiality. Staff completed a rough draft of a literature review: "Privacy and Confidentiality Research and the U.S. Census Bureau: Recommendations based on a Review of the Literature."

*Staff:* Tom Mayer (x4930), Jeff Moore

#### **T. Coverage, Rostering Methods, and Household Composition: A Comparative Study of Current Population Survey and the Census 2000**

As part of the Census 2000 Evaluations, staff proposed an evaluation, *J1-Coverage, Rostering Methods, and Household Composition: A Comparative Study of Demographic Surveys and the 2000 Census*, which will use matched Current Population Survey (CPS) survey-census records to examine coverage differences resulting from alternative methods of collecting roster, relationship, and household composition data.

During FY2001, staff met regularly throughout the year to comment on the CPS/NHIS to Census 2000 match project. The computer matching strategy has been finalized. Discussion of the clerical matching strategy and field follow-up has just begun. Staff identified the variables needed for the J1 evaluation, commented heavily on the computer matching strategy, created a comparison of roster rules between CPS and Census to use during clerical matching, and drafted a field follow-up questionnaire creation.

*Staff:* Beth Nichols (x4865), Laurie Schwede

#### **U. Research on Accuracy of the Census and the A.C.E. Estimates**

This project examines the quality of Census 2000 and A.C.E. estimates. These analyses investigate the biases and random errors in the dual system estimator arising from data collection, data processing, missing data, and model bias. A synthesis of these errors takes the form of a total error model. Using the results of the total error model simulations, loss function analyses compare the accuracy of the census and the A.C.E. estimates. These analyses support the decisions on which census data set to release for three different uses on three different occasions. The analyses add refinements as new evaluation data become available, and are tailored for the specific application.

During FY2001, staff expanded methodology for a total error model for the dual system estimator that included estimation of error components by type and source of error for the PES-C version of the estimator. The total error model for PES-C incorporated new error components for outmovers, inmovers, and nonmovers by type, which may be either discrepant, residence, or other, and by source of error, which may be either data collection or data processing.

*Staff:* Mary Mulry (x8462)

## **1.7 CURRENT POPULATION SURVEY (CPS) (Demographic Project 0906)**

### **A. CPS March Supplement Research**

Design, conduct, and analyze exploratory cognitive and other research to investigate measurement problems in the CPS March supplement, and recommend questionnaire design solutions. Recently, this research has focused on questions measuring participation in welfare reform benefits. Staff assists as needed.

No work on this project was requested of our division during this fiscal year.

*Staff:* Jennifer Rothgeb (x4968), Lorraine Randall

### **B. Tobacco Use Supplement to the 2003 Current Population Survey: Smoking Cessation**

Develop the questionnaire content of the Tobacco Use Supplement to the 2003 Current Population Survey on Smoking Cessation. Conduct cognitive testing on the instrument that will be administered in both CATI and CAPI modes. Data from this survey supplement provides information for national and state estimates on emerging adult tobacco control issues as part of the National Cancer Institute's Extraordinary Opportunities in Tobacco Research. The specific objective of the research is to learn how well newly-devised questions work to capture data on smoking cessation activity, including stages of readiness to quit, measures of addiction, quitting behavior, cessation methods used, and perceptions about different types of cigarettes. This survey is part of a continuing series of surveys that were originally fielded over the 1990s by the Census Bureau, and will be continuing over the next decade, alternating between a standard or core tobacco use survey and a special topic survey focusing on tobacco control issues.

To date, staff have completed respondent recruitment and summarized the results of 20 cognitive interviews. Staff conducted cognitive research on both existing and newly developed survey questions which provided valuable data that enhanced the scope of testing. Staff also conducted an extensive literature review on additional smoking cessation surveys. Multiple versions of the survey instrument were developed, tested, and heavily revised. A series of

discussions and consultations were held with representatives from the National Cancer Institute and the Demographic Surveys Division to ensure the design of a clear and useful questionnaire supplement appropriate for upcoming field pretests requirements. Based on cognitive interview results, staff produced a comprehensive report which documented questionnaire revisions, findings, sponsor feedback, item-by-item recommendations on challenging questionnaire concepts and difficult response tasks, and general survey aspects that were successful. Cognitive pretesting research and protocol development are complete.

*Staff:* Melinda Crowley (x2726), Ashley Landreth, Catherine Keeley, Kristen Hughes, Lorraine Randall, Joyce Farmer

## **1.8 SIPP 2000 METHODS PANEL (Demographic Project 1461)**

The SIPP Methods Panel (MP) is the R&D vehicle for development of a redesigned SIPP instrument for the 2004 SIPP panel. Through a combination of expert review, user needs assessment, secondary data analysis, and laboratory research, Methods Panel staff carry out the research activities necessary to implement the recommendations of the Continuous Instrument Improvement Group (CIIG).

During FY2001, staff analyzed data from the 2000 Methods Panel (MP) field test, including completed interviews for 854 test (MP instrument) households and 842 control (standard SIPP instrument) households and debriefing questionnaires from MP interviewers. We identified many important improvements in the MP instrument's new procedures, in addition to several areas in which hoped-for improvements did not materialize, and in which more work is needed. Analysis of the interviewer debriefing questionnaires revealed that interviewers were enthusiastic about some aspects of the MP instrument, but less positive in their general evaluations of that instrument as compared to the control instrument. Additional analyses revealed a strong relationship between job tenure and evaluations of the new instrument - Field Representatives (FRs) with more SIPP experience were much more likely to display a general preference for the control instrument, the one with which they were very familiar.

In preparation for the MP 2001 field test, staff conducted and analyzed 30 cognitive interview using the existing Wave 1 MP instrument. Staff also worked closely with the Continuous Instrument Improvement Group (CIIG) and with the Housing and Household Economic Statistics Division and Population Division subject matter specialists on preparation of recommendations for changes to the MP Wave 2+ instrument. Based on the cognitive interview results, analysis of the 2000 field test data, consultation with subject matter staff, and other research, we made numerous recommendations for additional refinements

to the 2001 MP Wave 1 instrument. Staff designed and initiated another round of cognitive interview testing involving 34 households; the primary purpose of the research is to focus on the Wave 2 instrument's dependent interviewing procedures (these interviews will be conducted in October and November). Staff assisted final preparations for the MP2001 Wave 1 field test, including last-minute instrument testing and debugging, review of training, and the development of a debriefing questionnaire for MP2001 FRs. At the completion of the Wave 1 interviews, staff participated in FR debriefing sessions conducted in all 6 participating Regional Offices.

*Staff:* Jeff Moore (x4917), Anna Chan, Julia Klein-Griffiths, Joanne Pascale, Michael Steffen

## **1.9 SURVEY OF INCOME AND PROGRAM PARTICIPATION RESEARCH (Demographic Project 1465)**

### **A. Measurement Research on SIPP**

The purpose of this project is to design, conduct, analyze, and report on research which addresses measurement error and nonresponse issues in SIPP, and which assists the development of new content areas.

During FY2001, staff completed a report on a series of focus groups with SIPP Field Representatives to elicit their views about the SIPP Advance Letter. Based on the results of the focus groups and on other information, staff worked with the Director's Office to develop a revised letter which we tested in 16 cognitive interviews. We prepared a report documenting the results of the interviews, and revised the letter to incorporate the following new features: 1) reorganization, to increase the saliency of information most requested by respondents; 2) use of uncomplicated syntax and brief sentences, avoiding academic terms for increased clarity; 3) reduced salience for problematic topics, best handled by field representatives at the doorstep; and 4) reformatting, to increase the saliency of the sponsor and readability. (The revised letter was an instant success among Field Division staff who urged its immediate adoption in production SIPP, even without any testing results). The new letter was tested in the MP2001 Wave 1 field test, where it drew praise from Field Representatives but did not, unfortunately, demonstrate any important response rate benefits. Staff also proposed revisions to the SIPP Wave 2 letter, in keeping with the Wave 1 revisions; this letter will be tested in rotation 4 (September) of the 2001 SIPP Panel.

The Census Bureau's new Respondent Identification Policy (RIP) requires that surveys secure permission from respondents before their answers can be revealed to other household members. This policy presents particular challenges to a longitudinal survey like SIPP, which in later waves, can greatly benefit from the use of dependent interviewing procedures. Staff developed two revised versions of proposed questions designed to

secure RIP permission, and completed ten cognitive interviews to test them. We completed a report documenting the results of the research and presenting recommended question wording.

*Staff:* Jeff Moore (x4975), Anna Chan, Julia Klein-Griffiths, Joanne Pascale, Ashley Landreth, Terry DeMaio

### **B. Continuous Instrument Improvement Group (CIIG)**

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

During FY2001, CIIG reviewed and recommended changes to the labor force part 1, labor force 2, general income part 2, assets part 2, and health insurance sections of the Wave 2+ SIPP instrument, and submitted formal recommendations to the SIPP Executive Committee for its review. The SIPP Exec approved all sets of recommendations, which will be developed and implemented by 2001 Methods Panel staff, and tested in the 2001 Methods Panel Wave 2 field test, to be fielded in October and November. With the completion of these activities, CIIG's responsibilities with regard to the core SIPP interview are complete. CIIG proposed to SIPP Exec that the group turn its attention to reviewing and recommending improvements to the survey's 27 topical modules; that proposal was accepted by the Committee. This review, as with the work on the core instrument, will target the 2004 Panel for implementing changes. In September, CIIG completed its review and recommendations for the Employment History module.

*Staff:* Jeff Moore (x4975), Julia Klein-Griffiths, Joanne Pascale, Anna Chan

### **C. 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 FY2001, staff proceeded with the final stage of the project research. We completed a study of several weighting and "model-based" alternatives for compensating for person-level wave nonresponse. In addition, we made preliminary assessments of the potential effects of attritional bias on selected SIPP estimates, and developed methods for deriving empirical estimates of the likelihood of program participation in the presence of attritional nonresponse.

Staff conducted an analysis of the consistency between selected cross-sectional and longitudinal estimates, and extended a study of the interactive

effects of the SIPP second stage ratio adjustment and the current weighting cell nonresponse adjustment scheme.

The project will conclude with a comparison of the current research results with those that will be based on data from the 1996 panel, and with an assessment of the overall effect of the current weighting cell adjustment for nonresponse on SIPP estimation.

*Staff:* Leroy Bailey (x4917), Todd Williams

#### **D. Adapting Standard Analytical Procedures to the Complex Sampling Structure of SIPP**

There has long been a need for establishing practical methods to use when analyzing data from complex surveys in order to reduce the time and effort required to obtain valid inferences by “correct statistical” procedures. These procedures are even more complicated for SIPP as a result of the longitudinal nature of its data. The intent of the project is to develop guidelines for adapting standard analysis methods for use with the complex sampling structure of SIPP. These adaptations may require either completely new analyses or adjustments to standard analyses, such as the use of design effects.

During FY2001, staff completed a study of the SIPP design complexities and requisite adaptations of standard procedures for valid estimation and analysis of survey data. The study placed special emphasis on multivariate estimation and analysis and the derivations and adaptations that reflect the longitudinal nature of SIPP.

A draft of the project report was completed and submitted for initial review. It included a general discussion of complex survey design theory and methods and their applications to SIPP, and recommendations for accounting for design complexities in future SIPP efforts involving multivariate analysis and longitudinal estimation.

*Staff:* Ruben Mera (x4934), Leroy Bailey

#### **E. Spell Length Analysis**

This project seeks to address the accurate estimation of such statistics as multiple occurrences of spells of program participation for analytical units, right censoring of spells due to limited observation periods, and dependencies among analytical units. The work will extend the analysis to include the use of weights and variance estimation for the model parameters.

During FY2001, staff fostered an effort to determine how to expand the goals of this project and identify additional survey estimates for which there are applications for the methodology derived previously.

As a result of extensive technical reviews, we revised the proposed spell analysis model. The revised work has been submitted for peer review, and is

available for use in the derivation of additional empirical results for a spell length analysis alternative.

*Staff:* Bev Causey (x4934)

#### **F. Quick Turnaround Pretesting for Household Surveys**

(See Projects 0351 and 1871, Survey Methodology-C)

##### **1.10 SURVEY OF PROGRAM DYNAMICS (Demographic Project 1467)**

The purpose of this research is to test questions proposed for the Survey of Program Dynamics (SPD), a survey that provides panel data to evaluate welfare and health care reform, especially as they influence income, program participation, employment, and child well-being.

During FY2001, staff participated in the SPD Steering Committee attending meetings, reviewing materials, and providing feedback as appropriate.

*Staff:* Jennifer Rothgeb (x4968)

##### **1.11 SCHOOL CRIME SUPPLEMENT (Demographic Project 7192)**

This project involves cognitive testing of the School Crime Supplement to the 2001 National Crime Victimization Survey, sponsored by the National Center for Education Statistics. Testing of the entire supplement will be conducted, with emphasis on questions that are newly-added. Cognitive interviews will be conducted with students aged 12-18, and revisions to the questionnaire will be recommended based on the results.

During FY2001, staff completed documentation of cognitive research results on the School Crime Supplement to the 2001 National Crime Victimization Survey. This research demonstrated that respondents were not familiar with technical names for drugs, although they were familiar with slang names that were not included on the questionnaire for the same drugs. It also identified illegally-obtained prescription drugs that are used by respondents, but not included on the questionnaire. Our suggested revisions to eliminate these two important reporting problems were accepted by the sponsor.

*Staff:* Terry DeMaio (x4894), Kristen Hughes, Ashley Landreth

##### **1.12 AMERICAN HOUSING SURVEY (Demographic Project 7455)**

Since 1985, the Census Bureau has been involved in efforts to explain and reduce the disparity between various income estimates derived from the American Housing Survey (AHS) and those produced by the Current Population Survey (CPS), and the Survey of



Income and Program Participation (SIPP). The AHS has historically reported a higher percentage of households below the poverty level than the CPS; moreover, the median household income reported by the AHS has generally been lower than that reported by the CPS or SIPP. This research is intended to provide a systematic analysis of the problem, which is expected to result in the identification of possible causes of the discrepancies and the nature and extent of their effects, and, if appropriate, the derivation of plausible compensation procedures.

During FY2001, staff produced a preliminary report on the exploratory analysis of selected CPS and AHS income data from 1989-1999. The report suggested that some of the salient disparities between estimates from the two surveys may be ascribed to data collection and preparation procedures. Moreover, the causes of the disparity may change with each occasion of the survey. The staff proceeded with a more extensive investigation of these data, which is ongoing. This effort will hopefully provide more definitive reasons for the discrepancies, or identify other methods that should be pursued in determining the extent of the problem and how it could be resolved.

*Staff:* Ruben Mera (x4934), Pam Ferrari, Leroy Bailey

### **1.13 2000 SAMPLE REDESIGN RESEARCH (Demographic Project 4000)**

The Demographic Statistical Methods Division (DSMD) has been redesigning samples based on new Census 2000 data. The Statistical Research Division has been assisting DSMD in its redesign activities. The activities include: maximizing PSU overlap between 1990 and 2000 redesigns (Work Group 3.4), stratification of Primary Sampling Units (PSUs), and research in the ways of combining CPS and State Children's Health Insurance Program (SCHIP) for estimating labor force status.

During FY2001, staff performed a thorough review of Specifications for Primary Sampling Unit (PSU) Selection (#3.4-S-1 Working Draft #1). We observed errors and helped DSMD correct them. We also helped DSMD add more procedures needed to complete PSU selection operations.

Staff verified the test run data for SIPP for selecting 2 PSUs from a stratum, and found all the procedures were incorporated correctly. However, for many strata, the program did not run, i.e., infeasible solution. We recommended that DSMD increase the tolerance limit which helped reduce the number of strata with infeasible solution.

*Staff:* Jay Kim (x4907)

### **1.14 CONTINUOUS MEASUREMENT/ AMERICAN COMMUNITY SURVEY (ACS) (Demographic Project 4200)**

#### **A. Questionnaire Design and Measurement: Seasonality and Residency Instructions**

The purpose of this project is to participate in an interdivisional working group charged with overseeing changes to the ACS questionnaire, as well as to propose, design, conduct, and analyze exploratory cognitive and other research to investigate measurement issues in the various instruments of the ACS, and recommend questionnaire design solutions.

During FY2001, staff chaired two subteams, one which met to develop a set of questions to collect information on "seasonal" residency in the ACS, and the other which met to revise the residency rules section of the questionnaire based on previous research. We defined the objectives of these questions and instructions, identified key concepts these questions and instructions needed to measure, and identified the critical respondent groups at which these questions were aimed. We developed a research plan for conducting cognitive interviews with these questions and instructions and presented these plans to the ACS Research Group. We developed a protocol for testing the questions, and recruited respondents with the following characteristics: seasonal residents; seasonal workers; commuter workers; and college students. We conducted 31 cognitive interviews in Maryland, Virginia, New Jersey, New York, Pennsylvania, and Wisconsin, and summarized the interviews.

*Staff:* Cleo Redline, (x4994), Jeff Moore, Eleanor Gerber, Theresa DeMaio, Kristen Hughes, Lorraine Randall

#### **B. Questionnaire Design and Measurement: Race and Ethnicity Research**

ACS staff have hypothesized that interviewer behavior may offer one explanation as to why more Hispanics reported their race as "White" in the nationwide administration of the American Community Survey (Census 2000 Supplementary Survey) than in Census 2000. Staff will use a combination of qualitative and quantitative methods to learn more about how ACS Field Representatives report they handle a variety of potential responses to the Hispanic Origin and Race questions.

During FY2001, staff wrote a study plan for this research and participated in an interdivisional working group to plan the study. We conducted two debriefing sessions with ACS CAPI interviewers in the New York and Los Angeles Regional Offices: the first with Field Representatives and the second with Supervisory Field Representatives. We developed a draft questionnaire to send to all 1050 ACS (Supervisory) Field Representatives and sent it out for review.

*Staff:* Laurie Schwede (x2611), Eleanor Gerber

#### **C. Questionnaire Design and Measurement: Border**

### **Communities (Colonia) Research**

This study uses ethnographic methods and other qualitative techniques to better understand unique barriers that may exist for the American Community Survey in communities along the US/Mexico border. The study uses focus groups and in-depth interviews to determine and understand the perceptions of community residents regarding various American Community Survey materials and methods. This study will also conduct a qualitative assessment of potential housing unit coverage problems.

During FY2001, staff developed a statement of work and awarded a purchase order for collaborative research with ethnographers from the University of Texas at El Paso (UTEP). Staff and ethnographers from UTEP conducted 40 in-depth interviews with border community residents in El Paso County, TX. Four focus groups with community residents were also conducted, along with ethnographic observations. Staff also conducted a qualitative assessment of the Census Bureau's address list for a specific border community in Starr County, TX. Staff began work on a draft report.

*Staff:* Manuel de la Puente (x4997)

### **D. Questionnaire Design and Measurement: Translating Demographic Surveys**

This effort has two major goals. The first goal is to convene a panel of expert translators in order to develop best practices and guidelines for the translation of Census Bureau demographic surveys from English into Spanish. The second goal of this effort is to use these best practices and guidelines to develop a conceptually and linguistically equivalent Spanish language translation of English language ACS forms. A long term goal is to use this effort as a prototype to do translations of Census Bureau demographic surveys from English into other selected languages.

Staff developed and issued a research plan and began assembling a panel of expert translators from federal government agencies, the private sector, ZUMA, and Statistics Canada. A research plan will be implemented during the first and second quarter of FY 2002.

*Staff:* Manuel de la Puente (x4997), Idabelle Hovland (DMD), Ivone Pabon-Marrero (DMD), Alredo Calvillo (NCHS)

### **E. Questionnaire Design and Measurement: Topic-based Instrument Design**

This project proposes, designs, conducts, and

analyzes research to investigate basic issues regarding the design of ACS' interviewer-administered instruments, with a particular focus on "topic-based" (in contrast to "person-based) instrument design.

Staff implemented an experiment in the Census Bureau's Questionnaire Design Experimental Research Survey (QDERS) 2000, to test a questionnaire design modification to reduce income nonresponse in a topic-based telephone interview. The design modification was the addition of a very brief statement to be read just prior to the income questions in the topic-based instrument: *We know that people aren't used to talking about their income but we ask these questions to get an overall statistical picture of your community and the nation, NOT to find out about you personally.* Analysis of the experiment indicates that the introductory statement completely eliminated the topic-based design's income nonresponse disadvantage, and in some instances actually yielded significantly lower nonresponse in the topic-based treatment. In addition, interviewers over-whelmingly preferred the topic-based format both in general, and (with the introductory statement) with regard to asking the income questions specifically. Results of the research were presented in an AAPOR paper and also to the ACS Research Group.

*Staff:* Jeff Moore (x4975)

### **F. ACS Small Area Estimation Research**

The goal of this project is to evaluate the use of demographic estimates of county population as a benchmark for the ACS. The effect of different specifications of the population frame by demographic methods and by ACS will be measured. Staff will develop small area models of population that incorporate both the ACS sample data and demographic information.

During FY2001, as a first start to coordinating small area estimates with demographic methods, a unit-level model for the ACS was developed. Staff completed the unit-level model and resulting method for small area estimates at the tract level. We included an evaluation of how well the model can predict sample-based direct estimates of within tract variability as a model check. Determining an MCMC algorithm that works for this data took a while because many of the estimates are probabilities that are close to zero. A method using adaptive rejective sampling works well but is slow. A draft paper on the model and methodology is available. This paper will be presented at the Federal Committee on Statistical Methodology (FCSM) Conference.

As a member of a newly formed ACS small area estimation work group, future emphasis will be placed on developing small area estimates of population for both ACS and Census residence rules with the aim of reconciling demographic estimates of county population counts as benchmarks for the ACS.

Staff completed a preliminary evaluation of the migration patterns of ACS respondents. This work is to provide information on the demographic technique which only uses tax-filers to determine internal county to county migration. These results will be presented at the FCSM Conference.

*Staff:* Donald Malec (x4892), Yves Thibaudeau, Nanak Chand (DSMD)

### **G. ACS-Edit/Imputation Research**

The purpose of this project is to determine the feasibility of applying and adapting an edit/imputation system created for Census 2000 using the DISCRETE prototype edit system and to-be-developed statistically valid item and unit imputation methods to the American Community Survey (ACS). The edit part of the project is: 1) to create valid code and sufficiently fast algorithms for editing; and 2) to translate traditional decennial edit rules into the Fellegi-Holt framework in a technically feasible manner. The imputation part is to impute for missing and contradictory data using statistically valid methods.

During FY2001, staff produced summary documents on the first phase of the ACS project. A Flexible Matching System was tested to determine how well it could automate the determination of matching strategies for hot-deck. New procedures for variance estimation for hot-deck imputation were developed and tested. Staff gave ACS staff personnel an additional tutorial on the DISCRETE edit system, several elementary examples of why conventional non-Fellegi-Holt methods often break down, and a small application of DISCRETE to New York Housing data that clearly illustrates how DISCRETE works.

Staff distributed a revised report evaluating the under estimation of the variance due to the presence of imputed items. The report, based on data from the American Community Survey, focuses on salary of homeowners. As suspected, the variance of salary underestimates the sampling error when item imputations are substituted for actual observations in the variance formula.

For DISCRETE edit software, the preorder routine in the set covering algorithm was successfully implemented in both of the edit generation and the error localization programs. The preorder routine speeds the software by eliminating a large number of computational paths. Several bugs were detected and fixed in the error localization program when the results from the new and old implementations of the preorder routine were compared. Staff modified DISCRETE to take the input of survey field names instead of the original names of "VAR1," "VAR2," etc. for input.

Staff developed a detailed plan and work schedule for additional comparisons between the edit/imputations in DISCRETE, the existing ACS hot-deck system, and Statistics Canada's Nearest Neighbor Imputation (NIM)

System. Staff obtained a copy of NIM software, began putting test data in a form that could be run through NIM, making (straightforward) modifications in the Ci/o code so that it would accept the test data, and examining the inputs and outputs to the system.

The NIM processing with the 1999 ACS data and specifications was straightforward, but time consuming. NIM is currently used for Canadian Census Short-Form edit/imputation. The four variables used for the NIM study are age, sex, marital status, and householder relationship. Calendar 1999 ACS specifications were translated into 16 decision logic tables required by the NIM processing of the ACS data.

The 1999 pre-edit version was completed. Substantial modification in the pre-edit was required because of changes in the edit specifications. The pre-edit program is run before the NIM or DISCRETE processing. Staff developed a more sophisticated method for combining edits that yielded substantial faster editing with DISCRETE software. The initial comparison between the NIM and DISCRETE was also completed: For NIM 4-person households, 9498 passed and 4760 failed; for DISCRETE 4-person households, 9405 passed and 4853 failed; For NIM 6-person households, 939 passed and 1190 failed; for DISCRETE 6-person households, 920 passed and 1209 failed.

*Staff:* Bill Winkler (x4729), Bor-Chung Chen, Yves Thibaudeau, Todd Williams

### **1.15 NCES POVERTY STATISTICS (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 to 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 FY2001, staff evaluated the alternative state poverty ratio and median income models using alternative independent variables in the Current Population Survey (CPS) regression models (e.g., using residuals from fitting the census regression instead of previous census data in the age 65+ poverty ratio model and median income model, and using the current IRS median income data instead of the adjusted census

median income data in the median income model). The new models were implemented for the year 2001 state poverty ratio and median income production. Staff performed the diagnostic checking of the state model results. We also developed SAS/IML software to implement the Bayesian approach for state models and tested the software using data from income years (IY) 1997-1999. This was used to check another program that was being used in production.

Staff produced the estimated sampling variances and covariances of the direct CPS state poverty ratio and median income estimates for IY 1995-1999 (extending to include IY 1999 with the results for IY 1995-1998 that were produced last year). These variance and covariance estimates provided the input data used to develop the CPS sampling error model whose results fed into the model for the CPS state estimates.

*Staff:* Elizabeth Huang (x4915), William Bell (M&S)

#### **1.16 DISCLOSURE LIMITATION METHODS (Economic Project 3491051)**

The purpose of this research is to develop disclosure limitation methods to be used for Census Bureau publicly available economic data products. Emphasis will be placed on techniques to implement disclosure limitation at the stage of processing. Disclosure research will be conducted on alternative methods to cell suppression for selected Economic surveys. Methods will be developed, tested, evaluated, and documented. We will also aid in the implementation of the methods.

During FY2001, staff provided test files and tested the Disclosure Audit System (DAS) software developed under contract to the Energy Information Administration. The key decisions on its development were made by designated members of the Confidentiality and Data Access Committee who represented the statistical agencies which funded the project. The Census Bureau received the final software and is in the process of installing it.

Staff tested a recently developed version of the linear programming method for a 3 dimensional suppression program which can be run in a warm start mode as well as the traditional (cold start) mode. Within a given column relation, a warm start refers to using information about the constraint structure of a table and the basis for the optimal solution derived for one primary suppression in the derivation of the optimal solution for the succeeding primary. Preliminary evidence is that time reductions are about 30%, and the suppression pattern is more compact, i.e., fewer secondary suppressions (about a 10 to 15% reduction), with a smaller total value, are selected. The network flow method is much faster currently, but the suppression pattern is larger than that produced by the

linear programming (warm or cold) methods and, more importantly, may not adequately protect some of the primaries.

Staff developed extensions of the 3D and 4D auditing programs that will be able to handle rounded data. These will allow for the detection of over-suppressions in a rounded table. Staff also enhanced the auditing programs to handle complex column relationships and negative values.

Staff assisted staff from the Economic Statistical Methods and Programming Division in applying cell suppression and auditing software to Manufacturing and Energy Consumption Survey data.

*Staff:* Laura Zayatz (x4955), Paul Massell, Phil Steel, Sam Hawala

#### **1.17 TIME SERIES RESEARCH (Economic Project 3491052)**

##### **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 Statistics Directorate. In coordination and collaboration with Time Series Methods Staff (TSMS), 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.

In addition to the software maintenance, support was given to the Manufacturing and Construction Division concerning X-12-ARIMA seasonal adjustment options.

X-12-ARIMA support or related seasonal, trading day or holiday adjustment support was also provided to: SAS Institute, Bureau of Labor Statistics, Department of Commerce, Federal Reserve Board, State of Washington Employment Department, Statistics Canada, Statistics New Zealand, Statistics Norway, Statistics Sweden, Eurostat, Office of National Statistics (UK), National Institute of Statistics and Information (Peru), Central Bureau of Statistics (Indonesia), Statistics Netherlands, ISTAT (Italy), INEGI (Mexico), Statistics Turkey, Statistical Service of Cyprus, DGBAS (Taiwan), the IMF, the Bank of England, Bank of Norway, Bank of Israel, the European Central Bank, Bank of Finland, Bank of Greece, Bank of Jordan, Japanese Ministry of Health, Labor, and Welfare, Government of Hong Kong, the Government of Sri Lanka, New York City's OMB, Israel Electric Company, Standard and Poor, Sanyo Management and Mitsubishi Research Institute.

Staff co-taught courses with Agustin Maravall (Bank of Spain) on seasonal adjustment for government statisticians and economists in Tallinn, Estonia, to participants from the European Commission countries, Israel and Mexico. Staff co-taught a course with staff

from TSMS on the use of seasonal adjustment and modeling diagnostics found in X-12-ARIMA on the 2001 International Symposium of Forecasters in Calloway Gardens, Georgia.

*Staff:* Brian Monsell (x2985), David Findley

## **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 and diagnostics, goes well beyond those of the Census Bureau's X-11, and Statistics Canada's X-11-ARIMA. This fiscal year's goals included 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.

Version 0.28 of X-12-ARIMA was completed and released to the public. It implements new capabilities requested by the Time Series Methods Staff (TSMS) of the Economic Statistical Methods and Programming Division and the Foreign Trade Division, extensive improvements for procedural and code consistency, better implementation of various options, and more constructive handling of inconsistent command choices by users. TSMS provides extensive testing.

Version 0.3 of X-12-ARIMA was updated with a slightly modified and improved implementation of the automatic model selection procedure of TRAMO as well as all of the new features of 0.2.8. In collaboration with TSMS, it was extensively tested and debugged. Also, a number of enhancements requested by TSMS were made to facilitate a detailed study by Golam Farooque, David Findley, and Catherine Hood on the implementation in 0.3 of the automatic time series modeling procedures of TRAMO. This study, whose results to date, are summarized in a proceedings paper, demonstrated that on average, the model choices are at least as good as TRAMO's. While this is an important milestone toward the official release of the X-12-ARIMA software, the study also identified different shortcomings of both programs' automatic model selection procedures, not all of which have yet been addressed in 0.3 (or TRAMO).

*Staff:* David Findley (x4983), Brian Monsell

## **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 included; 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; and 2) further development of a version of X-12-ARIMA that calls 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.

A study using simulated series was performed to determine how long a series is needed before the automatic model selection procedure of TRAMO provides more accurate model-based seasonal adjustment (SEATS) than the default model, and how long a series is needed before model-based seasonal adjustment is more accurate, on average, than adjustment by X-12-ARIMA with very noisy series.

An investigation was carried out of time-delay and component-enhancement and -suppression properties of the most commonly used model-based seasonal adjustment filters of SEATS. The results, which were documented in proceedings papers by Findley, and by Findley and Martin, provided some explanations for the superior performance of model based adjustment for highly irregular series. In addition, they demonstrated much more convincingly that earlier papers, the importance of frequency domain diagnostics for concurrent seasonal adjustment filters.

Staff went to Spain and Italy to work with Augustin Maravall and Gianluca Caporello on creating a version of the hybrid program X-12-ARIMA/SEATS that incorporates SEATS2001, and to plan modifications of both programs that will lead to more similar output, including essentially identical headings and formats for tables common to both programs. A preliminary version of this program was created and used for research.

*Staff:* David Findley (x4983), Brian Monsell, Donald Martin

## **D. Supporting Research, Documentation and Graphics Software for X-12-ARIMA**

The main goal of this project is to provide documentation to help users of Census Bureau time series modeling and seasonal adjustment software understand the methods and diagnostics implemented in the software, understand the methods and diagnostics implemented in the software, and how to use the software effectively. A related, secondary goal is to develop utility software to help users use the features fully and efficiently. This year's goals included: 1) collaboration with the Time Series Methods

Staff (TSMS) of the Economic Statistical Methods and Programming Division (ESMPD) to write a document to help inexperienced users of X-12-ARIMA quickly learn how to write command input files; 2) collaboration with TSMS to write a paper illustrating effective and ineffective diagnostics for comparing competing seasonal adjustments of a single time series, especially direct versus indirect adjustments of an aggregate series; and 3) document new research providing theoretical foundations for the most commonly used time series model comparison procedures of X-12-ARIMA.

For version 0.28 of X-12-ARIMA, staff produced a new version of the Reference Manual with descriptions of new options and explanations of how the program handles certain inconsistent command input. A file containing all of the changes made to the Reference manual in the preceding year was sent to TSMS so that their translation into WordPerfect of the Manual could be updated.

A document entitled, "Getting Started with X-12-ARIMA Input Files on Your PC" was written by Catherine Hood and Brian Monsell. A proceedings paper entitled, "Comparing Direct and Indirect Seasonal Adjustments of Aggregate Series" was completed by Catherine Hood and David Findley. A proceedings paper summarizing newly developed theory for the out-of-sample forecasting based model comparison diagnostics of X-12-ARIMA was completed by David Findley. A co-authored paper by David Findley and two academic researchers that provides fundamental theory supporting the analysis of within-sample forecast errors of models for time series arrays, including benchmarked on seasonally adjusted data, was published in *The Annals of Statistics*. Two proceedings papers by Raymond Soukup and David Findley were published. One, an invited paper, provides background research supporting the spectrum diagnostics of X-12-ARIMA and the criterion used with them to indicate modeling or adjustment inadequacy. The second describes and illustrates a generalization of X-12-ARIMA's approach to modeling moving holidays and addresses interpretational issues. A co-authored paper by David Findley and an external researcher, which provides the first mathematically complete theory for the application of Akaike's AIC model selection criterion for univariate and multivariate time series models, was accepted for publication by the *Journal of Multivariate Analysis*.

*Staff:* David Findley (x4983), Brian Monsell, Donald Martin

#### **1.18 STATISTICAL CONSULTING/POSTAL RATE COMMISSION**

#### **(Methodology and Standards Project 7676)**

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 FY2001, the staff provided extensive technical reviews of survey methodology and estimates, testimony, library references, and other documentation related to postal rate and classification issues on the Commission's 2001 docket. In addition, we developed a general set of guidelines intended for use in ensuring data collection and estimation quality for recurring postal surveys, and in assessing the validity of results from such surveys.

*Staff:* Leroy Bailey (x4917)

#### **1.19 COMPUTER ASSISTED SURVEY INFORMATION COLLECTION (CASIC) (Methodology and Standards Project 4100)**

##### **A. Imaging and Paperless FAX Image Reporting System (PFIRS): M3 Survey Targeted Test**

This project involves developing a Paperless Fax Imaging Reporting System (PFIRS) that processes a sample of the Manufactures' Shipments, Orders, and Inventories (M3) monthly questionnaires received by fax. M3 questionnaires will be received by the HostFax software and routed to the Elite version of the Teleform Optical Character Recognition (OCR) software. This version of the PFIRS system was developed for the Windows NT system.

The project is now in full production. Staff is acting as a consultant to trouble shoot any problems.

*Staff:* Tom Petkunas (x1601)

##### **B. Response Mode & Incentive Experiment (RM&IE)**

(See Decennial Project E.)

##### **C. Metadata Systems Research**

The purpose of this project is to conduct research into the collection, use, and dissemination of metadata. This research includes development of metadata standards, repositories, tools, and educating agency personnel about the latest developments and assisting with the implementation of these new methodologies.

During FY2001, staff progressed from early pilots

into production software products. Products of note include: 1) The ISO/IEC 11179 compliant Data Element Registry (DER), a core component of the Corporate Metadata Repository (CMR), was released this year. Many other agencies and organizations are very interested in the DER. The DER is installed at FAA and accessible via the Internet at [www://fdr.faa.gov](http://fdr.faa.gov). 2) New requirements have continued to emerge for the paper forms questionnaire design tool as the Economic Directorate analysts began to actually design and lay out paper forms. A major addition to this user interface tool supporting comparability of codes across time and to BLS codes was designed, coded, and tested during this quarter. The extensions to this tool required to support data capture for the Economic Censuses were designed and agreed upon; they will be coded and completed by the end of the first quarter of 2002. 3) Support for automated data validation of tier one product and tier two summary data set metadata was completed this year. The CMR is now receiving the product files from the Geography Division (GEO), validating the contents, notifying GEO of any errors with a tool to allow them to view the erroneous record directly, and making them available to DADS American FactFinder with no intervention required. This makes the effort of providing metadata to DADS AFF much less labor-intensive for GEO. 4) The Portal technology employed by the CMR team has received very enthusiastic response from many other parts of the Census Bureau. An architecture detailing how portals can best be deployed is under development and scheduled for completion in the first quarter of 2002. 5) A collaborative web portal was produced for the CPS branch in the Demographic Surveys Division, and a rollout to BLS is scheduled. This collaborative portal will enable CPS branch and BLS to enter, share, and search for documents. BLS is very interested in this for its own user-controlled organization and management of documents.

The basic CMR core components and several applications using the CMR core are scheduled for completion in 2002.

*Staff:* Sam Highsmith (x1928)

## **1.20 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 (x1030), Hazel Beaton, Alice Bell, Maria Cantwell, Robert Creecy, Manuel de la Puente, Gloria Prout, Easley Hoy, Barbara Palumbo

### **B. Computer Support**

The Computer Support staff provides computer support to the entire Methodology and Standards Directorate, 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:* Chris Dyke (x4987), Neal Bross, Chad Russell

## 2. RESEARCH

### 2.1 & 2.2 GENERAL RESEARCH (Census Bureau Project 0351) (Methodology and Standards Project 1871)

#### *Statistical Methodology*

##### **A. Disclosure Limitation Methods**

The purpose of this research is to develop disclosure limitation 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 data processing. Methods will be developed, tested, evaluated, and documented. We will also aid in the implementation of the methods. (Also partly funded under Project 3491051.)

During FY2001, staff implemented Roque's method for masking data using simulated data and adding noise from a mixture of normal distributions (2000 Ph.D. Dissertation, University of California, Riverside). Matching software will be used to test the effectiveness of the masking procedure.

Staff worked with staff from the Population Division (POP) to finalize disclosure limitation plans for the Census 2000 Public Use Microdata Samples (PUMS). Staff finalized specifications for the additional swapping to be applied to the PUMS. Staff also worked with POP staff to finalize the list of Census 2000 sample data variables which will not be swapped, and the list which will be used to find partner households. One variable remains in question and will be tested.

Staff worked with the American FactFinder staff to finalize disclosure limitation specifications for Tier 3 and also documented methodological support for the geographic thresholds used for public use microdata files. Staff worked with staff from HHES and other agencies to finalize plans for the Equal Employment Opportunity tables.

Staff examined the effects of a minimum-size roll-up of zip code tabulation areas (ZCTAs) on the disclosure risk for tables in SF3. ZCTAs often overlap tract boundaries and can lead to complementary disclosure problems through addition and subtraction of pieces of geography ("subtraction geography"). Results are not definitive: while the roll-up by itself, shows improvement, the subtraction geography is dominated by tract structure and only shows a 10% risk reduction in terms of number of unique households based on certain characteristics. It can be argued that since our disclosure prevention procedure does not have as good coverage on that 10%, it remains a problem.

Staff worked with staff from several divisions to

finalize a plan (including disclosure limitation) for the User Defined Areas Program for Census 2000.

The Census Bureau book, *Confidentiality, Disclosure, and Data Access --Theory and Practical Applications for Statistical Agencies*, to be published in January of 2002, has been sent to the publisher. A conference will accompany its release.

Staff developed a disclosure limitation research agenda to be coupled with a privacy research agenda in search of funding.

*Staff:* Laura Zayatz (x4955), Philip Steel, Paul Massell, Sam Hawala

##### **B. Research File Development-Decennial Application**

(See Decennial Project A.)

##### **C. Small Area Estimation-Demographic Applications**

During FY2001, staff developed a model-based methodology for evaluating/estimating small area adjusted counts that do not borrow data outside of the small area. Staff presented an overview of it at the International Conference on Small-area Estimation and Related Topics. Recently, we included a selection model, to account for the A.C.E. sample design, into the inference process, and have formulated an extension of the model which, when implemented, will smooth rates across neighboring LCOs.

Staff completed the unit-level model and resulting method for small area estimates at the tract level for ACS. (See Decennial Project C and Demographic Project 4200-F.)

*Staff:* Don Malec (x4892)

##### **D. Compensating for 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: to 1) 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.

During FY2001, staff reviewed theory underlying various model-based procedures for nonresponse adjustment and empirical results based on such models



used to evaluate methodology employed for the Survey of Income and Program Participation. (See highlights of Demographic Project 1465 C for additional details).

*Staff:* Leroy Bailey (x4917)

#### **E. Some Special Topics in Mathematical Statistics**

(See highlights of Demographic Project 1465 E.)

#### **F. Seasonal Adjustment**

(See Economic Project 3491052.)

### **G. ADDITIONAL TOPICS**

#### **Disclosure Avoidance for Microdata**

The current approaches for limiting disclosure risk for continuous variables in the public use microdata are top- and bottom-code and rounding. These approaches significantly distort variance and correlation between variables. Alternative approaches or remedies for the weakness will be investigated.

During FY2001, staff developed multiplicative noise models for masking continuous variables. For the purpose of obtaining first two moments of the unmasked data from the masked, the normal distribution was assumed for the unmasked data. New models were also developed without distributional assumptions.

Staff developed new computational procedures for the mixtures of additive noise approach of Roque (2000 Ph.D. Dissertation, University of California, Riverside). Staff wrote new C++ rank swapping, ordinary additive noise of Kim (1986), and mixtures of additive noise to the Kim-Winkler data (1995) using the information-loss and disclosure-risk framework introduced by Domingo-Ferrer and Mateo-Sanz (2001). Further research with different databases and additional information-loss metrics is in progress.

*Staff:* Jay Kim (x4907), William Winkler, Robert Creecy, William Yancey

### ***Statistical Computing and Technology***

#### **A. General Record Linkage Support 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. (This project is also funded under Decennial.)

During FY2001, staff wrote and documented BigMatch software that allows matching of moderate size files having between 1 and 100 million records, with large files having between 100 million and 4 billion records. The software eliminates sorting passes of the large file that can be prohibitively expensive in

terms of disk space (up to 12 terabytes for a 4 terabyte file) and time (up to 6 weeks for 10 passes). For special purpose applications such as matching against a Decennial Census, the reformatting pass can be eliminated by adding about 50 lines of code. Staff briefed personnel in the Planning, Research, and Evaluation Division on the Linking Employer-Household Data (LEHD) project. The BigMatch software runs on all Census Bureau machines, including the 64 bit Compaq Alpha machines.

Staff wrote a version of BigMatch software that contains new caching for input/output. Preliminary testing on moderate size files indicate only slight improvement in speed. Staff prepared a tutorial on Expectation Maximization methods and how to program them in a record linkage application. Staff also developed a new metric for re-identification software that is used in confidentiality experiments.

Staff collaborated with, and shared papers, software, and documentation on record linkage with researchers at numerous agencies including: University of Houston, Ohio State University, Statistics New Zealand, Cornell University, Statistics Canada, University of Chicago, University of Virginia, Internal Revenue Service, Purdue University, Ministry of Social Development and Economic Security in British Columbia, and University of Arizona, Revenue Canada, ISTAT in Rome, University of Vienna in Austria, University of Minnesota, Oxford University, Drexel University, Telcordia, the Federal Reserve Bank in Chicago, Census of Israel, Hebrew University, Office of National Statistics of the United Kingdom, Medstat Inc., Statistics Sweden, University of Kentucky, LexisNexis, Inc., INRIA, NCHS, Czech Academy of Sciences, Vienna Institute of Technology, Free University of Berlin, Israel Central Bureau of Statistics, University of Florida, Italian National Statistical Institute, and various divisions within the Census Bureau. A paper on developing analytic programming abilities was sent to a researcher at Eurostat.

*Staff:* Bill Winkler (x4729), Ned Porter, William Yancey

#### **B. General Edit/Imputation Support**

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 FY2001, staff reviewed the prototype LEO software and did initial test runs with artificial data provided by Statistics Netherlands. Staff tested the software with two different Census Bureau economic data sets, test data from ASM and ACES survey data.

Staff used and tested two new prototype software from Statistics Netherlands - EC system and EditSet.

The EC system is used to ensure that imputed data pass all edits. EditSet is used to determine a non-redundant set of edits. For the Census ASM data, using EditSet before running the updated error localization program Leo, ensures that the number of edits generated at every node of the tree does not grow too much, and prevents Leo from running out of allocated memory.

Staff refined the C++ version of the DISCRETE edit system. The software runs on all Census Bureau computer systems.

Staff completed a new report, "Variance Decomposition for the Imputed Average of Salary Income in the American Community Survey." This report summarizes research on the imputation of the household financial variables for the ACS. The focus is on evaluating the relative bias in variance estimator that treat the imputed data as if they were reported. Staff wrote a first draft of a tutorial of the SPEER editing software called "Editing Continuous Economic Data with SPEER Editing System."

Staff met with staff in the Housing and Household Economics Statistics Division (HHES) to discuss the respective responsibilities in designing the imputation methodology for the Residential Finance Survey. HHES subsequently issued a description of the tasks and responsibilities. Staff released a report to HHES reporting specific models for the imputation of variables related to mortgage in the Residential Finance Survey.

Staff made additional theoretical extensions to the Fellegi-Holt model. Whereas the earlier extensions showed the formal validity of NIM, the later ones specifically indicate how NIM is highly dependent on large numbers of high-quality donors. In particular, the Fellegi-Holt model with suitable model-based imputation, would suggest imputing one value in one field to assure the record satisfies all edits, and preserves multivariate analytic properties. In NIM and hot-deck, if a suitable donor is not available, then values in three or more fields might be changed so that the record satisfies edit restraints. In some situations such as rare populations, unforeseen unusual population characteristics, or race-tenure, lack of suitable donors could be a problem.

For discrete data, staff produced a brief document on how to perform imputation using Bayesian Networks. The imputation method preserves joint relationships and assures that edits are satisfied for imputed data.

Staff collaborated with, shared papers, provided information about machine learning and statistical data editing with researchers at the Office of National Statistics of the United Kingdom, staff at George Mason University, and staff from other divisions at the Census Bureau.

*Staff:* Bill Winkler (x4729), Bor-Chung Chen, Maria Garcia, Yves Thibaudeau

### **C. Exploratory Data Analysis (EDA) and Graphics**

This project entails devising cutting-edge graphical research aimed at fostering new Census Bureau data analysis techniques and discovering key Census Bureau methodological problems. The ultimate goal of this project is to ensure that this research, these discoveries, and these new techniques are actually implemented into day-to-day use by Census Bureau data analysts--and then spread to broader Census applications. This project includes conducting formal research into the efficacy of EDA methodology, inventing new graphical forms/methods, and formulating these data analysis techniques into easy to implement (point and click) graphical EDA procedures. This is to be accomplished by forming/heading up a vibrant Census Bureau Graphics User's Group, giving periodic division seminars highlighting these new graphical discoveries, teaching an ongoing comprehensive EDA course, and working one-on-one with Subject Matter Specialists in selected areas of the Census Bureau, all to ensure that these new EDA research techniques are actually implemented at the Census Bureau.

During FY2001, staff continued to teach a special purpose EDA course to Census Bureau employees as well as outside audiences. The success of this course has led to invitations to teach it at a number of different formats. The course has now been taught at BLS, DOT-NHTSA, Statistics Canada, Sweden, Italy, as well as a specially designed EDA course taught at the United Nations.

As part of these teaching efforts, staff has added substantial new material to the comprehensive reference manual for this course. It is not only used to teach the EDA course, but it is also intended to provide users with a database of creative and alternate ways of analyzing a variety of data sets. It provides a wide number of examples of the application of general graphical techniques and EDA data analysis concepts to specific areas of the Census Bureau data analysis tasks. Staff also prepared a new (50-page) JMP and Insight software "Cook book" which provides subject matter specialists with an easy-to-implement guide.

In response to a special request, staff organized and presented a series of new graphics workshops. These 3-day workshops entail the conversion of Census Bureau data into a graphically enhanced PowerPoint-ready presentation format. They include teaching the basics of EDA and PowerPoint software, the fine points of the proper graphical representation of data, and practice with presenting data using these PowerPoint tools.

And finally, staff: presented a number of special application invited papers on interactive EDA

techniques and “Live Graphs;” continues to head up the Census Bureau Graphics User’s Group; provided a new SNAP software capability; and developed a new type of graph - a “fingerprint” plot which allows analysts quick visualization capabilities.

*Staff:* Dave DesJardins (x4863)

#### **D. General VPLX Development and Support**

This project will develop new methods and interfaces for VPLX general variance estimation software. 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 applications of VPLX.

During FY2001, staff continued to provide Hot-Line support for VPLX to the program directorates at the Census Bureau. Long-term support included research supporting multiple CPS Supplements, the SIPP Variance System, the Census Long Form variances, variances for the Accuracy and Coverage Evaluation Survey, and the variances for the Survey of Construction.

Staff continued to develop the VPLX documentation on the Census Bureau Intranet. Staff conducted three VPLX User Group meetings and taught one computer-based course titled, “Advanced Topics in VPLX,” that focused on learning the new features of VPLX using the new SAS-based VPLX Code Builder. Attendees included users from the program directorates. Both the Code Builder and the latest version of VPLX are now available for the PC and downloadable from the VPLX Intranet site.

*Staff:* Aref Dajani (x4991), Sam Highsmith, Elizabeth Huang, Mary Ann Scaggs, Bob Fay (M&S), Allan Heckert (NIST)

#### **E. Metadata Systems Research**

(See CASRO Project 4100 C.)

#### **F. ADDITIONAL TOPICS**

##### **Metadata Standards Research**

The purpose of this project is the development of metadata standards.

The Methodology and Standards Council completed its review of the Metadata Standard.

*Staff:* Bill LaPlant (x4887)

##### **IT Accommodation Research**

This research is intended to support the further development of new assistive technology and methods

developed by the Archimedes Project of Stanford University. Previous research has shown that the initial devices can be applied several times more quickly than traditional aids and be at least as effective. The purpose of the technology is to isolate assistive devices needed by people with disabilities to use Information Technology (IT). This has enabled people with disabilities to be placed in IT intensive temporary positions throughout the Census Bureau. Success of this project will enable the Census Bureau to take a leadership position, because of our unique environment, in meeting the goals of *Executive Order 13078, Employment of Adults with Disabilities* and the requirements of *Executive Order 13164, “To Facilitate the Provision of Reasonable Accommodation”* and of *Public Law 105-220, Amendments to the Rehabilitation Act, Section 508*.

During FY 2001, work was completed to support either direct compliance by the Census Bureau with *Section 508 of the Rehabilitation Act of 1973* as amended by the *Workforce Investment Act of 1998 (PL 105-220) (codified as 29 U.S.C. § 794)* or to support the ability of Electronic & Information Technology (E&IT) suppliers and manufacturers to provide goods and services that comply with current or future versions of the Section 508 regulations. Specific accomplishments include: 1) modification of Census IT Standard 17.0.1 (Design and Development of Accessible Software) and Census Standard 18.0.1 (Design and Development of Accessible Web-based Application), both to ensure 508 compliance; 2) support of IT Access Interface Technical Sub-committee of the National Committee for IT Standards, which is developing standards that will support the development of Assistive Technology (AT) and E&IT that can be connected without complex tailoring or integration; 3) consulting services to the GSA Center for IT Accommodation on IT accessibility, standardization, and related issues.

*Staff:* Bill LaPlant (x4887)

#### **Survey Methodology**

##### **A. Usability Laboratory**

The usability laboratory provides a research, evaluation, and consulting facility for achieving good user-centered designs in the Census Bureau’s data collection, data dissemination, and administrative software.

*Outreach:* During FY2001, the lab sponsored three seminars for employees presented by nationally recognized researchers. We developed 2 of 3 prototypes for a usability knowledge base to be used by Census Bureau employees: an internal Website (to

disseminate best practices and tools for user-centered application interfaces) and several documents containing standards and guidelines for good Web design. We hosted a large group of visitors from the National Cancer Institute who were interested in building their own usability laboratory. Staff members presented papers, discussions, and posters about usability at professional meetings. Staff gave talks and demonstrations about usability to interested internal and interagency groups.

*Contracts:* To augment our ability to meet the Census Bureau's usability research, design, and evaluation needs, the lab contracted with several organizations; The University of Maryland's Human Computer Interaction Laboratory (for research and development), UserWorks, Inc., CompuWare, Inc., Usability Systems, Inc., and Humans and Computers, Inc. (for support).

*Facilities:* We added an ability to do time-coded behavior logging and video editing in connection with usability testing. This was done by upgrading software and hardware, preparing detailed instructions and training staff. We installed additional memory and a CD-ROM writer on the video editing equipment. As a result of these improvements, we are able to produce video clips from usability tests and include them in client reports that we write onto a CD-ROM. We began to implement an "Alternative Testing Environment" for software developers to test their prototypes for compliance with Universal Accessibility standards, and for usability on less advanced equipment such as legacy browser software, non-Windows operating systems, and telephone modems. A researcher from the University of Virginia installed the eye tracking equipment that we leased for the summer. It is available for use by researchers.

*Staffing:* We recruited and employed an academic-year student intern, six summer interns, and a full time professional researcher. Staff attended training courses at professional usability meetings. Staff and selected clients attended training at the Open House sponsored by the Human-Computer Interaction Laboratory at the University of Maryland. A staff member attended a short course in Economic Surveys.

*Staff:* Kent Marquis (x4719), Roni Cimperman (EPCD), Joyce Farmer, Larry Malakhoff, Krista Kennedy, David Mingay, Laura Mullin, Betty Murphy, Beth Nichols, Erica Olmstead, Keri Rainsberger (HHES), Lorraine Randall, Myron Smith

#### **A.1 Generalized Instrument Design System (GIDS)**

The Generalized Instrument Design System (GIDS) is a multifaceted endeavor of the Economic Directorate to

coordinate the content and design of Economic Census survey instruments, paper and electronic (Web and diskette). Usability staff, in conjunction with staff from the Economic Statistical Methods and Programming Division (ESMPD) and the Economic Planning and Coordination Division (EPCD), will evaluate the usability of several applications within the GIDS system.

During FY2001, staff helped create a user-centered style guide to use for the 2002 Economic Censuses Electronic Forms. This style guide will be used by forms designers to ensure a consistent design across the more than 600 electronic forms needed for the 2002 Economic Censuses. Staff from the economic subject matter areas, our division, the electronic reporting branch of the Economic Directorate, and the contractor used design standards, usability principles, results from past electronic form experiences, and results from usability tests to create the rules listed in the style guide. Usability staff were responsible for two rounds of testing. The first round focused on the wording, timing, and style of edits and edit error messages. Findings were documented in the *Human-Computer Interaction (HCI) Memorandum Series #39*. The second round of testing focused on the form layout and navigation. Findings were documented in the *HCI Series #49*. Papers were drafted for the FCSM and Statistics Canada conferences on the style guide creation and the usability testing used to support its creation.

*Staff:* Beth Nichols (x4865), Kent Marquis, Betty Murphy

#### **A.2 Private Schools Survey Usability Testing**

During 2001-2002, the Private School Survey (PSS) will offer the option of completing an Internet version of the PSS to approximately one-half of respondents who receive a mailed questionnaire. The Usability staff will coordinate usability evaluations of the Internet form.

During FY2001, the Internet questionnaire was prepared by CASRO staff and a contractor, BTG, and consisted of a single scrollable form. Usability Lab staff conducted an expert review of the questionnaire and prepared a report. The Internet questionnaire was modified based on the findings. Subsequently, staff from the Usability Lab, the Demographic Surveys Division, and the contractor, UserWorks, conducted exploratory usability testing of the questionnaire with the principals of eight schools. A substantial number of usability problems were identified, including several that resulted in failure to accomplish tasks or loss of data--for example, inability to identify the questions

that required correcting, or to return to the list of items to check. Changes were made to the questionnaire based on these findings and a final usability test was conducted with principals of four additional schools. A number of further changes were made to the questionnaire based on several additional usability problems that were identified. UserWorks and Usability Lab staff prepared a report on each round of testing, documenting the test methods, results, and recommendations.

*Staff:* David Mingay (x4971)

### **A.3 Survey of Doctoral Recipients Usability Testing**

The Census Bureau will offer a Web version of the Survey of Doctorate Recipients (SDR) to a sample of participants in the 2001 SDR fielding. Division staff will coordinate the usability testing of the SDR instrument. UserWorks will conduct two rounds of tests using the Census Bureau Lab.

During FY2001, the contractor, UserWorks, created a test plan and protocol. Testing was postponed due to concerns of the sponsor, the National Science Foundation (NSF), regarding mode effects. Staff provided an expert review on two early versions of the SDR electronic form. They also provided an expert review to NSF staff on revisions to current paper questionnaire. Eventually, the usability testing, and plans to offer an electronic form were abandoned because of the sponsor's dissatisfaction with the prototype electronic questionnaire produced by the programmers. Staff will provide expert reviews of NSF paper questionnaires, and encourage the sponsor to reconsider using electronic questionnaires in future years.

*Staff:* Beth Nichols (x4865), Cleo Redline, Kent Marquis

### **A.4 Project Management Repository (PMR) and Quality Management Repository (QMR)**

The purpose of this project is to evaluate the usability of two Census Bureau Intranet sites. These sites are intended to enable internal users to share, manage, and disseminate the Census Bureau's best practices, standards, and guidelines in both project and quality management. Usability will be key to actual usage and user-satisfaction levels.

During FY2001, we collaborated with the Computer Assisted Survey Research Office (CASRO) in planning and conducting usability testing of the PMR and QMR Web sites. UserWorks, Inc. provided data-logging support. We prepared a report documenting testing methods and prioritized results. We also described this work in a paper presented at an international conference.

CASRO planned to implement our recommendations and conduct further usability testing in FY 2002.

*Staff:* Betty Murphy (x4988), Kent Marquis

### **A.5 Evaluation of the Telecommuting Pilot**

The Planning, Research, and Evaluation Division (PRED) asked our division to assist in testing a series of Internet questionnaires about the effect of telecommuting on measures of performance, productivity, and morale.

During FY2001, Usability Lab staff conducted an expert review of the pre-pilot survey questionnaire, and contracted with UserWorks to conduct an 8-hour training program in usability methods for PRED and the Human Resources Division (HRD) staff. With technical assistance from Usability Lab staff, PRED and HRD staff conducted a five-person usability test on the pre-pilot survey questionnaire in the Usability Lab facilities. They have since used the Lab facilities for additional usability testing on this project without requiring further technical assistance.

*Staff:* David Mingay (x4971)

## **B. Usability Laboratory Research**

### **B.1 Library Media Center Persuasion Experiment**

For the 1990-2000 Library Media Center Survey, a split panel design was used to test the effects of a "motivational" flyer on Web use rates. Nonrespondents in the experimental panel also received follow-up telephone calls emphasizing Web use. Prior to the follow-up, the experimental panel had significantly lower response rates, and neither group submitted many forms via the Web. After follow-up, a much higher proportion of the experimental panel submitted forms using the Web. Overall response rates were the same for both groups.

Theory suggests that offering more than one reporting mode should increase response rates. Providing more options to report potentially decreases respondent burden if one mode is more burdensome than another. However, results from two independent surveys offering both a Web and paper reporting option have shown that the addition of a Web option or "highlighting" the Web option decreases initial response rates. For the 1990-2000 Library Media Center Survey (LMC), a split panel design was used to test the effects of "motivational" flyer on Web use rates. Nonrespondents in the experimental panel also received follow-up telephone calls emphasizing Web use. Prior to the follow-up, the experimental panel had significantly lower response rates, and neither group

submitted many forms via the Web. After follow-up, a much higher proportion of the experimental panel submitted forms using the Web. Overall response rates were the same for both groups. The Usability group undertook to present existing results and to learn more about the causes of the unexpected response rate effects.

Division staff analyzed data from the LMC experiment and presented those results at the AAPOR conference. Staff noted that response rates also suffered in the American Community Survey (ACS) panel offering a Web option. So we conducted an applied behavior analysis survey of a small group of ACS nonrespondents to determine the reasons for nonresponse. Analyses, presented in a memorandum to the ACS research group, suffered from a lack of statistical power. There was no evidence that intent to use the Web option elicited more procrastination and subsequent nonresponse than intent to respond using the paper form. Further nonresponse follow-up research with larger samples is needed.

*Staff:* Beth Nichols (x4865) , Kent Marquis

## **B.2 Remote Usability Testing Methods**

The Customer Liaison Office has encouraged the Usability Lab to develop methods equipment, software, and contractual relationships to conduct usability tests using participants at remote Census Information Centers (CICs). The staff of the Usability Lab and the Telecommunications Office are collaborating to develop the remote testing capability and to evaluate it.

During FY2001, staff successfully prototyped a remote system based on Polycom 512 Viewstations (for teleconferencing) and Microsoft Netmeeting (for application sharing). Division staff conducted a number of evaluation studies: four usability sessions using the Census.gov web site; seven cognitive interviews on an advance letter for the SIPP; a cognitive interview concerning the Bureau's Respondent Identification Policy; two focus groups on SIPP with Field Representatives at Regional Offices; a focus group on the planned Census usability Intranet site with programmers at the Jeffersonville Processing Center. Although a number of problems were identified, including the loss of the remote connection on one occasion, the results indicated that remote testing is a valuable, feasible methodology - e.g., providing pictures and sound of high quality, and earning high participant acceptance. Staff submitted a report outlining the benefits and limitations of remote testing that were identified in these evaluation studies, and presented the findings at a Principal Researchers' meeting. An expansion of the remote testing program

was approved. We contracted with two additional Census Information Center sites, one in Los Angeles and one in San Francisco, purchased and tested new equipment, and prepared to ship and install it.

*Staff:* David Mingay (x4971), Kent Marquis, Chris Dyke, Terry DeMaio, Catherine Keeley, Lorraine Randall, Ashley Landreth, Chad Russell

## **B.3 User-Interface Standards and Guidelines**

The purpose of this activity is to develop user-interface design standards and guidelines to foster usability, consistency, and accessibility across Windows-based and Web-based applications/sites for data collection, data analysis, data dissemination, and internal Census Bureau functions. Additional objectives are: 1) to link these guidelines to other IT standards and style guides developed for user-interface designers and implementers; 2) to put them in a form most useful for users.

During FY2001, staff completed the development of design standards and guidelines for Web-based user interfaces. We chaired the panel of team members who responded to questions at a Bureau-wide standards forum presented by the IT standards branch. Following the close of the commenting period in early FY 2002, we will head the revision and updating of the standards and guidelines, which are due for release in January 2002. We are considering undertaking a similar effort to develop standards and guidelines for Windows-based user interfaces.

*Staff:* Betty Murphy (x4988), Kent Marquis, Bill LaPlant

## **B.4 Visualization Research**

The goal of this research is to explore possibilities for developing and applying flexible data-visualization techniques to Census Bureau data for both internal use and external data dissemination in collaboration with the University of Maryland's Human Computer Interaction Laboratory (HCIL) and Professor Ben Shneiderman.

During FY2001, the HCIL assisted the Census Bureau's efforts to refine the CD version of the Dynamaps visualization tool by improving the software, addressing metadata issues more fully, and creating online help facilities. They initiated feasibility studies on parallel tracks to develop Dynamaps for the Web (testing Visual Basic, HTML, and Java for full-scale versions and DHTML for a PDA version). Work continued on the most promising versions, Java and PDA. HCIL researchers also completed 2 technical reports about Census Bureau issues: 1) On-line data tables, showing that the query preview visualization architecture speeds user performance and dramatically reduces network load; and 2) Visualization Tools,

highlighting, with examples, the main design issues and technical problems to be solved to produce a viable interactive product for the Web.

*Staff:* Kent Marquis (x4719)

### **B.5 Electronic Questionnaire Navigation Research**

This is long-term research with the University of Maryland, directed by Professor Kent Norman. The purpose is to understand principles and identify guidelines for designing electronic questionnaires for self-administration by establishment and household respondents. Topics include page vs. Scroll formatting, how to manage conditional branching (skip patterns), the presentation of edit error messages, the coordination of information in company on-line databases with questionnaire demands, and the effect of one-time vs repeated surveys on performance.

During the year, Professor Norman and his research assistants completed three experiments about: 1) the transfer of training and experience in longitudinal establishment surveys, 2) interface designs for conditional branching in on-line questionnaires, and 3) the timing of presenting conditional edit error. Reports are in preparation.

*Staff:* Kent Marquis (x4719)

### **B.6 Usability Intranet Site**

With contractor support, staff will create and install an Intranet site to disseminate knowledge to Census employees about user-centered design and about tools useful in the design process. Staff will evaluate the site.

During FY2001, the Lab contracted with UserWorks, Inc. to produce an Intranet site according to our general specifications. UserWorks delivered a prototype site toward the end of the year, but they were not able to implement several critical features. We are delaying implementation until we can add some version of the critical features and assure ourselves that the content is consistent with the existing usability knowledge base and that it is adequate for meeting user needs. To determine critical content and features, and to establish a baseline for future evaluation, staff conducted focus groups with Census Bureau software developers and managers to learn the general level of knowledge about usability, and to seek advice about the content and functionality of the Website. Then staff designed and fielded an online questionnaire to describe potential users of the site. Staff determined sample sizes, specified the sampling procedures, and drew a sample of Census Bureau employees. They conducted a pilot mailout with a subsample and developed new, automated procedures to scale-up for the main sample mailout. They presented the results

from the focus groups and the baseline survey at the AAPOR meetings.

*Staff:* Kent Marquis (x4719), Krista Kennedy, Larry Malakhoff

### **B.7 Data Dissemination Style Guide**

The objective of this DADS-sponsored effort is to provide detailed guidance on user-interface design to designers and developers of data-dissemination software tools for the Census Bureau (e.g., Internet/Intranet Web sites, CD-ROMs). This detailed guidance is intended to foster a consistent and accessible corporate look and feel, both within and between such tools, in the interest of improving the end user's experience of using the Census Bureau's software.

During FY2001, staff coordinated development of this style guide with the Decennial Systems and Contracts Management Office contractor personnel from IBM. We commented on draft materials and provided facilities for meetings of the style guide review team. Following the contractor's delivery of version 1.0 of "User Interface Web Style Guide for Data Dissemination Product Development," we began an assessment of the style guide for content and presentation. We developed a concept for a visual table of contents to improve the style guide's usability.

*Staff:* Betty Murphy (x4988), Chad Russell, Kent Marquis, Veronica Cimperman (EPCD), Laura Mullin, Erica Olmsted, Keri Rainsberger (HHES), Myron Smith

### **B.8 Dynamaps**

Dynamaps is a desktop application that we are developing as a flexible data-visualization tool for both internal use and external data dissemination via CD-ROM and the Internet. It was originally developed by Ben Shneiderman's group at the University of Maryland. The Census Bureau will undertake an iterative program to refine and evaluate the CD-ROM application for usability.

During FY2001, the Human Computer Interaction Lab at the University of Maryland completed revising the code to enhance the existing dynamic application. Improvements included allowing multiple selections of regions and a better zooming mechanism. Staff prepared a prototype on a CD-ROM of the U.S.A. Counties data, making additional changes to the interface. With the assistance of our contractor, UserWorks, six Census Bureau employees who work with Census data products, were administered a series of tasks to determine their efficiency and accuracy when doing the tasks, and their satisfaction with the

interface. All testers experienced a significant amount of difficulty in doing most of the tasks, and gave relatively low satisfaction ratings. On average, if no hints were given, only 54% of tasks were successfully completed in the time given. Ability to understand and use the scatter plot function was particularly low. After changes have been made to the interface in response to these findings, another round of usability testing will be conducted.

*Staff:* David Mingay (x4971), Kent Marquis, Tom Petkunas, Marty Appel, Erica Olmstead, Nathan Summers

### **B.9 Census Web Site Evaluation Project**

Under the sponsorship of the Census Bureau's Web Site Transition Team, summer interns will assess the usability of selected domains of the Census Bureau's public Web site and make recommendations for improving the user experience. Domains to be evaluated include Quick Facts, Economic Census, Population Estimates, Poverty, and Housing.

The interns completed the five usability evaluations. They identified generic classes of users and user tasks, set usability goals with the help of site developers, prepared testing protocols, recruited testers, conducted usability testing in the lab and with remote testing facilities, analyzed the videotapes and log notes, identified key usability issues, located video clips that illustrated each issue, and prepared final reports on CD-ROMs. Some evaluations included tests of low-fidelity prototypes designed to overcome identified usability problems. The group also contributed to the style guide, created a standard user-satisfaction questionnaire with sound psychometric properties, and conducted eye tracking research.

*Staff:* Kent Marquis (x4719), Larry Malakhoff, Roni Cimperman (EPCD), Laura Mullin, Erica Olmstead, Keri Rainsberger (HHES), Myron Smith

### **C. Quick Turnaround Pretesting for 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 FY2001, staff worked on five short-term projects. First, we completed a multi-stage project to evaluate and revise the advance letter for the Survey of Income and Program Participation (SIPP). Staff completed several rounds of cognitive interviews and

found that the information contained in the letter needed to be reorganized to present information in the order requested by respondents, the letter needed to decrease the saliency of problematic topics that could be better handled by the Field Representatives (FRs), and that shorter sentences, less complicated syntax, and fewer academic terms would improve the presentation of the letter. Based on these results, the letter was revised and approved with minor changes by an oversight working group. The revised letter was implemented in the SIPP Methods Panel, where it has been greeted with extreme enthusiasm by the FRs.

Second, we developed alternative versions of the respondent identification policy question for SIPP and conducted cognitive research to evaluate them. The research found that one version was superior to the others in eliciting informed responses. This question was implemented in the SIPP Methods Panel.

Third, we conducted an expert review of the 2002 Workplace Risk Supplement to the National Crime Victimization Survey (NCVS.) This review identified problems with the combination of the universe for the survey and the specific jobs being asked about, which could cause problems in reporting. Our suggestion to ask questions about the job identified in the NCVS screener, rather than allow the respondent to identify a potentially different main job, was accepted by the sponsor.

Fourth, we conducted cognitive research to evaluate new questions concerning computer crime proposed for inclusion in the National Crime Victimization Survey. This research demonstrated inconsistency in respondents' interpretations of what kind of computer use was intended to be captured by the questions (i.e., home computers vs work computers used for personal use), and identified extremely high levels of reporting of lewd or obscene messages, since respondents were using much broader criteria than the sponsor intended. Most of the revisions that we recommended based on this research were implemented by the sponsor.

Fifth, we conducted cognitive research on newly-developed residence rules on the American Community Survey to evaluate their performance for various situations in which people have multiple residences; seasonal residents, seasonal workers, commuter workers, and college students. This work is currently underway.

*Staff:* Terry DeMaio (x4894), Ashley Landreth, Kristen Hughes, Lorraine Randall, David Stemper (PRED), Elizabeth Martin (M&S)

### **D. Questionnaire Pretesting Activities**



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

During FY 2001, staff monitored the generic clearance, consulted with staff from other areas of the Census Bureau wishing to use the clearance, kept OMB informed of all pretesting activities, and received an extension of the generic clearance for an additional three years, through August 31, 2004. Twenty-seven letters were submitted to OMB for work done under the generic clearance, with a total of 4117.5 burden hours. Staff gave a presentation on questionnaire pretesting as part of Demographic Directorate Training on demographic surveys. Staff also began work on a project, with participation from the decennial, demographic, and economic directorates, to develop a Bureau-wide standard for questionnaire pretesting.

*Staff:* Terry DeMaio (x4894), Kristen Hughes

#### **E. Questionnaire Design Experimental Research Survey - 1999 (QDERS)**

Staff developed, coordinated, and implemented an annual omnibus questionnaire design experimental research survey (QDERS). This survey is a moderate-sized (target of 2000 completed interviews averaging 15 minutes each) RDD survey conducted through the Hagerstown Telephone Center. The QDERS allows the staff an opportunity to conduct questionnaire design field experiments in a timely and flexible manner.

During FY2001, results from one of the 1999 QDERS experiments were published as a book chapter entitled "Measures of Functional Limitations: The Effects of Person-level vs Household-level Questionnaire Design in a volume, *Research in Social Science and Disability, Volume 2*. In addition, other QDERS results were published in an article forthcoming in *Public Opinion Quarterly*.

*Staff:* Jennifer Rothgeb (x4968), Joanne Pascale, Ashley Landreth, Jeff Moore, Tom Mayer, Safiya Hamid

#### **F. Questionnaire Design Experimental Research Survey - 2000 (QDERS)**

QDERS 2000 is an omnibus survey designed to facilitate independent research related to questionnaire design issues, interviewer training, and other survey methodology issues. The QDERS 2000 will be conducted from the Hagerstown Telephone Center in September 1999, using an RDD sample. Five researchers conducted questionnaire design experiments and two researchers conducted interviewer training experiments.

During FY2001, staff produced several data products from the QDERS 2000 data collection. These included a SAS dataset for the QDERS 2000 field data,

an EXCEL dataset containing the interviewer ratings data from the interviewer debriefings, and a SAS datafile containing the behavior coding data produced under contract with the University of Massachusetts' Center for Survey Research. Using these data, several staff members presented QDERS 2000 results in their 2001 AAPOR conference presentations. We provided preliminary findings from the QDERS 2000 Interviewer Training Experiment to the Interagency Household Survey Nonresponse Committee. Also, we are utilizing the QDERS 2000 data in a monograph chapter selected for the QDET conference.

*Staff:* Jennifer Rothgeb (x4968), Joanne Pascale, Eileen O'Brien, Ashley Landreth, Tom Mayer, Jeff Moore

#### **G. Privacy and Confidentiality Research**

The purpose of this project is to investigate the effects of public attitudes and perceptions about privacy and confidentiality on Census Bureau activities, and to research methods to address respondent concerns and discourage nonresponse behavior.

During FY2001, the staff continued to investigate the effects of public attitudes and perceptions about privacy and confidentiality on Census Bureau activities, and to research methods to address respondent concerns and discourage nonresponse behavior. The staff continued work on the interviewer Refusal Aversion Training Project. Staff continued to consult with the Methodology and Standard Council, the Policy Office, and the American FactFinder staff to create confidentiality and statistical reliability statements for American FactFinder and other Census Bureau documents. Staff participated in Privacy Policy and Research Committee sub-groups to design Census Bureau Privacy Principles and a Privacy Research Initiative at the Census Bureau. Staff chaired the Interagency Household Survey Nonresponse Group (IHSNG) sub-group on Privacy and Confidentiality. Staff completed a rough draft of a literature review; "Privacy and Confidentiality Research and the U.S. Census Bureau: Recommendations Based on a Review of the Literature."

*Staff:* Tom Mayer (x4930), Jeff Moore

#### **H. Ethnography: Methods and Culture**

Apply ethnographic research methods to ground key Census Bureau concepts, processes, and operations in evidence from direct observation. Ethnographic methods are generated from anthropological theory and studies of particular societies, and have been widely adopted by other social sciences.

During FY2001, staff of the Census 2000 ethnographic evaluation and experiment projects circulated contractors' reports and drafts of their final reports for comments.

A project focused on the translation into Spanish of questionnaires and manuals for the American Community Survey, and more generally, cross cultural and linguistic issues for the use of languages other than English in censuses and surveys was proposed, funded by a sponsor, and new staff, contractors and consultants were identified.

*Staff:* Leslie Brownrigg (x4995), Manuel de la Puente, Eleanor Gerber, Laurie Schwede, Melinda Crowley, Matt Salo, Kristen Hughes, David Stemper (PRED)

### **I. Eye-Movement Research**

This is a partnership with researchers at the University of Virginia to investigate eye-movement analysis as a new tool for evaluating the design of visually administered instruments (paper questionnaires, Web questionnaires and Web pages). Eye-tracking hardware and software, which was originally developed at the University of Virginia for use with computer monitors, was adapted to track the eye movements of respondents answering paper questionnaires with alternative branching instruction designs and a pilot study was conducted with 24 respondents. Although the results were very promising, it became evident that the hardware, software, and interpretation of the data could use improvement. Thus, the purpose of this project is to improve the methodology (including the technology) and then conduct a follow-on study using the same questionnaires and number and type of respondents. In addition, we plan to expand the application from paper to the Web.

During FY2001, we presented a paper at the American Association of Public Opinion Research that described the results of the pilot study, and submitted a condensed version of the paper to the online proceedings. Also, the eye-tracking hardware and software were improved so that the equipment was capable of tracking a subject answering a paper questionnaire that was mounted at 40 degrees in the follow-on study as opposed to the 90 degrees it had been in the pilot study. Changes were also made to the software to facilitate the automatic coding of a subject's eye-movements. Automatically identifying a subject's eye-movement patterns, and correlating these patterns to behaviors can lead to a scientifically rigorous protocol to judge subjects' behaviors independent of potential prejudices of researchers. A second round of twenty-four subjects for the follow-on study were

recruited, and their eye-movements tracked using the updated equipment and set-up. Plans for coding and analyzing the data were discussed. Also, the eye-movement equipment was rented and staff received training in its use.

In addition, we demonstrated that: 1) eye-movement analysis is a promising new tool for the evaluation of visually administered questionnaires like the ACS; and 2) the Detection Method of Branching is superior to the branching method used in the ACS presently. We presented these results at the ACS Research and Evaluation Steering Committee meetings.

*Staff:* Cleo Redline (x4994), Kent Marquis, David Mingay, Larry Malakhoff, Cathy Keeley, C. Lankford (UVA)

### **J. ADDITIONAL TOPICS**

#### **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 to researchers to enable them to improve the questions.

In collaboration with Gordon Willis of the National Cancer Institute and Barbara Forsyth of Westat, we presented results of this research at the 2001 AAPOR conference. In addition, we used this research as the foundation for the QDET monograph chapter we are preparing. We developed an extended chapter outline and forwarded it to the monograph editors for their review.

*Staff:* Jennifer Rothgeb (x4968), Gordon Willis (NCI), Barbara Forsyth (Westat)

#### **Visual CASI**

This project explores the use of images or graphics to help convey the meaning of questions to respondents and to enhance listing in CAPI and Internet instruments.

During FY 2001, staff met with graduate students researching ethnobotany dissertations to vet the possibility they could adapt and test in their field work, a CAPI instrument visualizing the plants of interest, to establish the species subjects for inquiries (in lieu of presenting respondents with dried herbarium specimen). Also, the report on the Internet independent demonstration frame of selected types of Group

Quarters discusses source sites with visual content, including facilities, photographs, and maps.

*Staff:* Leslie A. Brownrigg (x4995)

#### **Analyzing the Data from Cognitive Interviews**

This independent research project focuses on the process by which cognitive interviews are conducted and analyzed by survey research organizations. There are two parts to the project. The first is to conduct a “survey” of major survey research organizations to find out exactly how they conduct their cognitive interviews. The second is to conduct an experiment to evaluate the analytic procedures used by different organizations in terms of the completeness of the results obtained and the quality of 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 FY2001, staff finalized the design of research. Data were collected under contract and in-house. Expert evaluators completed reviews of the original questionnaire that will serve as the “gold standard” in evaluating the results of the three experimental treatments. A contract was finalized to conduct cognitive interviews as an initial means of comparing the problems with the three revised questionnaires and the control questionnaire. Coding of the results of the cognitive interviews is underway.

Staff developed a research proposal for QDERS, which would be a more rigorous evaluation of the three revised questionnaires submitted by the contractors. The results of this research have been accepted as an invited paper for the QDET conference.

*Staff:* Terry DeMaio (x4894), Ashley Landreth, Cathy Keeley

#### **Juvenile Probation Survey**

This project involves research that ultimately will result in a new data collection effort to obtain information about juvenile probation offices and probationers. The current research, sponsored by the Office of Juvenile Justice and Delinquency Prevention, will include unstructured interviews to enable Census Bureau staff to develop key questions that will be used to compile a master directory of probation offices, which will also serve as the frame for a later survey.

During FY2001, project staff and contractors wrote and submitted the final Phase 1 project report, completing the project.

*Staff:* Laurie Schwede (x2611), Sharon Birch (contractor), Catherine Gallagher (contractor)

#### **Interviewer Refusal Aversion Training**

Initial nonresponse rates for continuing Federal household surveys are increasing (e.g., Atrostic, Bates, Burt, Silberstein, & Winters, 1999). Interviewer administered surveys allow interviewers to influence respondent participation because they can generate person-level, customized appeals. Interviewer training, however, is often inadequate in developing skills to effectively engage respondents in this way. Interviewers do not feel prepared in answering respondents’ questions, communicating the purpose of the survey, and establishing and maintaining rapport with the respondent (e.g., Doughty et. al., 2000). Based on the concepts of tailoring and maintaining interaction (Groves and Couper, 1998), Groves and McGonagle (in press), have recently examined a theory guided training protocol designed to enhance interviewers’ skills in avoiding refusal.

During FY2001, the staff continued to design and experimentally test a Refusal Aversion Training protocol that provides interviewers the background and skills necessary to quickly reply to various respondent concerns (including concerns regarding privacy and confidentiality). The staff tested the training protocol in an omnibus RDD household survey (QDERS 2000) and found that interviewers who received the training had significantly higher cooperation rates than untrained interviewers. The staff collaborated with the faculty of the Joint Program in Statistical Methodology faculty and the National Health Interview Survey staff to experimentally test the Refusal Aversion Training in the NHIS.

*Staff:* Tom Mayer (x4930), Eileen O’Brien

#### **R&D 2002 Contracts**

The Census Bureau has awarded multiple contracts in each of the following five technical areas: 1) technology services, 2) assessment, planning, and analysis, 3) statistical analysis, 4) methodological research, and 5) minority-focused and special population research. Many of the prime contractors are teamed with one or more organizations and/or have arrangements with outside experts/consultants to broaden their ability to meet all of the potential needs of the Census Bureau. These 5-year contracts, awarded in 1997, allow Census Bureau divisions and offices to obtain outside advisory and assistance services to support their research and development (R&D) efforts quickly and easily.

During FY 2001, 6 new R&D 2002 contract task orders were awarded, 70 modifications were made to the tasks, and 11 tasks were completed. To date, 96 tasks with a value of over \$36 million have been awarded.

Currently, there are 39 active tasks.

*Staff:* John Linebarger (x4976), Ann Vacca

### ***R&D 2007 Contracts***

The Census Bureau plans to award the next series of five year R&D contracts in the summer of 2002. Six areas are planned for the new solicitation: 1) assessment, planning, and analysis, 2) statistical analysis, 3) methodological research, 4) technology services, 5) sub-population research, and 6) Data Analysis and Dissemination.

Work has started on the competition for the new contracts, as the R&D 2002 contracts expire in July 2002. A draft solicitation was prepared and posted on the Web. A pre-solicitation conference was held in the Census Bureau auditorium to share the draft solicitation with vendors, and to answer questions. Work continues on finalizing the solicitation and is scheduled for release on November 2001. The draft solicitation, pre-solicitation conference agenda, attendees, transcripts, and questions and answers are posted on <http://www.census.gov/procur/www/rd2007/>.

*Staff:* Ann Vacca (x4996)

### ***Research Assistance***

This staff provides research assistance, technical assistance, and secretarial support for the various research efforts.

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

### 3. PUBLICATIONS

#### 3.1 JOURNAL ARTICLES, PUBLICATIONS

- Causey, B. (In Press). "Parametric Estimation of the number of Classes in a Population," *Journal of Applied Statistics*.
- Chan, A. and Smith, K.R. (2000). "Perceived Marital Quality and Stability of Intermarried Couples: A Study of Asian-White, Black-White, and Mexican-White Couples," *Sociological Imagination*, 37 (4), 230-256.
- Davis, J.D., Moran, M.K., Herger III, E.O., and Dajani, A.N. (2001) "Pregnancy Anxieties and Natural Recognition of

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de Wolf, V. and Zayatz, L. (2000). "Products of the Interagency Confidentiality and Data Access Group," *Of Significance...*, Vol. 2, No. 1, Association of Public Data Users, Arlington, VA, 28-34.

Findley, D.F., Potscher, B.M., and Wei, C.-Z. (2001). "Uniform Convergence of Sample Second Moments of Families of Time Series Arrays," *The Annals of Statistics*, Vol. 29, No. 3, 815-838.

Findley, D.F. and Wei, C.-Z. (In Press). "AIC, Overfitting Principles, and the Boundedness of Moments of Inverse Matrices for Vector Autoregressions and Related Models," *Journal of Multivariate Analysis*.

Hess, J., Moore, J., Pascale, J., Rothgeb, J., and Kelley, C. (In Press). "The Effects of Person-level vs. Household-level Questionnaire Design on Survey Estimates and Data Quality," *Public Opinion Quarterly*.

Malec, Donald J. (2001). "Contrasting Bayesian Analysis of Survey Data and Clinical Trials," *Statistics in Medicine*, 20, 1363-1371.

Malec, Donald J. (2001). "A Closer Look at Combining Data Among a Small Number of Binomial Experiments," *Statistics in Medicine*, 20, 1811-1824.

Martin, D.E. (In Press). "Applications of an Algorithm for the Distribution of the Number of Successes in Fourth-or Lower-Order Markovian Sequences," *Computational Statistics and Data Analysis*.

Martin, D.E. (2001). "Influence Functions Applied to the Estimation of Mean Rain Rate," *Journal of Applied Statistics*, Vol. 28, No. 2, 247-258.

Mingay, David. (2001). Review of Web site, "HealthQuiz.com," *Anesthesiology*, Vol. 94, No. 5, 944-945.

Moore, J., Stinson, L., and Welniak, E. (2000). "Income Measurement Error in Surveys: A Review," *Journal of Official Statistics*, Vol. 16, No. 4, 331-361.

Salo, Matt T. (In Press). "Gypsies in New England," *The Encyclopedia of New England Culture*, Yale University Press.

Salo, Matt T. (In Press). "Gypsies," *The Encyclopedia of New York State*, Syracuse University Press.

Salo, Matt T. (In Press). "Gypsies," *The Encyclopedia of Appalachia*, University of Tennessee Press.

**3.2 BOOKS/BOOK CHAPTERS**

C Hess, J., Rothgeb, J., Moore, J., Pascale, J., and Keeley, C. (2001). "Measures of Functional Limitations: The Effects of Person-level vs Household-level Questionnaire Design." In Barnartt, S. and Altman, B. (Eds), *Research in Social Science and Disability, Volume 2. Exploring Theories and Expanding Methodologies*, Oxford, England: Elsevier Science Ltd., 145-166.

C Winkler, W.E. (2001). "Record Linkage Software and Methods for Merging Administrative Lists," in *Exchange of Technology and Know-How*, European Community: Luxembourg, 313-321.

**3.3 PROCEEDINGS PAPERS**

*Fifth International Conference on Logic and Methodology*, Cologne, Germany, October, 2000.

C Rothgeb, J., Loomis, L., and Hess, J. (2000). "Challenges and Strategies in Gaining Acceptance of Research Results from Cognitive Questionnaire Testing," *Proceedings of the Fifth International Conference on Logic and Methodology*, CD-ROM.

Office for National Statistics, London, England, March, 2000.

- C Rothgeb, J. and Willis, G. (2000). "Evaluating Pretesting Techniques for Finding and Fixing Questionnaire Problems," *Proceedings of Quality Issues in Question Testing*, 100-102.

2000 Joint Statistical Meetings (American Statistical Association), Indianapolis, IN, August 13-17, 2000.

- C Albright, Keith A., Reichert, Jennifer W., Flores, Leslie R., Moore, Jeffrey C., Hess, Jennifer C., and Pascale, Joanne (2000). "Using Response Reliability to Guide Questionnaire Design," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 157.
- C Cantwell, Patrick J., Shores, Roger, and Kohn, Felipe (2000). "Counting People without a Usual Residence in the 2000 Census," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 509.
- C Findley, D.F. and Soukup, R.J. (2000). "Modeling and Model Selection for Moving Holidays," *2000 Proceedings of the Business and Economic Statistics Section of the American Statistical Association*, 102-107.
- C Findley, D.F. "Discussion of Session 14: Trend Estimation," in *ICES II: Proceedings of the Second International Conference on Establishment Surveys*, 809-812.
- C Hood, Catherine C., Ashley, James D., and Findley, David F. (2000). "An Empirical Evaluation of the Performance of TRAMO/SEATS on Simulated Series," *2000 Proceedings of the Business and Economic Statistics Section, American Statistical Association*, 71.
- C Hoy, Easley (2000). "The Disclosure Review Board of the Census Bureau," *2000 Proceedings of the Section on Government Statistics and Section on Social Statistics, American Statistical Association*, 250.
- C Massel, Paul B. (2000). "Latent Variable Models for Analysis of Survey Data," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 203.
- C Press, S. James and Marquis, Kent H. (2000). "Bayesian Estimation in a Census Bureau Survey Of Income Recall Using Respondent Generated Intervals," *2000 Proceedings of the Section on Government Statistics and Section on Social Statistics, American Statistical Association*, 199.
- C Soukup, R.J. and Findley, D.F. (2001). "Detection and Modeling of Trading Day Effects," in *ICES II: Proceedings of the Second International Conference on Establishment Surveys*, 743-753.
- C Thibaudeau, Yves (2000). "Laplace Approximation for Variances of Estimators Based on Categorical Data in Presence of Unreported Items," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 227.
- C Winkler, William E. (2000). "Machine Learning Information Retrieval, and Record Linkage," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 20.
- C Yancey, William E. (2000). "Frequency-Dependent Probability Measures for Record Linkage," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 752.
- C Zayatz, Laura, Steel, Philip, and Rowland, Sandra (2000). "Disclosure Limitation for Census 2000," *2000 Proceedings of the Section on Government Statistics and Section on Social Statistics, American Statistical Association*, 67.

American Association for Public Opinion Research Conference, Portland, OR, May 17-21, 2000.

- C Doyle, Pat, Martin, Elizabeth, and Moore, Jeffrey (2000). "Methods Panel to improve Income Measurement in the Survey of Income and Program Participation," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 953.
- C Hess, Jennifer, Moore, Jeffrey, Pascale, Joanne, Rothgeb, Jennifer, and Keeley, Catherine (2000). "The Effects of Person-level v.s. Household-level Questionnaire Design on Survey Estimates and Data Quality," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 1039.
- C Mingay, David J. (2000). "Is Telephone Audio Computer-Assisted Self-Interviewing (T-ACASI) a Method Whose Time Has Come?," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 1062.
- C Moore, Jeffrey C. and Loomis, Laura S. (2000). "Using Alternative Question Strategies to Reduce Income Nonresponse," *2000 Proceedings of the Section on Survey Research Methods, American Statistical Association*, 947.

### 3.4 STATISTICAL RESEARCH DIVISION RESEARCH REPORTS

**RR2000/01**, Maria Garcia and Katherine Thompson, "Results of Evaluation of AGGIES for ACES," 11/29/2000.

**RR2000/04**, John Kovar and William Winkler, "Comparison of GEIS & SPEER for Editing Economic Data," 10/2/2000.

**RR2000/05**, William Winkler, "Using the EM algorithm for Weight Computation in the Fellegi-Holt Model of Record Linkage," 10/04/2000.

**RR2000/06**, William Winkler, "Frequency-Based Matching in Fellegi-Sunter Model of Record Linkage," 10/04/2000.

**RR2000/07**, William Yancey, "Frequency-Dependent Probability Measures for Record Linkage," 10/18/2000.

**RR 2001/01**, Paul Massell, "Cell Suppression and Audit Program Used for Economic Magnitude Data," March 26, 2001.

**RR 2001/02**, David Findley, "Convergence of a Robbins-Monro Algorithm for Recursive Parameter Estimation with Non-Monotone Weights and Multiple Zeros," June 7, 2001.

**RR (Statistics #2001-01)**, William Winkler, "Multi-Way Survey Stratification and Sampling," August 3, 2001.

### 3.5 OTHER REPORTS

Elizabeth Nichols, "1999-2000 Library Media Center Split Panel Results," *Human-Computer Interaction Memorandum Series #37*, January 9, 2001.

Betty Murphy and Kent Marquis, "Usability Evaluation of the Project Management Repository (PMR) and Quality Management Repository (QMR) Web Sites," *Human-Computer Interaction Memorandum Series #38*, February 16, 2001.

Richard Griffin and Donald Malec, "Accuracy and Coverage Evaluation: Assessment of Synthetic Assumptions," *DSSD Census 2000 Procedures and Operations Memorandum Series B-14\**, February, 2001.

Ashley Landreth, "SIPP Advance Letter Research: Cognitive Interview Results, Implications, and Letter Recommendations," March 23, 2001.

Legler, Julie, Breen, Nancy, Meissner, Helen, Malec, Donald, and Coyne, Cathy. (2001). "Predicting Patterns of Mammography Use: A Geographical Perspective On National Needs for Intervention Research."

David J. Mingay and Kent Marquis, "Feasibility Study of Remote Usability Testing," *Human-Computer Interaction Memorandum Series #40*, May 8, 2001.

Elizabeth Nichols, Betty Murphy, and Amy E Anderson, "Results from Cognitive and Usability Testing of Edit Messages for the 2002 Economic Census (First Round)," *Human-Computer Interaction Memorandum Series #39*, May 21, 2001.

Kristen Kennedy and Kent Marquis, "Conducting Focus Groups in Conjunction with Building the Census Bureau's Usability Web Site," *Human-Computer Interaction Memorandum Series #41*, May 31, 2001.

Kristen Kennedy, "Building the Census Bureau's Usability Web Site: The Online Questionnaire," *Human-Computer Interaction Memorandum Series #51*, May 31, 2001.

Laura Mullin, Erica Olmsted, Keri Rainsberger, and Kent Marquis, "Quick Facts Usability Study," *Human-Computer Interaction Memorandum Series #48*, July, 2001.

Veronica A. Cimpermin, Laura N. Mullin, and Kent Marquis, "Economic Census Web Site Usability Study," *Human-Computer Interaction Memorandum Series #43*, August 28, 2001.

Keri L. Rainsberger, Myron Smith, and Kent Marquis, "HHES Poverty Site Usability Study," *Human-Computer Interaction Memorandum Series #45*, August, 2001.



Myron Smith and Kent Marquis, "HHES Housing Site Usability Study," *Human Computer Interaction Memorandum Series #46*, August, 2001.

Melinda Crowley and Ashley Landreth, "A Comprehensive Report: CPS Tobacco Use Supplement Cognitive Pretesting, Rounds I and II," August 31, 2001.

Erica Olmsted and Laura Mullin, "Population Estimates Site Usability Study," *Human-Computer Interaction Memorandum Series #47*, September, 2001.

Elizabeth Nichols, "Usability Testing Results of the 2002 Economic Census Prototype RT-44401," *Human-Computer Interaction Memorandum Series #51*, September, 2001.

Wright, T. "Selected Moments in the Development of Probability Sampling: Theory & Practice," *Newsletter of the Survey Research Methods Section of the American Statistical Association, Issue 13*, July, 2001, 1-6.

Richard Griffin and Donald Malec, "Accuracy and Coverage Evaluation: Assessment of Synthetic Assumption for Puerto Rico," *DSSD Census 2000 Procedures and Operations Memorandum Series (Draft)*, May, 2001.

#### 4. TALKS AND PRESENTATIONS

*Statistics Department, The Ohio State University, Columbus, Ohio, October 5, 2000.*

- C Tommy Wright, "CENSUS 2000: One Look at What's Happened So Far." (Center for Survey Research Seminar).
- C Tommy Wright, "Some ABCs of Probability Sampling." (Graduate Class Lecture).

*Conference on Seasonality in Economic and Financial Variables, University of Algarve, Portugal, October 5-7, 2000.*

- C David Findley, "Spectral Diagnostics for Detecting Unmodeled or Inadequately Modeled Trading Day or Seasonal Effects."

*Fifth International Conference on Logic and Methodology, Cologne, Germany, October 6, 2000.*

- C Jennifer Rothgeb, "Challenges and Strategies in Gaining Acceptance of Research Results from Cognitive Questionnaire Testing."

*Statistical Office of Estonia, Tallinn, Estonia, October 9-13, 2000.*

- C David Findley, Course on "Seasonal Adjustment Methods."

*Washington Statistical Society and DC/Baltimore Chapter of the American Association for Public Opinion Research, Washington, DC, October 11, 2000.*

- C Manuel de la Puente, "Colonias on the US/Mexico Border: Barriers to Enumeration in Census 2000."

*SESUG Conference, Charlotte, NC, October 15-18, 2000.*

- C Dave DesJardins, "Inliers, Outliers, and Just Plain Liars."

*Methodological Interchange with Statistics Canada, Census Bureau, October 16-17, 2000.*

- C Laura Zayatz, "Disclosure Limitation for American FactFinder."

*Census Advisory Committee on the Hispanic Population, Alexandria, VA, November 2, 2000.*

- C Manuel de la Puente, "Colonias on the US/Mexico Border: Barriers to Enumeration in Census 2000."

*Federal Committee on Statistical Methodology Workshop on "Integrating Federal Statistical Information and Processes," Washington, DC, November 8-9, 2000.*

- C Laura Zayatz, "An International Confidentiality and Data Access Research Agenda."

*Washington Statistical Society and the American Statistical Association's Government Statistics and Social Statistics Sections, Washington, DC, November 15, 2000.*

- C Cleo Redline, "A Tribute to Don Dillman, Recipient of the 2000 Roger Herriot Award for Innovation in Federal Statistics."

*Annual Meeting of the American Anthropological Association, San Francisco, CA, November 16, 2000.*

- C Manuel de la Puente and David Stemper, "Survey Forms, Focus Groups, and Census 2000 in the Southwest Borderlands: Clashes Between Cultural Traditions of Colonia Residents and Census Concept of Ethnicity and Household."
- C Laurie Schwede and Anna Chan, "Complex Households in Selected Ethnic Groups and Implications for the U.S. Census: A Summary of Project Findings."

*Mathematical Association of America, Washington, DC, November 18, 2000.*

- C Paul Massell, "Cell Suppressions Using Linear Programming: A Disclosure Limitation Technique for Data Tables."

*Washington Statistical Society Seminar, Washington, DC, November 28, 2000.*

- C Jennifer Hess, Jeffrey Moore, Joanne Pascale, Jennifer Rothgeb, and Cathy Keeley, "The Effects of Person-level vs. Household-level Questionnaire Design on Survey Estimates and Data Quality."

*Data Quality Workshop, Morristown, NJ, November 30, 2000.*

- © William Winkler, "Record Linkage Methods."  
([Http://www.niss.org/affiliates/dqworkshop/presentations/winkler-presentations.pdf](http://www.niss.org/affiliates/dqworkshop/presentations/winkler-presentations.pdf).)
- Federal Economic Survey Advisory Committee*, Washington, DC, December 14, 2000.
- © Eileen O'Brien, "Using Cognitive Methods to Improve Questionnaires for Establishment Surveys: A Demonstration."
- Department of Statistics, George Washington University*, Washington, DC, January 26, 2001.
- © David Findley, "Theory Supporting an Out-of-Sample Forecast Error Diagnostic for Comparing Possibly Incorrect Time Series Models."
- Statistics Colloquium, George Washington University*, Washington, DC, January 26, 2001.
- © Donald Malec and Yves Thibaudeau, "Is Inter-County Migration of Income Tax Non-Filers Ignorable when Benchmarking County Estimates?"
- North Carolina State University*, Raleigh, NC, February 16, 2001.
- © David Findley, "Theory Supporting an Out-of-Sample Forecast Error Diagnostic for Comparing Possibly Incorrect Time Series Models."
- European Statisticians Institute*, Luxembourg, Luxembourg, February 26-March 2, 2001.
- © David Findley, Course on Seasonal Adjustment.
- National Highway Traffic Safety Administration Seminar, Department of Transportation*, Washington, DC, February 27-28, 2001.
- © David DesJardins, "New Graphical Methods for Editing/Analyzing Statistical Data."
- FedCasic*, Bureau of Labor Statistics, Washington DC, March 1, 2001.
- © Larry Malakhoff, panel session, "Audio CASI and Telephone Audio CASI: Recent Developments."
- Washington Association of Professional Anthropologists*, Washington, DC, March 6, 2001.
- © Manuel de la Puente and David Stemper, "Census 2000 and Colonias on the US/Mexico Border: Findings from Ethnographic and Focus Group Research."
- NIST Symposium on Monte Carlo Methods and NIST Web Handbooks*, Gaithersburg, MD, April 4, 2001.
- © Donald Malec, "Examining the Synthetic Bias of Small Area Population Estimates from a Post Enumeration-Type Survey," Invited presentation and roundtable discussant.
- Economic Commission for Europe Conference*, Skopje, Macedonia, March 12-April 5, 2001.
- © Sam Hawala, "American FactFinder: U.S. Bureau of the Census Works Towards Meeting the Needs of Users While Protecting Confidentiality."
- Transportation Research Board, National Academy of Sciences*, Washington, DC, March 19, 2001.
- © Tom Mayer and Eileen O'Brien, "Interviewer Refusal Aversion Training to Increase Survey Participation."
- Washington Statistical Society*, Washington, DC, March 21, 2001.
- © Joanne Pascale, "The Role of Questionnaire Design in Medicaid Estimates: Results from an Experiment."
- Data Visualization in the New Computing Environment 2001 Conference*, Charlotte, NC, March 25-28, 2001.
- © Dave DesJardins, "The Marriage of Exploratory Data Analysis and Mapping."
- Hebrew University*, Jerusalem, Israel, March 26, 2001.
- © William Winkler, "Data Cleansing."
- Society for Applied Anthropology Annual Meeting*, Merida, Yucatan, Mexico, March 27-April 1, 2001.
- © Leslie Brownrigg, "Workshop on Multisite Ethnographic Evaluations."

*International Conference on Small-Area Estimation and Related Topics*, Potomac, MD, April 11, 2001.

- C Don Malec, "Examining the Synthetic Bias of Small Area Population Estimates from a Post Enumeration Survey." (Invited presentation)

*Washington Statistical Society, Invited Presentation*, Washington, DC, April 12, 2001.

- C Tom Mayer, "Interviewer Refusal Aversion Training to Increase Survey Participation."

*Annual Meeting of the Association of Borderlands Studies*, Reno, NV, April 18-22, 2001.

- C Manuel de la Puente and David Stemper, "The Enumeration of Colonia Residents in Census 2000: Perspectives from Census Field Workers and Ethnographers."

*Workshop on Anthropological Approaches and Techniques in Evaluation*, Washington, D.C., April 21, 2001.

- C Leslie Brownrigg, "Multisite Ethnographic Evaluation: Coordinated Research to Evaluate Process, Projects, and Programs."

*Department of Computer Science, Purdue University*, Lafayette, IN, April 30, 2001.

- C Bill Winkler, "Record Linkage and Machine Learning."

*Quality in Official Statistics 2001*, Stockholm, Sweden, May 14, 2001.

- C Bill Winkler, "Quality of Very Large Data Files."

*American Association for Public Opinion Research*, Montreal, Quebec, Canada, May 17-20, 2001.

- C Anna Chan and Laurie Schwede, "Within Household Coverage Error in Complex Households: A Qualitative Study on Ethnic and Racial Groups."
- C Melinda Crowley, "The Political Economy of Privacy Among Ethnic Minorities: The Power Factor."
- C Manuel de la Puente and David Stemper (PRED), "The Enumeration of Colonia Residents in Census 2000: Perspectives from Census Field Workers and Ethnographers."
- C Kristen Kennedy and Kent Marquis, "Improving Electronic Questionnaires at the Census Bureau: Creating a Web Site to Promote User-Centered Design."
- C Ashley Landreth and Eileen O'Brien, "Respondents' Understanding of the Vague Economic Concept 'Cash': A Comparative Study."
- C David Mingay, "Guidelines for Improving the Usability of Telephone Audio Computer-Assisted Self-Interviewing (T-ACASI)."
- C Jeff Moore and Laura Loomis, "Reducing Income Nonresponse in a Topic-Based Interview."
- C Beth Nichols, Kent Marquis, and Richard Hoffman, III, "The Effect of Motivational Messaging on Mode Choice and Response Rates in the Library Media Center Survey."
- C Eileen M. O'Brien, Sylvia Fisher (BLS), and Karen L. Goldenberg (BLS), "Applications of Cognitive Methods to an Establishment Survey: A Demonstration Using the Current Employment Statistics Survey."
- C Joanne Pascale, "Measuring Private and Public Health Coverage: Results from a Split-Ballot Experiment on Order Effects."
- C Cleo Redline and Christopher Lankford (University of Virginia), "Eye-Movement Analysis: A New Tool for Evaluating the Design of Visually Administered Instruments (Paper and Web)."
- C Jennifer Rothgeb, Gordon Willis (RTI), and Barbara Forsyth (Westat), "Questionnaire Pretesting Methods: Do Different Techniques and Different Organizations Produce Similar Results."
- C Sid Schneider (Westat), David Cortar (Westat), Larry Malakhoff, Carlos Arieira (Westat), Paul Segal (Westat), Luu Nguajen (Westat), and Jennifer Guarino (PRED), "An Experiment Comparing Computer-Assisted and Paper Models of Data Collection for the Short Form in Census 2000."
- C Susan Trencher (George Mason University) and Eleanor Gerber, "Privacy Concerns Go Public."

*Statistics Sweden Seminar*, Stockholm, Sweden, May 17, 2001.

- C Bill Winkler, "Masking and Re-identification Methods for Public-Use Microdata."

*Field Director's Conference*, Montreal, Canada, May 22, 2001.

- C Larry Malakhoff, "Usability Analysis from Census 2000 Speech Recognition Short Form Instrument."

*ISTAT CEASAR*, Rome, Italy, June 4-8, 2001.

- C Dave DesJardins, "Interactive Graphical EDA+ Techniques for Analyzing/Editing Data."

*OMB Federal Committee on Statistical Methodology Seminar on the Funding Opportunities in Survey Methods Research*, Washington, DC, June 11, 2001.

- C David Mingay, Discussant on paper "Social Presence in Web Surveys."

*ISTAT*, Rome, Italy, June 14, 2001.

- C Dave DesJardins, "New Techniques for Using Graphs to Analyze and Present Statistical Data."

*International Symposium on Forecasting*, Callaway Gardens, GA, June 16-20, 2001.

- C Donald Martin, "Spectral Properties of Linear Concurrent and Symmetric Seasonal Adjustment Filters of SEATS and X-11/12-ARIMA for Short and Moderate-Length Time Series."
- C Brian Monsell, "The Automatic Model Selection Procedure of X-12-ARIMA Version 0.3."

*Japan-U.S. Seminar on Statistical Time Series Analysis and the Satellite Meeting of the Japan-U.S. Seminar*, Kyoto, Japan and Tokyo, Japan, June 18-25.

- C David Findley, "RegARIMA Model Selection via Out-of-Sample Forecast Comparison."

*The 2001 Summer Public Health Research Videoconference on Minority Health*, Chapel Hill, NC, June 19-20, 2001.

- C Manuel de la Puente, "Ethnographic Research at the U.S. Census Bureau: The Enumeration of Border Communities Along the U.S./Mexico Border During Census 2000."

*Joint European Union Conference on New Techniques & Technologies for Statistics 2001 and Exchange of Technical Knowhow 2001*, Crete, Greece, June 19, 2001.

- C E. Murphy, K. Marquis, E. Nichols, K. Kennedy, and D. Mingay, "Refining Electronic Data-Collection Instruments and Data-Dissemination Tools Through Usability Testing."

*Bureau of Labor Statistics Seminar*, Washington DC, June 27, 2001.

- C Dave DesJardins, "Graphical Techniques for Presenting Statistical Data."

*Usability Professionals' Association Annual Conference*, Las Vegas, Nevada, June 27-29, 2001.

- C David Mingay, "Using Low-fidelity Prototyping to Design an Interactive Voice Response System."

*Washington-Baltimore Chapter of the National Association for Public Opinion Research*, Bureau of Labor Statistics, Washington, DC, July 25, 2001.

- C Ashley Landreth, "Understanding Respondents' Interpretation of the Vague Economic Term 'Cash'."

*American Statistical Association (Joint Statistical Meetings)*, Atlanta, GA, August 5-9, 2001.

- C Claudette Bennet, Elizabeth Martin, and Manuel de la Puente, "The Effects of Questionnaire and Content Changes on Response to Race and Hispanic Items: Results of a Replication of 1990 Census Short Form in Census 2000."
- C Anna Chan and Jeffrey Moore, "New Roster Probes and Procedures to Improve Coverage in Household Surveys: The Case of the Survey of Income and Program Participation (SIPP)."
- C Bor-Chung Chen and William Winkler, "Using the DISCRETE Edit System for ACS Survey."
- C Aref Dajani, Eleanor Gerber, and Mary Ann Scaggs, "Residency Rules: Census Experiment and Coverage Evaluation."
  
- C Manuel de la Puente, David Stemper, and Al Mirabal, "Three Perspectives on the Enumeration of Colonias in the State of Texas in Census 2000: The Operational Perspective, the Field Perspective, and the Ethnographic Perspective."
- C Golam Farooque, David Findley, and Catherine Hood, "Comparing the Automatic ARIMA Model Selection Procedures of TRAMO and X-12-ARIMA 0.3."

- C David Findley, “Model Selection via Out-of-Sample Forecast Error Comparisons” and “Asymptotic Stationarity Properties of Out-of-Sample Forecast Errors of Misspecified RegARIMA Models.”
- C Eleanor Gerber, “Images of Government Data Collection: An Ethnographic View.”
- C Sam Hawala, “On the Variation of the Percent of Uniques in a Microdata Sample and the Sample Size.”
- C Catherine Hood and David Findley, “Comparing Direct and Indirect Seasonal Adjustments of Aggregate Series.”
- C Mike Ikeda and Pat Cantwell, “Missing Data Procedures for the Census 2000 Accuracy and Coverage Evaluation Sample.”
- C Jay Kim and William Winkler, “Multiplicative Noise for Masking Continuous Data.”
- C Lawrence Malakhoff, Jennifer Guarino, Sid Schneider, and David Cantor, “Development of the Response Mode an Incentive Experiment for Census 2000: A Case Study.”
- C Don Malec, “Bayesian Loglinear Modeling of Local Area Captures and Erroneous Enumerations in a Census Coverage Evaluation Survey.”
- C Donald Martin and David Findley, “Spectral Properties of Linear Concurrent and Symmetric Seasonal Adjustment Filters of SEATS and X-11/12-ARIMA for Short and Moderate-length Time Series.”
- C Paul Massell, “Using Linear Programming for Cell Suppression in Statistical Tables: Theory and Practice.”
- C Cleo Redline, “The Effects of Altering the Design of Branching Instructions on Navigational Performance in Census 2000.”
- C S. Rowland and Laura Zayatz, “Automating Access with Confidentiality Protection: The American FactFinder.”
- C Phil Steel, “The Impact of Geographic Detail on Disclosure Risk for Several Commonly Used Statistical Geographies.”
- C Laura Zayatz, “Disclosure Limitation for the Census 2000 Public Use Microdata Files.”

*Korean National Statistics Office*, Seoul, Korea, August 16, 2001.

- C Jay Kim, “Managing Non-sampling Errors - from the Perspective of Sample Design.”

*Korean Society of Marketing Researchers*, Seoul, Korea, August 17, 2001.

- C Jay Kim, “2000 Redesign of the U.S. Demographic Surveys.”

*93rd Session of the International Statistical Institute*, Seoul, Korea, August 24, 2001.

- C Jay Kim, “Probability of Duplicated Selection and Its Effect on Nonresponse, Bias, and Variance.”

## 5. STATISTICAL RESEARCH DIVISION SEMINAR SERIES

Seminar Series Team: Barbara Palumbo, Matt Salo, Yves Thibaudeau, Julie Tsay

Kent Norman, University of Maryland, "Dynamics of Web-Based Surveys: Dual Navigation of Questionnaires and Organizational Records," Part 1 of 3, October 25, 2000.

David Smith, University of Georgia, "Comparison of Variance Component Estimators in the Fay-Herriot Model," October 26, 2000.

Wendy Smith, University of Georgia, "Dependent Bootstrap Confidence Intervals," October 27, 2000.

Ben Shneiderman, University of Maryland, "Broadening Access to Statistical Data by Improving User Interfaces," Part 2 of 3, October 31, 2000.

Ben Bederson, University of Maryland, "Zoomable User Interfaces," Part 3 of 3, November 13, 2000.

Darrel Barton, SAS Institute, "DataFlux Software Demonstration," December 4, 2000.

Ray Waller, American Statistical Association, "The Census Bureau and the American Statistical Association," December 19, 2000.

Maribeth Andereck, Memphis, TN; Mark Fleisher, Illinois State University; Susan Lobo, Intertribal Friendship House; Robert Mings, Arizona State University; "Ethnographic Research on Mobile and Elusive Populations;" January 30, 2001.

Beverly Causey, SRD, Bureau of the Census, "Prior Assumptions for Bayesian Statistical Models," January 31, 2001.

Dave DesJardins, SRD, Bureau of the Census, "Converting Your Technical Paper into the Best Presentation of Your Life," February 14, March 1, March 15, March 23, 2001.

Alex Stepick, Florida International University; Paul Draus, Grinnell College; Carol Dutton Stepick, Florida International University; Betsy Martin (Discussant), Bureau of the Census; "Generation X Speaks Out on Civic Engagement and the Census: An Ethnographic Approach," (Part 1), February 26, 2001.

Suzanne Hanchett, Portland, OR; Victor Garcia, University of Texas at Dallas; Melinda Crowley, SRD, Bureau of the Census; Susan Trencher, George Mason University; "Generation X Speaks Out on Civic Engagement and the Census: An Ethnographic Approach," (Part 2), February 27, 2001.

Dean Judson, PRED, Bureau of the Census, "On the Inference of Semi-Coherent Structures from Data," (Part 1), March 7, 2001.

Dean Judson, PRED, Bureau of the Census, "A Partial Order Approach to Record Linkage," (Part 2), March 13, 2001.

Thomas R. Belin, UCLA Department of Biostatistics and Datametrics, Inc., "Reflecting Uncertainty Due to Possibly Nonignorable Missingness in Handling Unresolved Match & Enumeration Status," April 24, 2001.

David Loshin, Knowledge Integrity Incorporated, "The Guardian Data Quality Rules Manager," May 8, 2001.

Graham Kalton, Westat and Constance Citro, Committee on National Statistics, "Small-Area Poverty Estimates and Public Policy: Looking to the Future," May 30, 2001.

Jerome P. Reiter, Department of Mathematics, Williams College, "Using Synthetic Data to Satisfy Disclosure Restrictions," May 31, 2001.

Eric Slud, Mathematics Department, University of Maryland at College Park, "Small-Area Estimation Based on

Misspecified Unit-Level and Aggregated Models in SAIPE,” June 5, 2001.

Donald Martin, Howard University and SRD, Bureau of the Census, “Influence Functions Applied to the Estimation of Mean Rain Rate,” June 6, 2001.

Alfred H. Pfeiffer, Geography Division, Bureau of the Census, “The United States Census Bureau’s Local Update of Census Addresses Program: A Partnership with State, Local, and Tribal Governments,” June 12, 2001.

Randy J. Fusaro, Geography Division, Bureau of the Census, “Standards and Metadata at the United States Census Bureau,” June 12, 2001.

Andrew Borthwick and Arthur Goldberg, Choicemaker, “MEDD: An Approximate Record Matching Technology Based on Machine Learning,” June 12, 2001.

Peter Cummings, University of Tennessee, “Analysis of Finite Element Methods for Acoustic and Elastic Wave Problems in the Frequency Domain,” June 28, 2001.

David DesJardins, SRD, Bureau of the Census, “Converting Your Technical Paper into the Best Presentation of your Life!,” June 28, 2001 and August 1, 2001.

Elaine Zanutto, Department of Statistics, The Wharton School, the University of Pennsylvania, “Combining Matching and Modeling to Impute for Survey Nonresponse,,” September 17, 2001.



## 6. PERSONNEL ITEMS

### 6.1 HONORS/AWARDS/SPECIAL RECOGNITION

#### *Bronze Medal Awards, Bureau of the Census*

- C *Hazel V. Beaton*, for outstanding support for special Census Bureau sponsored meetings, service to the Washington Statistical Society, and performance as (Statistical Research Division) secretary.
- C *Carmen Easley Hoy*, for exemplary leadership in supporting, motivating, and inspiring others, and for performance as Chair of the Census Bureau's Disclosure Review Board - a board that addresses important issues relating to the balance of confidentiality and data access for Census Bureau programs.
- C *Catherine E. Keeley*, for efforts to develop and refine behavior coding techniques in the evaluation and improvement of demographic data collection programs, and contributions to computer-assisted personal interviewing capability for the Census 2000 Accuracy and Coverage Evaluation survey operations.
- C *Julie H. Tsay*, for contributions to survey design, research, and development of innovative statistical methodology to improve the precision of survey-based estimates in the presence of auxiliary variables and for constructing a transparent data file in a census.

#### **Hammer Award**

- C *Bill LaPlant and Other Members of the Information Technology Accessibility Research Team*, "... for ... significant innovations in the development of assistive technology. The Total Access System (TAS) is a revolutionary way of improving electronic and information technology (E&IT) for individuals with disabilities. The TAS system provides individuals with disabilities the freedom to interact with many different E&IT devices and to obtain necessary information in a fashion similar to people without disabilities."

#### *Director's Awards for Innovation (Honorable Mention)*

- C *Bill LaPlant* - for his vision, foresight and leadership associated with the further development and implementation of the Total Access System (TAS) enabling disabled employees to perform the duties of their positions. TAS has been shown to aid in the avoidance of common workplace injuries such as repetitive motion syndrome.
- C *Samuel N. Highsmith, Jr. and Other Members of the EMR/GIDS Team* - for invaluable contributions to the furtherance of electronic reporting techniques that will allow the Census Bureau's economic statistics programs to minimize reporting burden and facilitate data reporting. This metadata-driven system reduces the time and resources required for forms design. Electronic reporting will be offered to all 5 million companies canvassed as part of the 2002 Economic Censuses and will enable data collection and processing to proceed more quickly, more accurately, and less expensively than ever before.
- C *Lawrence A. Malakhoff, Thomas F. Petkumas, and Other Members of the M3 Electronic Data Capture Team* - for the full implementation of electronic reporting options for the Manufacturers' Shipments, Inventories and Orders (M3) Survey, a sensitive, monthly economic indicator. The M3 Survey now can receive data through touch-tone data entry, telephone voice recognition, facsimiles with optical character recognition capability, and through the Internet. These techniques have resulted in 100 percent electronic data capture in this monthly survey.

#### **Customer Service Award**

- C *Jeff Moore* - for sustained and outstanding service to the Continuous Instrument Improvement Group and the SIPP Methods Panel which have resulted in improving SIPP data products to customers (awarded October 4, 2001).

**Thirty Year Length of Service Recognition** - Leroy Bailey, Joyce Farmer, Samuel Highsmith, Cary Isaki, Margaret Poole.

**Thirty-five Year Length of Service Recognition** - Carmen Easley Hoy.

### 6.2 SIGNIFICANT SERVICE TO PROFESSION

Leslie Brownrigg

- C Member, Migrant and Seasonal Farm Workers Interagency Group.
- C Member, Washington Association of Professional Anthropologists Evaluation Workshop Planning Committee.
- C Appointed Member, Interagency/Interuniversity Seminar on Andean Society and Culture.

Beverly Causey

- C Refereed a paper for *The American Statistician*.

Anna Chan

- C Co-organizer, co-chair, Complex Households Ethnographer Conference.

Manuel de la Puente

- C Co-Chair, Social and Demographic Statistics Section, Washington Statistical Society.
- C Discussant, Paper session on issues in translating surveys at the AAPOR annual meeting.
- C Member, task force on an American Sociological Association Statement on Race.

Terry DeMaio

- C Member, Conference Committee for the 2001 AAPOR Conference.
- C Secretary (Elected), Washington-Baltimore AAPOR Chapter.
- C Discussant, Session at AAPOR Annual Meeting.
- C Discussant, FCSM Seminar on the NSF Funding Opportunity in Survey Research.
- C Refereed papers for *Public Opinion Quarterly* and *Medical Care*.

David Findley

- C Chair, Business and Economic Statistics Section, ASA.
- C Refereed papers for *Econometric Theory*, *International Journal of Forecasting*, and *The Annals of Statistics*.

Sam Hawala

- C Member, Interagency Confidentiality and Data Access Group.
- C Refereed a paper for *The American Statistician*.

Elizabeth Huang

- C Refereed a paper for the *Journal of Official Statistics*.

Kristen Hughes

- C Session Chair, AAPOR Annual Meeting.

Cary Isaki

- C Refereed a paper for the *Journal of Official Statistics*.

Bill LaPlant

- C Chair, National Committee for IT Standards, IT Technical Committee, V2; IT Access Interfaces.
- C Workshop Chair, Usability Professional Association.

Larry Malakhoff

- C Member, American Voice Input Output Society.

Don Malec

- C Refereed papers for *Statistics in Medicine*, *Survey Methodology*, and *Medical Decision Making*.
- C Technical review of a manuscript for the *Centers for Disease Control and Prevention*.

Donald Martin

- C Refereed a paper for *The American Statistician*.

Paul Massell

- C Member, Interagency Confidentiality and Data Access Group.
- C Refereed a paper for *Management Science*.

- Tom Mayer  
 C Member, Interagency Household Survey Nonresponse Group.
- David Mingay  
 C Discussant, FCSM Seminar on the NSF Funding Opportunity in Survey Research.
- Brian Monsell  
 C Secretary-Treasurer and *AMSTAT-On-Line* Assistant Editor, Business and Economic Section of ASA.
- Jeff Moore  
 C Member, Interagency Household Survey Nonresponse Group.  
 C Reviewed a draft report for the National Research Council.
- Mary Mulry  
 C Associate Editor, *The American Statistician*.  
 C Refereed a paper for *The American Statistician*.  
 C Chair, Fellows Committee, Survey Research Methods Section of the American Statistical Association.
- Betty Murphy  
 C Reviewed six papers submitted to the Human Factors & the Web 2001 Conference.
- Eileen O'Brien  
 C Member, American Statistical Association's Survey Review Committee.
- Joanne Pascale  
 C Secretary, Statistics Section of the American Public Health Association.
- Cleo Redline  
 C Member, Risk, Prevention, and Health Behavior Integrated Review Group, Center for Scientific Review of the National Institutes of Health.  
 C Reviewed a grant proposal submitted to National Science Foundation.
- Jennifer Rothgeb  
 C Chair, Organizing Committee, International Conference on Questionnaire Development, Evaluation, and Testing Methods (QDET).
- Matt Salo  
 C President, Gypsy Lore Society.  
 C Consultant, National Geographic Society.  
 C Consultant, Catholic Bishops' Committee on Migrants and Refugees.
- Laurie Schwede  
 C Session organizer, chair and presenter, American Anthropological Association Annual Meeting.  
 C Co-organizer and co-chair, Complex Households Ethnographer Conference.
- Phil Steel  
 C Member, Interagency Confidentiality and Data Access Group.  
 C Member, American Statistical Association's Committee on Privacy and Confidentiality.
- Yves Thibaudeau  
 C Refereed a paper for *The American Statistician*.
- Bill Winkler  
 C Member, Organizing Committee, Chair, New Technologies Session, Work Session of the U.N. European Economic Commission in Cardiff, Wales, U.K.  
 C Session Chair and lead discussant, Data Quality Workshop.

- C Reviewed a paper for *Very Large Databases, 2001*.
- C Member, Scientific Committee, Eurostat-sponsored conferences on New Techniques and Technologies in Statistics 2001 and Exchange of Technology and Know-How 2001.
- C Taught 5-day course at the Israel Central Bureau of Statistics in Jerusalem.

Tommy Wright

- C Refereed papers for *The American Statistician*.
- C Member, American Statistical Association Executive Director Search Committee.
- C Member, Mathematics Department Advisory Council, The University of Tennessee, Knoxville, TN.
- C Member, Editorial Board, *The American Statistician*.
- C Member, Editorial Board, *American Journal of Mathematical and Management Sciences*.
- C Member, Editorial Board, *Journal of Transportation and Statistics*.

Laura Zayatz

- C Member, Interagency Confidentiality and Data Access Group.
- C Member, National Center for Education Statistics Disclosure Review Board.
- C Editor, Census Bureau commissioned book on confidentiality and data access.
- C Editor, second issue of *Of Significance...*

### 3. PERSONNEL NOTES

Anna Chan joined our division as a researcher to continue her work as a member of the SIPP Methods Panel and her ethnographic research on complex households.

Lydia Scoon-Rogers completed her detail and returned to the Housing and Household Economic Statistics Division.

Laura Loomis left the Census Bureau to pursue full-time motherhood.

David Mingay joined the division as a member of the Human Factors and Usability Research Group.

Betty Murphy graduated from the University of Maryland with a Ph.D. in cognitive and experimental psychology.

James Ashley completed his detail and returned to the Manufacturing and Construction Division.

John Linebarger retired from the Census Bureau effective June 1, 2001.

Cary Isaki retired from the Census Bureau effective August 17, 2001.

Lauren Moyer (detailed to DMD) retired from the Census Bureau effective June 30, 2001.

Neal Bross' last day at the Census Bureau was April 27, 2001.

Mary Mulry returned to the Census Bureau and joined our division as a principal researcher in dual system estimation and error analysis.

Pat Cantwell has joined our division on a detail from the Decennial Statistical Studies Division.

Summer Visitors:

- C Roni Cimperman (graduate student at the University of Minnesota and hired by EPCD), Human Factors and Usability Research.
- C Laura Mullin (graduate student at The Catholic University of America), Human Factors and Usability Research.
- C Erica Olmstead (graduate student at University of Central Florida), Human Factors and Usability Research.
- C Keri Rainsberger (graduate student at the University of Maryland, College Park and hired by HHES), Human Factors and Usability Research.
- C Myron Smith (graduate student at Illinois Institute of Technology), Human Factors and Usability Research.
- C Michael Steffen (undergraduate student at Yale University), Questionnaire Design and Measurement Research.

- C Nathan Summers (undergraduate student at Brigham Young University), Human Factors and Usability Research.
- C Elena Fazio (graduate student at the University of Maryland, College Park), Human Factors and Usability Research.
- C Dr. Curtis Miller (graduate student at Iowa State University), Time Series Research.

Erica Olmsted converted from a summer intern to an academic internship (usability).

Kristen Kennedy completed her academic internship (usability).

Al Heckert completed his work on VPLX and returned 100% to NIST.

**APPENDIX A Statistical Research Division's FY 2001 Program Sponsored Projects/Subprojects With Substantial Activity and Progress**

**Basis for PERFORMANCE MEASURES**

Project #	Project/Subproject Sponsor(s)	SRD Contact	Sponsor Contact
	<b>DECENNIAL</b>		
6120	- Coverage Requirements		
6121	- Statistical Requirements		
6352	- Coverage Measurement A.C.E.		
6367	- Census 2000 Evaluation Projects		
6511	- Metadata Tools		
6607	- Coding Operations		
	1. <i>Transparent File Research</i>	Mike Ikeda	Jason Devine/Charles Coleman
	2. <i>Decennial Coverage Research</i>	Don Malec	Rick Griffin
	3. <i>Alternative Questionnaire Experiment (AQE2000)</i>	Cleo Redline	Randall Neugbauer
	4. <i>Response Mode &amp; Incentive Experiment (RM&amp;IE)</i>	Larry Malakhoff	Violeta Vazquez
	5. <i>A.C.E. Missing Data Research and Development</i>	Mike Ikeda	Pat Cantwell
	6. <i>Census 2000 Research and Development Contracts</i>	Ann Vacca	Ruth Ann Killion
	7. <i>Privacy Implications of the Decennial Census</i>	Eleanor Gerber	Ruth Ann Killion
	8. <i>Complex Households &amp; Relationships in the Decennial Census &amp; In Ethnographic Studies</i>	Laurie Schwede	Randall Neugbauer
	9. <i>Generation X Speaks Out On Censuses, Surveys, and Civic Engagement: An Ethnographic Approach</i>	Melinda Crowley	Kevin Shaw
	10. <i>Enumeration Barriers Specific to Colonias in the Context of Census 2000</i>	Eleanor Gerber	Randall Neugbauer
	11. <i>Comparative Ethnographic Research on Mobile Populations</i>	Matt Salo	Alice Green
	12. <i>Ethnographic Social Network Tracing in the Context of Census 2000</i>	Leslie Brownrigg	Violeta Vazquez
	13. <i>Evaluation of the Decennial Frame of Group Quarters and Sources</i>	Leslie Brownrigg	Violeta Vazquez
	14. <i>Evaluation of Responses to the Question on Race</i>	Eleanor Gerber	Christine Hough
	15. <i>Automated Industry/Occupation (I&amp;O) Coding</i>	Marty Appel	Pat Johnson
	16. <i>Administrative Records Linkage Support</i>	Ned Porter	Fay Nash
	17. <i>Decennial Privacy Research</i>	Tom Mayer	Gerald Gates
	18. <i>Coverage, Rostering Methods, &amp; Household Composition: A Comparative Study of Demographic Surveys &amp; Census 2000</i>	Beth Nichols	George Train
	19. <i>Research on Accuracy of the Census and the A.C.E. Estimates</i>	Mary Mulry	Rita Petroni
	<b>DEMOGRAPHIC</b>		
0906	- Current Population Survey March Supplement Research		
	20. <i>Tobacco Use Supplement to the 2003 Current Population Survey: Smoking Cessation</i>	Melinda Crowley	Gordon Willis (NCI)
1461	21. <i>SIPP Methods Panel</i>	Jeff Moore	Pat Doyle
1465	- Survey of Income and Program Participation (SIPP) Research		
	22. <i>Continuous Instrument Improvement Group (CIIG)</i>	Jeff Moore	Bob Kominski
	23. <i>Longitudinal Weighting</i>	Leroy Bailey	Karen King
	24. <i>Adapting Standard Analytical Procedures to the Complex Sampling Structure of SIPP</i>	Ruben Mera	Karen King
	25. <i>Spell Length Analysis</i>	Bev Causey	John Iceland
	Quick Turnaround Pretesting of Household Surveys		
	26. <i>School Crime Supplement</i>	Terry DeMaio	Marilyn Monahan
	27. <i>SIPP Advance Letter</i>	Terry DeMaio	Pat Doyle
	28. <i>SIPP RIP Statement</i>	Terry DeMaio	Pat Doyle
	29. <i>Cyber Crime Questions</i>	Terry DeMaio	Marilyn Monahan
	30. <i>Work Place Risk Supplement</i>	Terry DeMaio	Marilyn Monahan
1467	31. <i>Survey of Program Dynamics</i>	Jennifer Rothgeb	Mike McMahon
7455	32. <i>American Housing Survey</i>	Ruben Mera	Dennis Schwanz
4000	33. <i>2000 Sample Redesign Research</i>	Jay Kim	Andrea Chamberlain
4200	- Continuous Measurement/American Community Survey		
	34. <i>American Community Survey (ACS) Measurement Research</i>	Cleo Redline	Debbie Griffin
	35. <i>ACS Small Area Estimation Research</i>	Don Malec	Chip Alexander
	36. <i>ACS Edit/Imputation Research</i>	Bill Winkler	Barbara Diskin
	37. <i>The Development of a Conceptually and Linguistically Equivalent Spanish Language Translation of English Language American Community Survey Instruments</i>		
TBA	38. <i>Researching American Community Survey Challenges in Communities Along the US/Mexico Border</i>	Manuel de la Puente	Joan Bernard
	- NCES Poverty Statistics	Manuel de la Puente	Debbie Griffin
7165	39. <i>Research for Small Area Income and Poverty Estimates (SAIPE)</i>	Elizabeth Huang	Dave Waddington
	<b>ECONOMIC</b>		
3491051	40. <i>Disclosure Limitation Methods</i>	Laura Zayatz	Paul Hsen
3491052	- Time Series Research		
	41. <i>X-12-ARIMA Development and Evaluation</i>	Brian Monsell	Catherine Hood
	42. <i>Research on Seasonal Time Series - Modeling and Adjustment Issues</i>	David Findley	Catherine Hood
	43. <i>Supporting Documentation and Software for X-12-ARIMA</i>	David Findley	Catherine Hood
	<b>METHODOLOGY AND STANDARDS</b>		
7676	44. <i>Statistical Consulting/Postal Rate Commission</i>	Leroy Bailey	Spyras Xenakis (USPS)
4100	- CASIC		
	45. <i>Imaging &amp; Paperless FAX Image Reporting System (PFIRS): M3 Survey Targeted Test</i>	Tom Petkunas	Jessica Young
	46. <i>Metadata Systems Research</i>	Sam Highsmith	Cheryl Landman
	- Usability Laboratory		
Other	47. <i>Generalized Instrument Design System (GIDS)</i>	Beth Nichols	Diane Harley
	48. <i>Project Management Repository and Quality Management Repository</i>	Betty Murphy	Deb Stempowski
	49. <i>Private Schools Survey Usability Testing</i>	David Mingay	Steve Tourkin
	- Survey Methodology		
Other	50. <i>Interviewers Refusal Aversion Training</i>	Tom Mayer	Adrienne Oneto

**FY 2001 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 again attempt to provide *seven measures of performance*, this time for the fiscal year 2001. For FY 2001, the *measures of performance* for our division are:

*Measure 1. Overall, Work Met Expectations*

Percent of FY 2001 Program Sponsored Projects/Subprojects where sponsors reported that work met their expectations.

*Measure 2. Established Major Deadlines Met*

Percent of FY 2001 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 2001 Program Sponsored Projects/Subprojects reporting at least one improved method, techniques developed, solution, or new insight.

*Measure 3b. Plans for Implementation*

Of the FY 2001 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 2001 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 2001.

*Measure 6. Proceedings Publications*

Number of proceedings publications documenting research that appeared in FY 2001.

These measures will be based on input from our sponsors as well as from members of our division. We will use these measures and associated detail to help improve our efforts. This action is consistent with the spirit of the *Government Performance Results Act (GPRA) of 1993* ". . . to provide for the establishment of strategic planning and performance measurement in the Federal Government."

To construct these seven measures for our division, we will combine the information for each of our program area sponsored projects or subprojects obtained during October 1-15, 2001 using this questionnaire. As indicated on this questionnaire, much of the information will be provided by researchers in the Statistical Research Division. Your assistance is requested for the remaining information on

Project Number and Name \_\_\_\_\_  
Sponsoring Division \_\_\_\_\_

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, Chief

\_\_\_\_\_  
Date

Statistical Research Division

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

***Brief Description of Results/Products from FY 2001 (SRD Contact will provide):***

**TIMELINESS: Established Major Deadlines/Schedules Met**

1(a) Were all established major deadlines associated with this project or subproject met? **(Sponsor Contact)**

**G** Yes

**G** No

**G** No Established Major Deadlines

1(b) If the response to 1(a) is No, please suggest how future schedules can be better maintained for this project or subproject **(Sponsor Contact)**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**QUALITY & PRODUCTIVITY/RELEVANCY:  
Improved Methods/Techniques Developed/Solutions/New Insights**

2. Listed below are at most 3 of the top improved methods, techniques developed, solutions, or new insights offered or applied on this project or subproject in FY 2001 where an SRD staff member was a significant contributor. Review the list, (provided by SRD Contact) and make any additions or deletions as necessary. For each, please indicate whether or not there are plans for implementation. If there are no plans for implementation, please comment. Add any comments, and certify with your initials.

**G** - No improved methods/techniques/solutions/new insights developed or applied.

	Plans for Implementation?			
a. _____	Yes	<b>G</b>	No	<b>G</b>
b. _____	Yes	<b>G</b>	No	<b>G</b>
c. _____	Yes	<b>G</b>	No	<b>G</b>

Comments (**Sponsor**): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Related reports, software/hardware, professional publications (e.g., in the proceedings of professional/scientific organizations, through inter-agency publications, etc.) or peer-reviewed publications by SRD staff that appeared during FY 2001 are listed. An abstract or summary for each listed document is attached.

**G** No reports, software/hardware, professional publications, or peer-reviewed publications appeared during FY 2001.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_

**COST: Predict Cost Efficiencies**

3. Listed (provided by SRD Contact) below are all research results or products produced for this project or subproject in FY 2001 that predict cost efficiencies. Review the list, and make any additions or deletions as necessary. Add any comments.

**G** No cost efficiencies predicted.

a. \_\_\_\_\_

b. \_\_\_\_\_

Comments (**Sponsor**): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**OVERALL: Expectations Met/Improving Future Communications**

4. Overall, work on this project or subproject by SRD staff during FY 2001 met expectations. (**Sponsor**)

**G** Strongly Agree      **G** Agree      **G** Disagree      **G** Strongly Disagree

If you checked "disagree" or "strongly disagree," please comment (**Sponsor**): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Please provide suggestions for future improved communications or any area needing attention on this project or subprojects.

Suggestions (**Sponsor**): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(SRD Contact will coordinate first two signatures as noted and pass to SRD Chief.

First \_\_\_\_\_      Second \_\_\_\_\_  
Sponsor Contact Signature      Date      SRD Contact Signature      Date

(SRD Chief will coordinate last two signatures as noted.)

Third \_\_\_\_\_      Fourth \_\_\_\_\_  
Sponsor Division Chief Signature      Date      SRD Division Chief Signature      Date

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August 28, 2001 (3:29PM)

# Statistical Research Division

## Assistant Division Chief for Computing and Technology

Robert Creecy  
Barbara Palumbo

### Computer Support Staff

Chris Dyke  
Tom Petkunas  
Chad Russell  
VACANT

### Statistical Computing Research

Bill Winkler  
Bor Chung Chen  
Maria Garcia  
Judi Norvell  
Yves Thibaudeau  
William Yancey

### Computing Applications

Sam Highsmith  
Aref Dajani  
David DesJardins  
Ned Porter  
Mary Ann Scaggs

### Technology Research

Marty Appel  
Carol Corby  
Bill LaPlant  
Nita Rasmann

## Assistant Division Chief for Mathematical Statistics

Easley Hoy  
Alice Bell

### Sampling Research

Don Malec (Acting)  
Pat Cantwell  
Elizabeth Huang  
Mike Ikeda  
Jay Kim  
Mary Mulry  
Gloria Prout  
David Smith  
Julie Tsay  
Ann Vacca

### Statistical Estimation and Analysis Research

Leroy Bailey  
Tina Arbogast  
Bev Causey  
Pam Ferrari  
Ruben Mera  
Todd Williams  
Eric Slud (U. of MD)

### Disclosure Limitation Research

Laura Zayatz  
Sam Hawala  
Paul Massell  
Phil Steel

### Time Series Research

David Findley  
Don Martin (Howard U.)  
Brian Monsell  
Thuy Trang Nguyen\*  
VACANT  
VACANT

## Assistant Division Chief for Survey Methodology

### Center for Survey Methods Research

Manuel de la Puente  
Maria Cantwell

### Questionnaire Design and Measurement Research -1

Jeff Moore  
Anna Chan  
Julia Klein-Griffiths  
Cathy Keeley  
Tom Mayer  
Beth Nichols  
Joanne Pascale  
Jennifer Rothgeb

### Questionnaire Design and Measurement Research -2

Eleanor Gerber  
Melinda Crowley  
Safiya Hamid  
Eileen O'Brien  
Cleo Redline  
Laurie Schwede

### Questionnaire Pretesting for Household Surveys

Terry DeMaio  
Kristen Hughes  
Ashley Landreth  
Lorraine Randall

### Human Factors and Usability Research

Kent Marquis  
Leslie Brownrigg  
Joyce Farmer  
Jonathan Jezyk (Student)  
Larry Malakhoff  
David Mingay  
Betty Murphy  
Erica Olmsted (Student)  
Matt Salo

## Office of the Chief

Tommy Wright  
Hazel Beaton