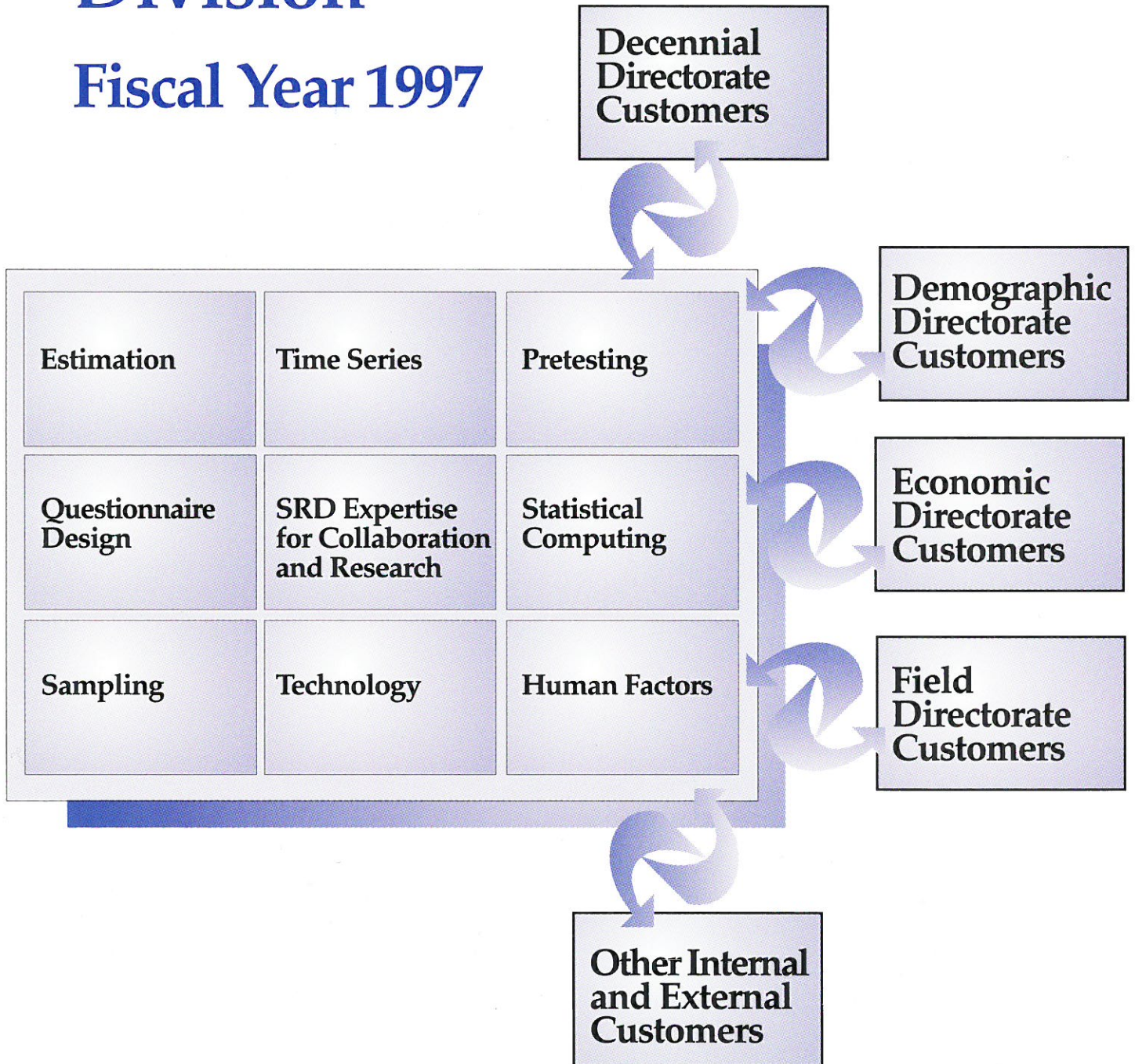


Annual Report *of the* Statistical Research Division

Fiscal Year 1997





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Statistical Research Division
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*For fiscal year 1997, this is an accounting of
for whom we did what, why, when, and where.*

Statistical Research Division

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1. COLLABORATION

1.1 CONTENT & QUESTIONNAIRE DESIGN (Decennial Project 6101)

A. 2000 Decennial Census Content

The objective of this research is to develop and test the content and design of the 2000 Census forms. This includes cognitive testing of the folds, icons, and envelopes for the long and short forms, as well as new questions pertaining to grandparents as caregivers and new disability questions. It includes review of the design elements and the question wording of the long and short mailout forms, Be Counted Form, long and short Simplified Enumerator Questionnaires, Individual Census Report, Individual Census Questionnaire, and Military Census Report. It also includes planning for the 1997 National Census Survey, a mailout/mailback field test of alternative design elements, which was subsequently cancelled..

During FY 1997, cognitive interviews were conducted with long and short mailout forms that focused on navigational issues, use of icons, and evaluation of two envelope designs. In both sets of interviews (Jenkins and Lee, 1996; Bogen, Lee, and DeMaio, 1996), problems were identified with the folding pattern of the forms. This research was used as input to making decisions about the design of the Dress Rehearsal forms. The rollfold, which proved superior to the accordion fold, although it did not perform perfectly itself, will be used for the short form, and the long form will be mailed out flat, that is, without a fold. At the request of the Population Division, staff conducted extensive review of the results of the 1996 National Content Survey and provided expert guidance on the question wording and design of the draft Dress Rehearsal mailout questionnaires as well as the Be Counted Form, long and short Simplified Enumerator Questionnaires, Individual Census Report, Individual Census Questionnaire, and Military Census Report. Staff also worked with the designers to improve the forms.

Staff worked with the Population Division to develop questions on the new census topic of grandparents as caregivers, which was mandated in recent welfare reform legislation. Cognitive interviews were conducted using these questions, and changes to the questions were made based on the results of the interviews (Gerber, Sweet, and Lee, 1997).

Staff worked extensively with the Office of Management and Budget Disability Working Group to consult with disability experts from other federal agencies in developing an alternative set of disability questions. Once the questions were developed, staff conducted cognitive interviews with two sets of questions, one developed by the Census Bureau and the other developed by the working group. The research results (DeMaio and Wellens, 1997) showed that the format of the Census Bureau caused misreporting by respondents, and the content of the alternative questions was problematic. As a result, a revised set of questions that incorporated aspects of both sets of questions has been adopted for the Dress Rehearsal.

Staff: Terry DeMaio, Karen Bogen, Eleanor Gerber, Cleo Jenkins, Meredith Lee, Betsy Martin, Lorraine Randall, Richard Smiley, Beth Sweet, Tracy Wellens

B. Be Counted Form

The objective of this project is to develop the questionnaire and procedures for the Be Counted operation for the 1998 Dress Rehearsal.

Staff participated as part of the Be Counted team and chaired the questionnaire design subteam. The questionnaire was designed during FY 1997.

Staff: Susan Ciochetto

C. Simplified Enumerator Questionnaire

The objective of this project is to develop and test short form and long form prototype instruments to be used by enumerators during nonresponse follow-up for Census 2000.

During FY 1997, staff participated as members of the long form and short form Simplified Enumerator Questionnaire (SEQ) teams. The long form was developed from scratch. The short form was used for nonresponse follow-up in the 1996 Community Census. Staff conducted an evaluation of audiotapes made during nonresponse follow-up, and a report is nearing completion. Work is also underway on a report documenting the results of a hothouse test of the SEQ short form.

Staff: Susan Ciochetto, Richard Smiley

D. Decennial Roster Research

The project goal is to develop and evaluate rosters for self-administered questionnaires that would help to improve coverage. Expanded coverage will be obtained by encouraging the inclusion of non-relatives, other persons who may be tenuously attached to the household, and persons whose residency situation may be ambiguous on the roster. The project includes analysis of alternative rosters tested in the mailout of the 1996 Community Census and of a classroom experiment that examines respondents' understandings of who should be included on census forms under different scenarios about residence.

During FY 1997, staff completed a report that documents the results of cognitive research conducted on five different alternative rosters in 1995. The results (Gerber and Wellens, 1997) showed that structuring the roster as a series of sequential cues for respondents to follow would be potentially useful in encouraging the listing of categories of persons who might otherwise be omitted. Staff also completed and presented at the American Association for Public Opinion Research Conference (Gerber, Keeley, and Wellens, 1997) a paper that documents the results of classroom testing of alternative rosters and analysis of vignettes (i.e., hypothetical scenarios) that evaluate respondents' understanding of the residence rules included on the census form. As a result of this research, an unnecessary and potentially confusing residence rule was removed from the Dress Rehearsal census form.

Staff also undertook analysis of data from the mailout forms for the 1996 Community Census, which contained a split panel test of a household count question vs. an extended roster that contained cues to elicit reporting of persons with tenuous connections to the census household. This report is currently nearing the final stages of completion.

At the request of the Associate Director for Methodology and Standards, an interdivisional team was put together and charged with making a recommendation to address the question of whether a roster significantly improves coverage on a self-enumerated demographic questionnaire. The team, composed of division staff as well as staff from the Demographic Statistical Methods Division, Decennial Statistical Studies Division, and Decennial Management Division, reviewed results of research conducted in previous censuses and census tests and made recommendations. As a result of their

recommendations, the Census 2000 short form will not contain a household roster and the long form will contain a roster.

Staff: Eleanor Gerber, Cathy Keeley, Betsy Martin, Rajendra Singh, Beth Sweet, Tracy Wellens, Tommy Wright

1.2 RACE & ETHNICITY TARGETED TEST (Decennial Project 6116)

A. Race and Ethnicity Reporting

This project has involved cognitive interviews to better understand how various populations define and perceive race and ethnicity, and to assess the effects of these perceptions on responses to new race and ethnicity questions designed with assistance from staff. The results were incorporated into the questionnaires for the National Content Survey and Race and Ethnicity Targeted Test questionnaires, which were conducted as part of the information-gathering for the Office of Management and Budget's (OMB) revision of *Directive 15*. Activities include working as part of an interagency team chartered to make a report to OMB of recommendations about the guidelines for race and ethnic reporting, and participating in additional testing of alternative race and Hispanic origin questions.

During FY 1997, staff drafted a report, which is nearing completion, that documents the cognitive work done by staff and other researchers to prepare questions for the National Content Survey and the Race and Ethnicity Targeted Test. Staff also participated in meetings and contributed to the report of OMB's committee to evaluate research on the race questions. Staff conducted additional cognitive testing of race and Hispanic origin questions after OMB made its preliminary recommendations, and assisted in implementing and overseeing a contractor's work on testing the questions with a large sample of cases. The results showed that the triple-banking (three column format) of the Asian and Pacific Islander response categories was not especially problematic, but other problems with race and ethnicity questions still exist. In addition, this research provided an opportunity to evaluate other aspects of the Dress Rehearsal questionnaire, such as the rollfold and the wording of the Whole Household Usual Home Elsewhere (WHUHE) instruction. As a result, the wording of the WHUHE instruction has been revised for the Dress Rehearsal.

Staff: Eleanor Gerber

1.3 1998 DRESS REHEARSAL (Decennial Project 6201)

A. Privacy Research

The purpose of this project is to conduct research to assess public opinion on privacy-related issues, such as confidentiality assurances by the Census Bureau, and attitudes toward data sharing among Federal agencies.

In fiscal year 97, staff prepared an analysis of the 1996 Survey of Public Attitudes Toward Administrative Record Use to aid in the development of various Census Bureau programs. Staff also participated in the development of the 1997 Study of Privacy Attitudes, a survey that was eventually cancelled.

Staff: Cathy Keeley

1.4 ICM SPECIAL TEST (Decennial Project 6236)

A. 1996 Integrated Coverage Measurement (ICM)

1996 ICM Operations

The purpose of this operation is to conduct questionnaire design research on automating the ICM household instrument.

In fiscal year 1997, staff completed an evaluation of the performance of the 1996 automated interview. We conducted a behavior coding evaluation of the ICM instrument using tape recorded interviews from the 1996 ICM test. We also implemented changes to the Dress Rehearsal ICM instrument based on the behavior coding evaluation.

Staff: Cathy Keeley

1996 Sampling and Estimation

The purpose of this project is to design and test Integrated Coverage Measurement methodologies for Census 2000 during the 1996 Census Test. Analysis and evaluation of the results will lead to decisions in preparation for Census 2000. Tasks will focus on all estimation (including imputation for missing data) for the 1996 Test for both CensusPlus and Dual System Estimation (DSE) methodologies.

During FY 97, staff designed, participated in, and

coordinated development of experiments, and sampling and estimation for the developed experiments for the 1996 ICM test. They developed computer specifications and data requirements for estimation, including handling of missing data. The staff, in coordination with other Bureau staff, developed and implemented a review process and reviewed results of various steps of estimation process. The staff researched, developed, implemented, and tested the 1996 ICM missing data system on test R-Sample, P-Sample, and E-Sample data sets from the 1996 Community Census. Staff examined the results for possible problems and produced CensusPlus and DSE estimates at the test site and sub site levels.

Staff observed DSE follow-up interviews in Chicago and at the Acoma Reservation. ICM was discussed with the staff at the Chicago Regional Office. Two reports were written which summarized the observations, and recommendations were made to improve overall census data quality.

Staff: Rajendra Singh, Rita Petroni, Michael Ikeda, Anne Kearney

Dress Rehearsal ICM Operations

The purpose of this project is to conduct questionnaire design research on automating various ICM instruments.

In fiscal year 1997, staff led and/or participated in multiple interdivisional teams planning the revision and expansion of the existing automated instrument, the automation of various supplementary ICM instruments, and in the design of the overall ICM project.

Staff: Cathy Keeley

B. Research on Enumerating American Indians

The objective of the project is to identify factors that contribute to the census omission or erroneous enumeration of American Indians. Additionally, the project is also intended to provide insight into how to best enumerate American Indians on and off reservations in the year Census 2000. Focus groups were conducted and analyzed from the Fort Hall Reservation. A report was prepared, providing findings on both positive and negative reactions of the Indians toward the Census, and their recommendations for improving the design and content of promotional materials, the use of native or culturally savvy

enumerators, and rephrasing the questions on ethnicity and household membership to make them correspond better to the local Indian culture.

Staff: Matt Salo

1.5 COVERAGE MEASUREMENT - ICM (Decennial Project 6352)

A. Special Place Facility CATI Instrument Development

The purpose of this project is to assist the development, implementation, and evaluation of a Computer Assisted Telephone Interview (CATI) instrument used prior to the census, among other things, to define and categorize special places and group quarters and update their address information.

In fiscal year 1997, staff conducted research to evaluate the Dress Rehearsal version of the Special Place Facility questionnaire, which is designed to collect address and contact information in preparation for census enumeration. We conducted on-site cognitive interviews at special places in the Dress Rehearsal areas (correctional institutions, group homes, nursing homes, juvenile institutions, colleges, hotels and motels), and also tape-recorded and analyzed both personal visit and CATI interviews conducted for the Dress Rehearsal. Staff developed a revised facility questionnaire and suggestions for operational changes based on the research, and submitted their recommendations to the facility questionnaire evaluation team.

Staff: Laurie Moyer

B. Research on Enumerating the Homeless

The project goal is to develop questionnaires, methods and procedures for improving census coverage of the homeless population. Tasks include evaluation of a Service-Based Enumeration (SBE) feasibility test that was conducted in September 1996 in New York City. The test examined a shortened questionnaire and new procedures, designed by staff, for enumerating at soup kitchens and mobile food van stops.

During FY 1997, staff completed a report of results from the small-scale SBE test conducted in New York City. The results (Gerber, Wellens, and Smiley, 1997) showed that a self-enumeration procedure was too time-consuming to use in the fast-moving situation of soup kitchens and mobile food van stops. In addition, the enumeration team was too small. As a result, the

number of enumerators in a team has been increased and the questionnaire will be enumerator-administered in the Dress Rehearsal. Staff also completed an evaluation of the quality of the demographic data collected by enumerators (Smiley, 1997) which showed that there were differences in quality between the soup kitchen and van run data, with the respondent name and (marginally) respondent race information being better when collected at the soup kitchen. Staff also participated in planning the listing of service locations for soup kitchens and mobile food van stops, and plans for enumerating encampments.

Staff: Eleanor Gerber, Richard Smiley, Tracy Wellens

C. 2000 Integrated Coverage Measurement (ICM)

The objective of this work is to conduct research to guide development of estimation and missing data procedures in ICM during the Dress Rehearsal and Census 2000.

Staff researched: using census edited and imputed data to form noninterview adjustment cells for ICM; alternative ICM characteristic imputation methodologies - 1996 ICM type methodology, the 1996 census edit and allocation methodology, replace E-sample data by census edited and imputed data; and appropriate ways to model match, residency, and correct enumeration probabilities.

Based on this research, staff is recommending appropriate ICM missing data procedures for Dress Rehearsal and Census 2000.

The staff has participated on a quick response team to address whether ICM should be conducted pre-and post-census day, and prepared a document for the Census 2000 Committee on Statistical Policy (CCSP) regarding primary selection algorithm/estimation issues to the Statistical Design Team Leaders.

Staff: Rajendra Singh, Rita Petroni, Mike Ikeda, Anne Kearney

D. DSE Search Areas Research

The purpose of this ICM research is to investigate the impact of search area on DSE estimates and their variances. A two phase research approach was planned. During Phase I, staff will use the 1990 PES data to investigate an alternative search area definition.

Staff will apply the 1995 search area definition to the 1990 data and evaluate how the results differ from those obtained in 1990. Research in Phase II will depend on the outcome of Phase I. If the search area size does affect the estimates significantly, Phase II will develop methodology for possible use in 2000. The methodology will account for "nonresponse follow-up" and "undeliverable as addressed" samples.

During the FY 1997, staff obtained additional archived 1990 PES files for this project and developed a methodology for handling surrounding block duplication in the simulation. The staff considered how to measure variance increase effects under sampling for nonresponse follow-up. The PES data was recoded to reflect 1995 Census Test search area definition, and PES estimation programs were run to calculate estimated probabilities of correct enumeration and of match for the modified data. Staff discussed preliminary results with other ICM staff.

Staff prepared a proposal for DSE search areas for Dress Rehearsal and Census 2000. The proposal also presented alternatives for addressing the concern that geocoding errors will be a major problem in a few isolated blocks and thus, if we search only within a block, it will result in increased variances. The proposal on the DSE search area was presented to the statistical design PSC and the CCSP.

Staff: Rajendra Singh, Rita Petroni, Richard Griffiths, Mike Ikeda

E. Post Stratification Research

ICM post-stratification research will use 1995 ICM and census data to explore the potential of alternative post-stratification schemes to reduce heterogeneity, bias, and, secondarily, the negative fourth cell phenomenon. The alternatives include formation of post-strata based on inclusion probabilities, hard-to-count scores, and hard-to-count scores crossed by combinations of demographic characteristics. If an alternative appears promising, we may implement it on the 1990 Census data.

Staff developed definitions of post-strata based on inclusion probabilities and hard-to-count (HTC) scores. Staff identified data sources and methodology to compute ICM estimates and files necessary for computation of inclusion probabilities and logistic regression-based 1995 estimates. Staff completed site-level estimates and their variances based on inclusion probability and HTC post-strata. They also completed

site-level analysis of estimates based on inclusion probabilities and HTC post-strata. Staff produced logistic regression-based benchmark estimates.

Staff: Rita Petroni, Anne Kearney, Denise Sanders, Rajendra Singh

F. GQ Enhancement

The purpose of this project is to develop a method to match, merge, and resolve discrepancies among the several Census Bureau frames which list Decennial "group quarters" or those business and government facilities which have a domiciliary function in order to enrich, evaluate, and update a frame of group living facilities for continuous measurement and for the Decennial and Economic censuses. In a May 1997 meeting, a compromise was struck with regard to the Dress Rehearsal: a separate coverage evaluation of the population in group quarters will be conducted and Group Quarters will be temporarily omitted from the Integrated Coverage Measurement (ICM). This evaluation expands the scope of the planned comparisons among the Decennial group quarters frame (the Special Places/Group Quarters list) and other Census Bureau frame sources. Staff constructed a preliminary frame from public Internet sources of just under 1000 records. Each record lists the address and other information for one or more potential units of enumeration; places that are or contain group quarters such as state licensed nursing homes, colleges, prison complexes, military bases. Designing the public frame with flat records served to prototype the variables and format for the final GQ evaluation frame. The public frame also proved to be a useful illustration of listing records which could be freely shown to, and shared with, local collaborators.

Staff: Leslie Brownrigg

G. Quality Assurance Research

The purpose of this project is to provide consultation and participation in the design and evaluation of quality assurance activities associated with the Integrated Coverage Measurement (ICM) for the Dress Rehearsal. Work is done as part of the Quality Assurance Subteam of the ICM Program Steering Committee. The ICM processes are examined to determine what need there is for QA, and how best to conduct the QA activities efficiently and effectively. Plans are made as needed for tests of new QA procedures during the Dress Rehearsal, and after that, the QA designs will be fine tuned for Census 2000.

During Fiscal Year 1997, staff, as part of the QA team, participated in reviewing 1996 Test Census QA operations and the development of QA plans for Dress Rehearsal ICM address listing, address data capture, housing unit matching, housing unit follow-up interviewing, person interviewing, person matching, and person follow-up interviewing. This included QA designs for operations using field interviewers, field office clerks, processing office clerks, and interactive software.

Staff: Carol Corby, John Linebarger, Denise Sanders

H. 1996 ICM Rostering and Administrative Evaluations

The objective is to evaluate the redesigned rostering approach used in the 1996 Community Census and to evaluate the use of administrative person records on the CensusPlus estimates of the 1996 Community Census.

Draft reports on the redesigned rostering approach and the administrative person records evaluation were completed. Results from the administrative person records evaluation were presented at the Joint Statistical Meetings in Anaheim, CA.

Staff: Beth Sweet, Meredith Lee, Tracy Wellens, Eleanor Gerber

1.6 RESEARCH AND DEVELOPMENT ON SAMPLING METHODOLOGY (Decennial Project 6356)

A. Transparent File Research

The purpose of this research is to develop methodology for construction of a short form Decennial Census transparent data file (a file that would not distinguish between persons (and housing units) counted through direct contact and persons (and housing units) statistically estimated) for Census 2000. It also includes development of software and an operational system to be applied to data. Research will include an analysis of the properties of resulting small area estimates of population and housing.

During Fiscal Year 1997, staff successfully developed several methodologies for constructing a transparent file based on 1995 Test Census data. The work involved both estimation of household counts

under Dual System and CensusPlus methods as well as quadratic programming methods with person constraints. Several draft papers documenting the household estimation methods were completed. A draft paper on transparent file construction in a one number census situation was completed. Early results on research were present at an SRD seminar and several meetings of the Committee on National Statistics Panel on Alternative Census Methodologies. Future research on housing unit estimation methods will focus on the long form sample situation.

Staff: Cary Isaki, Julie Tsay, Mike Ikeda

B. Decennial Edit/Imputation Research

First tests of the edit portion and imputation portion of the edit/imputation system were completed. The software is quite fast. Preliminary documentation of imputation methods was written. Most edits reside in easily modified tables. The main source code of the Fellegi-Holt system can be used on other surveys. Characteristics of housing units are imputed using an EM Algorithm and Gibbs sampling. Person characteristics are imputed via a combination of logistic regression for relationship and ordinary regression for age characteristics. The chief characteristic of the system is that valid statistical models, subject to testing and review, are used. The system often targets key distribution characteristics at the tract level and automatically adapts across tracts. Joint distributions such as Hispanic-race and race by age ranges are better maintained than with hot-deck methods. Variance estimation is part of the system. The "check one or more" races question is dealt with straightforwardly.

Staff: Bill Winkler, Bor-Chung Chen, Yves Thibaudeau, Todd Williams

C. Census 2000 Disclosure Avoidance Research

The purpose of this project is to develop, test, and analyze techniques involving data swapping and data restriction to be used for disclosure limitation for Census 2000. It also included development of software to perform disclosure limitation for Census 2000. Staff worked with the Disclosure Review Board and staff in the decennial area to ensure that both groups are satisfied that the data have been protected and remain statistically useful and valid.

During Fiscal Year 1997, staff developed the

prototype systems for disclosure limitation for the data from the census "long form" and for the data from the census "short form." The prototypes involve data swapping, which means that pairs of household records that agree on some variables but are in different geographic locations, are swapped across the geographic locations (Steel and Zayatz, 1997). The prototypes were modified to incorporate changes requested by the Disclosure Review Board, including requiring that each household that is the only household in its block with someone of a given race be swapped. Staff also modified the prototypes to incorporate changes requested by staff in the Housing and Household Economics Statistics Division and the Population Division including that all swapping be done within small geographic areas so that certain statistical properties of the data will be maintained. Staff tested the prototypes and documented the results. Staff provided the Decennial Management Division with test outputs which it reviewed and successfully used to perform the swapping. Staff successfully used the prototypes for the 1996 Census Test data. Staff began revising the prototypes to improve production performance focusing on CPU time.

Staff: Laura Zayatz, Ruben Mera, Bev Causey, Philip Steel

D. Automated Coding Research

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 the development of prototypes, standards and tools, and the education of agency personnel about the latest technologies, and assisting with the implementation of these new methodologies.

During FY 97, the staff and members of the Housing and Household Economic Statistics Division (HHES) prepared documents for decennial management to alert them to the need to begin funding Industry and Occupation (I&O) coding research now. It was proposed, and decennial management accepted, a broad research and development plan. The staff and members of HHES prepared documents for decennial management to warn them not to try to resurrect the 1990 Automated Industry and Occupation Coding System for use in Census 2000. HHES provided funds to develop five prototype I&O coding systems for

assessment for possible use in the Census 2000 I&O Coding operation. Based on research and evaluations performed since the 1990 Census, the staff obtained estimates for producing an I&O coding proof-of-concept system for NIOSH, Inference Group (Australia), Statistics Canada, Lawrence Technologies, and INSEE (France). These estimates were forwarded to the Decennial Management Division. The Disclosure Review Board agreed to let the I&O coding test files go to the public after records with specific terms in them are removed. By the end of the fiscal year, the decision was made to fund all five prototypes.

Staff: Dan Gillman, Marty Appel

E. The Success of Past Censuses

Staff conducted research and drafted a paper covering the first six censuses. The staff read official census histories, Margo Anderson's *The American Census: A Social History*, and parts of other papers and books, including Carroll Wright and William Hunt's *History and Growth of the United States Census: 1790-1890*, methodology papers on the Minnesota Historical Census Projects: 1850-1990, Bureau of the Census Director S.N.D. North's *American Census Taking: From the First Census of the United States*, and Hyman Alterman's *Counting People: The Census in History*. We produced two tables; one documenting the official census numbers and their changes over time with reasons, and the other comparing official census numbers to demographic analysis estimates from 1880-1990. Staff discussed work with interested parties including Leslie Brownrigg, Howard Hogan, and Dave Pemberton (history staff) and attended relevant seminars throughout the year.

Staff: Miriam Rosenthal, Tommy Wright

F. Evaluation Program Steering Committee

The work of this committee is to coordinate all of the efforts leading to the Evaluation Program of the Dress Rehearsal and the Evaluation Program of Census 2000. During FY 1997, the approach taken by the committee for the Dress Rehearsal and Census 2000 is to provide performance measures in three major categories:

- *Status Reports:* Status Reports on the progress of different aspects of the Dress Rehearsal (Census 2000) at different points-in-time over the Process. A main feature of the status

reports will provide actual vs. projected comparisons.

- Quality Assurance Checkpoints: Periodic quality checks, many based on statistical sampling and demographic methods, will be used to monitor the Dress Rehearsal (Census 2000) Process and signal when extra efforts are needed to ensure the process continues to operate as planned. A part of the Dress Rehearsal (Census 2000) Report Card will provide comprehensive results from selected QA checkpoints.
- Evaluation Studies: Evaluation studies will be diverse and include some studies which will point to how good the Dress Rehearsal estimates are in terms of statistical measures and consistency checks. Where appropriate, the studies will include estimates of the magnitude of nonsampling error and sampling error and will point to areas for improvement.

For both the Dress Rehearsal and Census 2000, the plan is to provide these measures by issuing a Census 2000 Dress Rehearsal Report Card and a Census 2000 Report Card respectively. For the Dress Rehearsal, the committee completed several drafts of the report - "CENSUS 2000 DRESS REHEARSAL: Evaluation Program."

Staff: Tommy Wright, Marty Appel, Eleanor Gerber, John Linebarger, Miriam Rosenthal, Denise Sanders, Rajendra Singh, Florence Abramson (DSSD), Susan Ammenhauser (TMO), Solomona Aoelua (C2PO), Nancy Bates (DIR), Dick Blass (FLD), Linda Franz (GEO), Ed Gore (DMD), Charisse Jones (DMD), Sandy Lucas (FLD), J. Greg Robinson (POP), Jimmie Scott (DSSD), Joel Sobel (GEO), Ann Vacca (DSSD).

1.7 CURRENT POPULATION SURVEY (Demographic Project 0906)

A. Current Population Survey (CPS) Methodological Research

The purpose of this project is to provide expert consultation and participate in methodological research sponsored by the Bureau of Labor Statistics (BLS) to improve the quality of the Current Population Survey (CPS), in particular, the survey instrument.

Staff participated in ongoing meetings conducted by the BLS to monitor and coordinate CPS activities, and provided advice and consultation as requested. Support was provided to BLS in its activities related to a large-scale review of race and ethnicity

reporting conducted for the Office of Management and Budget. Staff also participated in an interagency group jointly sponsored by BLS and the Census Bureau on Household Survey Nonresponse. A research proposal for a field test to evaluate modified rostering methods which could benefit coverage in demographic surveys, including CPS, was presented and received favorably, and work on this project (described below #0906C) proceeds.

Staff: Betsy Martin, Jeff Moore

B. Current Population Survey (CPS) Supplements

CPS March Supplement Research

The purpose of this project is two-fold: (1) to design, conduct, and analyze exploratory cognitive and other research to investigate measurement problems in the CPS March Supplement, and recommend questionnaire design solutions; and (2) to investigate ways to improve interviewer training and performance on the March Supplement. Staff served on two committees, with representatives from many Bureau divisions and from outside agencies, which coordinated work on the two major tasks.

In fiscal year 1997, both the interviewer performance and the questionnaire redesign groups developed work plans and budgets which they submitted to the Demographic Surveys Division, and to the CPS March Supplement Research Oversight Committee. The interviewer training/performance group's plan was accepted as written. The questionnaire redesign group's efforts however, were redirected toward implementing welfare-reform-related instrument changes for the March 1998 survey. Both groups used the March 1997 survey period to collect baseline data. The training/performance group administered a debriefing questionnaire to Field Representatives at the end of the group training sessions, an evaluation form for the trainers, and also implemented a field observer's report guide; data from all of these efforts are currently being analyzed. The two groups jointly developed a protocol for debriefing sessions with interviewers which were carried out in New York and Jeffersonville; the Bureau of Labor Statistics staff is preparing the transcripts of those sessions. The questionnaire group taped 150 interviews for behavior coding and conducted respondent debriefings with 150 households. Analysis of these data was put on hold however, in order to concentrate on the immediate problem of

how to modify the March Supplement in response to changes to the welfare system. The instrument redesign group conducted cognitive interview research to assess the need for changes to the Supplement. Staff completed and summarized interviews with 26 current or former welfare recipients in seven states (Florida, Massachusetts, Michigan, Minnesota, Tennessee, Virginia, and Wisconsin) and issued a final report of the results of this research, including recommendations for revisions to existing questions and for additional questions to be added to the March 1998 instrument.

Staff: Karen Bogen, Andy Zukerberg, Julia Klein Griffiths, Jeff Moore

C. Food Security Supplement

The goal of this project was to test and improve the questionnaire for the Food Security Supplement.

Staff behavior coded food expenditures questions, wrote a report, and met with the Food and Consumer Service to revise the questions, which were subsequently fielded. This project is complete.

Staff: Jenny Hess

1.8 AMERICAN HOUSING SURVEY (AHS) (Demographic Project 0907)

A. American Housing Survey (AHS) Research

The purpose of this project is to design, conduct, and analyze exploratory cognitive and other research to investigate measurement problems in the redesigned AHS CATI/CAPI instrument, and recommend questionnaire design solutions.

In fiscal year 1997, staff completed reports of research conducted on several sections of the AHS instrument, including: (1) a report describing research conducted the prior year on AHS's proposed new "home office" questions, and recommending wording changes; (2) a cognitive interview research project evaluating the AHS "contributors to housing costs" questions; and (3) a cognitive interview research project evaluating the survey's lead paint questions. Staff also reviewed and recommended modifications to the proposed "observation" items (which formerly were completed by interviewer observation but which now will be asked of respondents).

Staff: Jeff Moore, Dawn Von Thurn, Andy Zukerberg

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

A. Survey of Income and Program Participation (SIPP)

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.

In fiscal year 1997, staff provided expert consultation to Housing and Household Economic Statistics Division and Demographic Surveys Division on the design of topical modules for Wave 3 of the 1996 Panel (work expenses, child support paid, medical out-of-pocket costs), Wave 5 (employee health benefits and welfare to work questions), and the Wave 6 (child well-being) and Wave 7 (pension) modules. We also assisted with development of revisions to SIPP core questions concerning increasingly out-of-date welfare programs (such as AFDC). Other research projects included the development and implementation in Wave 4 of a respondent debriefing instrument related to welfare reform issues; a lead role in the development and testing of a proposed new Wave 8 topical module devoted to welfare reform; and cognitive interview research to evaluate the Wave 8 Adult Well-Being module. Staff also conducted research on the feasibility of using administrative records and census information to compensate for Wave 1 household nonresponse in SIPP.

Staff: Jeff Moore, Karen Bogen, Julia Klein Griffiths, Kent Marquis, Betsy Martin, Esther Miller, Heather Tedesco

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.

In fiscal year 1997, the CIIG completed a thorough review of the Wave 1 core SIPP labor force

questions, including a cognitive interview research project among persons with non-mainstream employment situations, and issued a report recommending developmental research and instrument improvements for the 2000 SIPP Panel. The group also initiated reviews of several other sections of the instrument: demographic (control card) questions, general income (program) reciprocity, asset reciprocity, earnings, and general income amounts. Although CIIG's primary focus is the Wave 1 core instrument, we also served as the vehicle for ensuring SIPP's adherence to the Bureau's pretesting policy, which required careful review of, and modifications to, implementation schedules for the Wave 8 topical modules, in order to allow time for testing of new and/or unproven content.

Staff: Betsy Martin, Jeff Moore, Karen Bogen, Julia Klein Griffiths, Lorraine Randall

Longitudinal Weighting

The principal objectives of this project are to: (1) assess the effectiveness of the current longitudinal weighting procedure through the analysis of data from previous SIPP panels; and (2) develop and recommend a plan for future longitudinal weighting research.

The staff completed a general theoretical and empirical assessment of the current longitudinal weighting procedure and several other weighting options. A research proposal was developed for further research on potential weighting schemes for nonresponse and the modeling of attrition. Following reviews by the SIPP Research and Evaluation Committee and the ASA Survey Research Methods Section Advisory Group, the research plan was implemented, and work began on the development of three nonresponse weighting alternatives.

Staff: Leroy Bailey, Todd Williams

Adapting Standard Analytical Procedures to the Complex Sampling Structure of SIPP

The intent of this project is to develop guidelines for adapting standard analysis methods for use in 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.

We developed an adaptation of a balanced half-sample procedure for the calculation of variances for SIPP, which compared favorably with the corresponding procedures available through SUDAAN and Westvar. In addition, staff developed and began the analysis of methods designed to compare selected variance estimation methods to the generalized variance estimation technique. Work proceeded on the investigation of issues relating to the design-based frequency tables and the multivariate modeling and estimation methods for complex surveys.

Staff: Ruben Mera, Leroy Bailey

Spell Length (Survival) Analysis

This project was designed to address the effective estimation of such statistics as multiple occurrences of spells of program participation of analytical units, right censoring of spells due to limited observation periods, and dependencies among analytical units.

The applicable models and the proposed estimation procedures were developed previously. Work during the past year focused on the extension of the empirical assessment of the methodology to include several additional items suggested by our analysis. The results of this phase of the evaluation of the proposed approach to spell length analysis were consistent with earlier results, and therefore suggested that the technique would provide a desirable alternative to the current methods.

A paper which documents the spell length research and describes related work in this area was completed. Planning for the implementation of the proposed methodology should proceed in the near future.

Staff: Beverley Causey, Leroy Bailey

1.10 SURVEY OF PROGRAM DYNAMICS (Demographic Project 1467)

A. Survey of Program Dynamics

The purpose of this project is to develop, test, and evaluate the questionnaires used in the Survey of Program Dynamics (SPD). This includes both the SPD "core" questionnaire as well as the self-administered adolescent questionnaire. Staff worked with sponsoring divisions (Population Division and

Housing and Household Economic Statistics Division (HHES)), and managing divisions (HHES and Demographic Surveys Division) to ensure that the survey content and planned survey procedures were acceptable to all parties.

During Fiscal Year 1997, staff developed the SPD core questionnaire to be used in the Fall 1997 SPD pretest, developed CAPI authoring specifications, and responded to a multitude of questions from the authoring staffs at the University of Berkeley and the Technologies Management Office. Selected areas of the core questionnaire were tested using think-aloud cognitive interviews, summaries were prepared and evaluated, and recommendations for questionnaire revisions were provided to sponsoring divisions. Final questionnaire revisions were then negotiated with the sponsoring divisions. In collaboration with Child Trends, Inc., content and procedures for the self-administered adolescent questionnaire were developed and approved by the SIPP/SPD Executive Committee and OMB for the Fall 1997 pretest. Cognitive interviews were conducted with adolescents 12-17, interviews were summarized, and recommendations for revisions were provided to Child Trends, with whom we negotiated the final question wording.

In preparation for the October 1997 SPD pretest, staff reviewed all survey related materials (Field Representatives (FR) training guide, FR manual, Job aids, FR procedures, etc.) and provided written comments to DSD and FLD. Staff proposed evaluation forms for observers attending FR training and interviewing observations to enable a systematic review of what was observed in the field. This information will serve as input for improvements to the questionnaire and other FR materials for the production survey in Spring 1998. Staff also developed a Project Overview documenting the planned evaluation for the October 1997 pretest, which includes using data from FR debriefings, behavior coding of interviewer-respondent interactions, and interviewing observer reports. Child Trends will conduct analysis of the pretest data obtained from the self-administered adolescent instrument.

Staff: Jennifer Rothgeb, Jennifer Hess, Andy Zukerberg, Lorraine Randall

1.11 CONTINUOUS MEASUREMENT (Demographic Project 4200)

A. American Community Survey (ACS) Research

The purpose of this project is 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.

In fiscal year 1997, staff completed a paper, "Person- vs. Topic-Based Design for Computer-Assisted Household Survey Instruments," which was presented at the InterCASIC '96 Conference, and which drew, in part, on the results of a small-scale laboratory investigation of different instrument designs for the ACS CATI nonresponse follow-up questionnaire. With an inter-divisional working group, staff developed plans for a FY 1998 field test of person-based and topic-based instruments, including the overall design of the test and staffing plans, and evaluation components such as interviewer and respondent debriefings, behavior coding, household and item nonresponse evaluations, response variance investigations (since disapproved), data profile comparisons, etc. Staff also completed a paper examining respondents' strategies for answering a "last 12 months" income question in the ACS telephone interview, and conducted reviews of (and prepared comments on) the design of the CATI follow-up instruments to be used in the field test.

Staff: Jeff Moore, Laurie Moyer

1.12 SCHOOLS AND STAFFING SURVEY (Demographic Project 7168)

A. Schools and Staffing Survey

The purpose of this project is to design, conduct, and analyze methodological research to improve the questionnaires for the Schools and Staffing Survey.

In fiscal year 1997, staff's research on efforts focused on improving the Teacher Listing Form (TLF) through cognitive interview research. We conducted twenty cognitive interviews, in three waves, with revisions to the TLF after each wave. Staff prepared

a final report detailing the findings of these interviews and recommending revisions to the TLF instrument. We also implemented a redesigned form based on these recommendations, which will be field tested in FY 1998.

Staff: Andy Zukerberg, Meredith Lee

1.13 INTERCENSAL INCOME AND POVERTY ESTIMATES (Demographic Project 7184)

A. Research for Small Area Income and Poverty Estimates

The purpose of this research is to develop methods to produce "reliable" income and poverty estimates for small geographic areas and/or small demographic domains (e.g. poor children age 5-17 for counties). The methods should also produce realistic measures of the accuracy of the estimates (standard errors). The investigation includes assessment of the value of various auxiliary data from administrative records in producing the desired estimates, evaluations of the techniques/models developed, and documentation of the methodology. Work is done in collaboration with the Housing and Household Economic Statistics Division (HHES), and partly guided by requests from the National Academy of Sciences (NAS) Review Panel on Estimates of Poverty for Small Geographic Areas.

During 1997, efforts concentrated on development and evaluation of county models of poverty among school age (5-17) children. A bivariate model was developed to integrate 1990 census data with current CPS data in a way that allows for sampling error in the census poverty estimates (which derive from long form results). Software was developed for estimation and evaluation (diagnostic checking) of the bivariate and other forms of county poverty models. Results for a large set of models were presented to the NAS Panel over several meetings. Based on these results, the panel is currently in the process of developing its report with recommendations to the Secretaries of Commerce and Education as to whether the county poverty estimates should be used (in place of estimates from the 1990 census) to allocate up to \$7 billion of annual Title I education funds. Some research on time series estimation of state poverty rates was also completed and presented at the conference on Current Topics in Survey Sampling, held at the University of Nebraska.

Staff: William Bell, Mark Otto, Matt Kramer

1.14 HHS/FRINGE BENEFITS (Demographic Project 7300)

A. Research on Employer Provided Fringe Benefits

The desire for a SIPP employer based fringe benefit supplement grew out of a need for Census Bureau analysts to obtain a more complete picture of employee compensation at the work place. To date, earnings trends using household survey data are often criticized because they rarely include data other than wages. The goal of this supplement is to supplement the wage data with data on employee fringe benefits. The survey includes questions about the availability and participation of an employee with regard to: 1)Health Insurance Benefits; 2)Pension and Retirement Benefits; 3)Life Insurance Benefits; 4)Long Term Disability Insurance Benefits; 5) Child Care Benefits; and 6) Other Fringe Benefits.

This particular project focused on evaluating and revising the questionnaire using the cognitive interviewing technique.

During the year, staff completed an expert review of the questionnaire, conducted a first round of cognitive interviews at employer sites, and revised the questionnaire based on the results. They conducted a second round of cognitive interviews with the revised document and developed final questionnaire recommendations. The results and recommendations were incorporated into a final report and also presented to clients at the Department of Health and Human Services.

Staff: Esther Miller, Wendy Davis

1.15 CENSUS OF RESIDENTIAL JUVENILE FACILITIES (Economic Project 7540)

A. The Children in Custody Questionnaire Redesign Project

The questionnaire redesign for this project sponsored by the Office of Juvenile Justice and Delinquency Prevention has two main objectives: 1) develop a new individual-level, roster-based census form to replace the Census of Public and Private Juvenile Detention, Correctional, and Shelter Facilities; and 2)

revise the screening and classification questions for facilities housing such juveniles. Research involved unstructured interviews, cognitive interviews, and a split-panel test of a new questionnaire.

During FY 1997, staff documented the results (Schwede and Gallagher, 1996) of cognitive interviews using a newly-developed questionnaire based on previous rounds of research. The results were used to fine-tune the questionnaire before testing in a split-panel test of the old and new questionnaires and a feasibility test of the new questionnaire with central reporters (that is, respondents who report for multiple facilities). Staff worked collaboratively with the Economic Statistical Methods and Programming Division (ESMPD) to analyze the data and prepare reports of results (Schwede and Ellis, 1997; Ellis and Schwede, 1997). The results indicated that the new questionnaire achieved a significantly higher overall response rate than the original form, during a shorter data collection period, and obtained high quality data. It was concluded that the new questionnaire worked well enough (with a few minor revisions) to replace the old questionnaire in the October 1997 census. The sponsor agreed and the new questionnaire is currently being fielded.

Staff also wrote a report to the Office of Management and Budget (Schwede, 1997) summarizing the results of iterative research on this multi-stage project concerning third-person reporting of Hispanic origin and race data in this establishment census. This paper identified a unique mix of factors that affect the quality and completeness of Hispanic origin and race data in facilities and documented that the separate Hispanic origin and race questions recommended for use in household data collections do not work well in this census. On the basis of the three-year research in this paper, OMB agreed to give special approval to use a combined Hispanic origin/race question with an "other" category in the upcoming census. This document appears to be the first paper on the quality of Hispanic origin and race data collected in group quarters.

Staff: Laurie Schwede, Terry DeMaio, Yuki Ellis (ESMPD), Catherine Gallagher

1.16 CHILDREN IN CUSTODY FACILITY PROJECT (Economic Project 7542)

A. Children in Custody Facility Census Questionnaire

This project involves the development of a facility census questionnaire, a new data collection effort that will expand upon the facility questions that are included on the current Children in Custody questionnaire and collect information on the availability of educational, health, mental health, and substance abuse services. The work, conducted for the Office of Juvenile Justice and Delinquency Prevention, consists of unstructured interviews, questionnaire development, cognitive testing, and perhaps field testing.

During FY 1997, staff developed a research protocol and collected unstructured interview data at 20 facilities in 6 states. A report documenting the results is nearing the final stages of completion.

Staff: Laurie Schwede, Bonnie Carver, Terry DeMaio, Linda Hiner, Catherine Gallagher, Carol Macauley, Lorraine Randall

1.17 GENERAL RECORD LINKAGE SUPPORT FOR AGRICULTURE (Economic Project 7962)

A. General Record Linkage Support

This project involved the development of the 1997 Census of Agriculture mailing list for the U.S. and Puerto Rico. Matching was done in two phases, with eleven source address files in phase I and sixteen files in phase II. Files were standardized, unduplicated, and tracked. The tracking software, newly developed for this project, enabled multiple addresses to be associated with the same establishment.

Staff completed system development and both phases of the Agriculture production work. Preliminary review by NASS-AGR indicate that matching results are of high quality.

Staff: Bill Winkler, Ned Porter

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

CASIC Related Research

The purpose of this project is to provide technical advice and support to the Computer Assisted Survey Research Office (CASRO). Specifically, research is conducted to identify, assess, and educate about new technologies and methodologies for the collection, capture, and analysis of survey and census data. This research includes the development of prototypes, standards, and tools, and the education of agency personnel about the latest technologies, and assisting with the implementation of these new methodologies.

A. Imaging and Paperless FAX Image Reporting System (PFIRS)

The Current Trade Report project investigated the use of faxing out of reminder notices and questionnaires for the Current Trade Survey. This research project has migrated to a production environment on schedule, according to plans. The day-to-day activities were taken over by staff and equipment in TMO. The Current Trade Survey faxed out approximately 2200 reminder notices per month, with the Monthly Retail Survey faxing out approximately 3500 per month. In April 1997, reminder notices were faxed to all establishments contained in the Retail ISPN database. TMO is using the HostFax technology (16 fax lines) and its Fax Control Language for the imprinting of respondents' data. The project has been completed.

Staff: Tom Petkunas

B. M3 Survey Targeted Test

This project involves developing a PFIRS system that processes a sample of M3 monthly questionnaires received by fax. The M3 staff decided to end receiving monthly reports via the system until the requirements for image search and retrieval can be met. The first possible option for adding search and retrieval capabilities to the existing survey involved the Watermark image management software. TMO purchased the Watermark Developer Toolkit, which we received in December. We worked to integrate the two software packages (Teleform and Watermark). Faxed questionnaire images received via TeleForm have

been incorporated into the Watermark search function. Analysts can search for previous months' questionnaires by CFN or company name.

Staff: Tom Petkunas

C. HostFax

For the first time, faxed questionnaires received and routed by the HostFax software have been recognized, and their data interpreted by the TeleForm Elite Optical Character Recognition (OCR) software. It is now possible to use the same faxing software, HostFax, for both outgoing and incoming faxes.

Staff: Tom Petkunas

D. ICR3 Evaluation

The purpose of this project is to support Field Division in its evaluation of the imaging system ICR3 for cost, progress, and payroll processing for use in field offices in Census 2000. The ICR3 software has not produced the results that were expected. Therefore, it has been decided that the ICR3 software will not be used for interpreting data from the enumerators' Daily Pay and Work Record for the Census 2000. Instead, DataCap's TaskMaster/Paper Keyboard OCR software will interpret the enumerator's data from these forms. Staff is currently helping the Field Division implement this system for the Dress Rehearsal.

Staff: Tom Petkunas

E. Large Vocabulary Voice Recognition Entry (VRE)

This project is experimenting with a prototype voice recognition application that could be used on a laptop computer and made for automated listing of addresses. Development of the VRE field listing instrument prototype was begun. The screens for rural listing were constructed based on a design used by a PEN instrument in a field test in 1993. Urban listing screens were based on the ICM study. Windows drivers were procured to perform VRE with the sound chip in the notebook PC. It was found during development, that the speech software would support command and control applications, but not open-ended dictation, so new software was ordered to enable this feature. A voice-activated, wearable computer was viewed at the Federal Office

Systems Expo. The staff hosted a demonstration by the vendor for interested Bureau people to see if this device has potential for census or survey applications. A research plan was written and circulated for comments. Most of the feedback dealt with having to look at the screen while driving, and use of a small, wearable computer versus a notebook or pen computer. The plan emphasizes using audio prompting and echoing the input to minimize looking at the screen. Use of the wearable computer will be compared and contrasted with other technologies the Census Bureau is considering for listing.

Staff: Larry Malakhoff

1.19 OJJDP/DEPARTMENT OF JUSTICE (Methodology and Standards Project 7525)

A. Juvenile Probation Survey

This project involves research that will ultimately 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 the Census Bureau 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 FY 1997, staff completed administrative details related to the project and consulted with the sponsor. Actual research will begin in the next fiscal year.

Staff: Laurie Schwede

1.20 RESEARCH ON PRINT DISABILITY LIBRARY OF CONGRESS (Methodology and Standards Project 7566)

A. Research on Print Disability

The project was initiated by the American Foundation for the Blind to evaluate questions used to generate functional visual impairment (specifically, print reading disability) statistics on two national surveys, the Health Interview Survey (HIS) and the Survey of Income and Program Participation (SIPP). The scope of these two surveys is quite different in terms of the respondent rules they use and the primary survey content. As a

consequence, the operational definition of visual impairment is different for the two surveys and results in substantially different prevalence estimates. The evaluation used cognitive interviewing methods to learn whether measures of print disability are tapping differences in question meaning. The interviews suggested that respondents basically interpreted the questions from the two surveys to be asking the same question. However, the different contexts set by the two surveys seemed to influence the way respondents answered the questions. Specifically, it seemed that the preceding questions in the HIS, all of which had to do with visual ability, may have influenced respondents to think more positively about their visual ability.

The results of these interviews will be used as a basis for making recommendations to improve and coordinate the collection of visual disability data. A final report is in preparation and results are expected to be presented at an SRD seminar and at a conference next year.

Staff: Wendy Davis (DSSD), Paul Beatty (NCHS)

1.21 STATISTICAL CONSULTING POSTAL RATE COMMISSION (Methodology and Standards Project 7676)

A. Statistical Consulting/Postal Rate Commission

The work associated with this project entails 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 includes (1) briefing the commissioners and their staffs on desirable approaches to identified statistical questions, and (2) presenting written summaries of major findings from all assigned reviews.

During the year, staff provided various briefings and technical advice and reviews to the Commission, relative to the analysis of survey results and associated testimony and documentation from two classification cases. The primary issues on which the consultation focused included: (1) the statistical defensibility of survey estimators; (2) assessments of the effects of nonsampling errors on market research results; and (3) confidentiality and statistical disclosure. In addition, we drafted major sections of a substantial revision of the Commission's rules

concerning the review of statistical studies.

Staff: Leroy Bailey

**1.22 IPA FOR TRACY WELLENS
AT NATIONAL ACADEMY OF SCIENCES
(Methodology and Standards Project 8910)**

This mobility assignment provided a research associate to participate in workshops, committee activities, and panels involving topics including disability statistics, establishment surveys, and transformation to quality organizations. This project has been completed.

**1.23 IPA FOR BETSY MARTIN AT JOINT
PROGRAM ON SURVEY METHODOLOGY
(Methodology and Standards Project 8932)**

Under an Interagency Personnel Agreement, Betsy Martin taught a course on Questionnaire Design with Stanley Presser in Fall 1996.

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

A. Division Leadership and Support

During FY 97, this staff provided leadership and support for the overall operation of the division including collaborations, research, personnel matters, budget, procurements, planning, and communications.

Staff: Tommy Wright, Hazel Beaton, Alice Bell, Robert Creecy, Easley Hoy, Carol Macauley, Elizabeth Martin, Barbara Palumbo

B. Computer Support

During FY 97, this staff provided 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, Neal Bross, Joyce Farmer, Jeannette Robinson, Chad Russell, Mary Ann Scaggs, Dave Smith

1.25 R&D 2002

During FY 97, activities for the existing Indefinite Quantity Task Order Contract (IQTOC) contracts were: nine new tasks were awarded, seven tasks were completed, and modifications were made to eleven, leaving 15 tasks active. While all contracts except for one in the Technology Services have expired, many of the contractors continue to work on active tasks.

In July, a new series of contracts, called R&D 2002, were awarded to 18 contractors in the five technical areas of Technology Services; Assessment, Planning & Analysis; Statistical Analysis; Methodological Research; and Minority-Focuses & Special Population Research. Nine tasks have been awarded under the new contracts.

Staff: John Linebarger

1.26 RESEARCH ASSISTANCE

During FY 97, this staff provided research assistance and secretarial support for the various research groups of the division.

Staff: Tina Arbogast, Maria Cantwell, Bonnie Carver, Lakeena Courtney, Linda Hiner, Judi Norvell, Lorraine Randall, Nita Rasmann

2. RESEARCH

2.1 GENERAL RESEARCH (Methodology and Standards Project 1870)

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

The purpose of this research is to discover new ways in which time series models can be used to improve seasonal, calendar effect, and other adjustments of Census Bureau seasonal time series.

This year's research was focused on methods of the TRAMO/SEATS model-based seasonal adjustment program, one of Eurostat's two official adjustment programs. (X-12-ARIMA is the other.) Two features of TRAMO/SEATS were studied, its temporary change outlier model and its method of deciding automatically between the multiplicative and additive modes of seasonal adjustment. The temporary change outlier models were found to provide benefits for a rather small number of series, but enough series to make it worthwhile to add this outlier model to X-12-ARIMA. The method for selecting the mode of adjustment did not do quite as well as the more model-based method now in X-12-ARIMA and has not been implemented in this program. Both sets of results were presented at the annual Joint Statistical Meetings in Anaheim.

Robert Templeton of Statistics New Zealand visited to do research on methods of outlier detection in seasonal time series modeling. In collaboration with staff members, he investigated enhancements to the outlier detection methods of REGARIMA and X-12-ARIMA programs. Simulation studies showed that an approach proposed in the literature to determining statistical significance of outliers works reasonably well, leading to higher critical values and fewer detected outliers than the approach used previously (which found too many outliers, i.e., many that were not really statistically significant). The studies also furthered understanding of the problem of detecting multiple outliers.

Staff: David Findley, Brian Monsell, Matt Kramer, Bill Bell, Mark Otto

B. Supporting Documentation and Graphics Software for X-12-ARIMA

The purpose of this project is to develop supplementary

documentation and supplementary programs for X-12-ARIMA that will enable both inexperienced seasonal adjusters and experts to use the program as effectively as their backgrounds permit.

A new version of the X-12-ARIMA Reference Manual was completed that includes additional background on some of the program's diagnostics and descriptions of all of the features added to the program this fiscal year, together with instructions for their use. Work was begun on a SAS graphics package to produce graphs of the diagnostic output of X-12-ARIMA. A "Rejoinder" to the seven discussants of the Findley et al. (1997) *Journal of Business and Economic Statistics* article was written and later revised to be in accord with changes made in the discussant's comments. (Findley, Bell)

Staff: David Findley, Bill Bell

C. Administrative Records

The goal of this project is to help implement the Census Bureau's third Strategic Objective (reducing respondent burden) with contributions to interdivisional research planning and facilitating current administrative records research. Our particular emphasis is on using state-of-the-art methods to construct and evaluate a national, longitudinal database of people linked to households, addresses, geographical areas and employers.

During the year we worked on several projects and teams:

1995 Match Team Our goal was to investigate the feasibility and possible advantages of applying staff's record linkage software to population database construction applications. Prior to starting the new project in May, group members reviewed earlier research, upgraded their computer skills, started studying database fundamentals, and started becoming familiar with record linkage software. During the year we matched several administrative records files to test census files to discover and correct problems in the data, software and matching strategies prior to final database construction. Some solutions remain to be implemented. A decision about whether to continue into the database building stage is pending.

1996 Database Evaluation We planned the evaluation of the 1996 Test Census administrative records database with members of the Administrative Records

Research Staff and Decennial Statistical Studies Division. We evaluated test files, hired a summer intern, conducted the planned analyses for 3 databases, and began to draft a preliminary report. Several important areas for further research were identified.

Evaluation of County Estimates With the Administrative Records Modeling Group, we developed a plan and provided computer specifications for evaluating county-level population, household, and housing estimates produced partly from administrative records by the new distributive housing method and by two other procedures also based on demographic modeling methods. Future work includes the analysis and a report.

Census 2000 Experiment We worked with a group that is planning an administrative records experiment for Census 2000. Group members reviewed a contractor report for an administrative records census in 2010, completed initial work on objectives and assumptions for the 2000 experiment, and made significant progress on specifying the details of the experimental and evaluation design.

Staff: Kent Marquis, Pascal Buser, Ram Chakrabarty, Elizabeth Huang, Jay Kim, Ned Porter, Phil Steele.

D. A Comparison of Cognitive Interviewing Techniques for Evaluating Self-Administered Questionnaires: Concurrent Versus Retrospective

The purpose of this research is to determine which, if either, of two cognitive interviewing techniques--concurrent or retrospective--is best for evaluating self-administered questionnaires. In FY 96, a small-scale experiment was conducted in which equal numbers of respondents completed three census short forms by one of the two cognitive interviewing techniques.

In FY 97, staff began to document the theoretical rationale for this research and the resulting evaluation plan for analyzing the data.

Staff: Cleo Jenkins, Richard Smiley

2.2 GENERAL RESEARCH (Census Bureau Project 0351)

Mathematical Statistics

A. Sample Design and Estimation Research for Demographic Surveys

The purpose of these projects is to provide statistical methodology research and consultation for DSMD in

selected demographic surveys. Estimation and variance/covariance estimation issues for surveys are investigated, depending upon user needs and availability of resources.

The papers on modeling 2-bedroom median rent of occupied units using AHS-MS data, and estimation of correlation between years for the AHS Survey, were revised and presented at the 1997 ASA meeting.

Staff: Elizabeth Huang, Jay Kim

B. Coverage Research

This research deals with coverage improvement in the Bureau's programs and has many related research and development projects. These projects will: 1) increase understanding of coverage and its impact on data usage; 2) increase coverage awareness; 3) improve coverage of the target population in the Bureau's programs; and 4) improve the quality of the Bureau's products.

Staff identified specifics for selected research. This included identifying the scientific null hypothesis, data analysis, and the needed data to perform analyses and test hypothesis. Staff created and verified 1990 Census and ACS data work files for all four sites in the 1996 American Community Survey (ACS). Staff has completed preliminary analysis for one of the identified projects and the discussed results with the ACS staff. Work is progressing on other projects and we anticipate discussions of preliminary results on these projects with the ACS staff soon.

Staff met with the ACS staff to discuss the goal and the focus of the questionnaire redesign research. The group also identified tentative completion schedules for selected activities to implement changes to the ACS questionnaire. The staff presented expert review of the 212 Associates design of the ACS roster grid and made several recommendations about the questionnaire format. The staff also suggested wordings for residence rules and their rationale. We plan to test changes in roster instructions cognitively.

Staff: Rajendra Singh, Pam Ferrari, Eleanor Gerber, Anne Kearney, Miriam Rosenthal, Denise Sanders

C. 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 processing. Methods will be developed, tested, evaluated, and documented. We will also aid in the implementation of the methods.

Developments during Fiscal Year 1997 for Census 2000 are described under Decennial Project #6356C.

Staff developed and documented (Mera 1997) a technique for disclosure limitation of demographic microdata through matrix masking. This particular matrix masking technique involves adding noise to the data which means slightly changing reported data values to avoid disclosure. The technique is designed to preserve certain statistical properties of the data such as means and variances.

Staff investigated the effects on trend statistics of adding noise to economic microdata prior to tabulation. Staff used *County Business Patterns* data as well as simulated data to study the effects using a variety of values of the original trend and of the amount of noise present in the yearly level estimates. This allowed us to observe in a controlled way, the relationships among the amount of noise in a trend, the true value of the trend, and amount of noise in the respective level estimates. All results were documented (Evans, 1997).

Staff aided various divisions at the Census Bureau as well as other government agencies in evaluating the disclosure risk of data and in implementing appropriate disclosure limitation procedures.

Staff: Laura Zayatz, Tim Evans, Ruben Mera, Beverley Causey, Philip Steel

D. Seasonal Adjustment

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 and, in recent years, the seasonal adjustment processing for the Quarterly Financial Report.

In FY 1997, three additional projects were carried out: (1) A comparison study was done of two different approaches to estimating Labor Day and Thanksgiving holiday effects in Retail Trade series, the X-11 approach developed in the early 1970's by Bateman and Mayes and a time series modeling approach developed by Bill Bell in the 1980's. More often than not, this approach gave more satisfactory results. Consequently, the X-11 approach was removed from X-12-ARIMA

and Bell's approach retained (Chen, Findley). (2) A similar comparison study of Easter effect estimation procedures by the same authors was carried out, but in this case the X-11 approach was better for series with strong Easter effects, whereas Bell's approach was somewhat better for moderate Easter effects. Therefore both approaches were retained in X-12-ARIMA. (3) A study was completed comparing the X-11 approach to robustifying the irregular component trading day and holiday effect regressions against extreme values with a new approach that permits simultaneous estimation of trading day, holiday and outlier effects. The new approach was found to be significantly better and was implemented in X-12-ARIMA (Kramer, Findley).

Staff: David Findley, Brian Monsell

E. 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 goes beyond the capabilities of the Census X-11 and Statistics Canada X-11-ARIMA and provides more effective diagnostics.

The "final" version of X-12-ARIMA, meaning the version planned before Eurostat's committees finished drafting their list of desired features this Summer, has been completed and given initial testing (Monsell, Findley). It has been distributed, along with documentation, to the appropriate Divisions of the Economic Statistics Directorate for further testing, and also to the Federal Reserve Board, the International Monetary Fund, and Israel's Central Bureau of Statistics. It will be sent to other agencies for additional testing after further in-house testing. Programs for converting command sets from the 1996 "beta" version to the "final" version, and from the VAX and Unisys versions of X-11-ARIMA were completed, tested and distributed (Monsell).

Three short courses on the use of X-12-ARIMA were presented, after extensive preparation of background documents, audiovisuals, documented examples, and exercises that demonstrate the simplicity and versatility of the program (Findley, Monsell, Bell).

Staff: David Findley, Brian Monsell, Matthew Kramer, Bill Bell

Survey Methodology

A. General 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 1997, staff monitored the clearance, consulted with staff from other areas of the Bureau wishing to use the clearance, and kept the Office of Management and Budget informed of all pretesting activities. Twenty-one pretesting activities were conducted under the clearance, with a total of 3292 burden hours. Staff also finalized the "How to Conduct Pretesting" brochure (DeMaio, 1997), which was published by the American Statistical Association as part of its *What is a Survey* series.

Staff: Terry DeMaio

B. Field Experiment to Evaluate New Roster Methods for Surveys

Staff developed a proposal to adapt and improve the roster probes tested in the Living Situation Survey and evaluate them in a field test of (perhaps) 7800, using the Current Population Survey first month in sample interviews as the control group. The field test, planned for July 1999, would include 3 components: (1) experimental evaluation of coverage gains using the new probes; (2) respondent debriefing questions to probe respondents' understandings of residency situations and possibly privacy and other concerns; and (3) ethnographic follow-up interviews to collect more complete qualitative data from a small sample of "interesting" cases, focusing on marginal household members. The National Institute for Child Health and Human Development has provided funds through a reimbursable agreement to partially support the work, and the Census Bureau has also pledged support. The Interagency Forum on Child and Family Statistics recommended this project as one of several "targets of opportunity" worth pursuing in order to improve federal government statistics on fathers. Staff are currently working with other divisions to bring the cost estimate for the field work more in line with available funds, and to finalize the survey design.

Staff: Elizabeth Martin, Tracy Wellens, Eleanor Gerber, Laurie Schwede, Nancy Bates (DIR), Debbie Fenstermaker (DSMD), Richard Ning (FLD), Cathy Walker (DSD).

C. Electronic Forms Usability Laboratory

During the year, with strong encouragement and support from the Computer Assisted Survey Research Office, staff began preliminary work to create a testing

and consulting capability focused on the usability of the Human-Computer Interfaces that are used in collecting and disseminating survey and census data. The cognitive laboratory facilities were made available for data collection. Additional equipment was purchased and plans for new lab space were drawn. Interested staff attended planning meetings and began a program of continuing education based on formal courses, seminars, reading, visiting usability labs, surfing the web, and attending professional conferences and meetings.

Staff: Kent Marquis, Betsy Martin, Beth Sweet, Tracy Wellens, Susan Ciochetto, Marty Appel, Heather Tedesco, Bob Tinari (CASRO), Bill Nicholls (CASRO).

Industrial R&D Survey

Staff led our first project on the 1997 Industrial R&D Expenditures Survey electronic questionnaire. An expert review was conducted on two electronic forms. The experts included four people familiar with electronic forms from the Technologies Management Office and two graduate students from the University of Maryland's Human-Computer Interface Laboratory. Results of testing were implemented in the final products. We prepared a report, "Results of 'Expert Review' of Two Internet R&D Questionnaires."

Staff: Beth Sweet, Kent Marquis, Greg Fulton (CASRO), Howard Kanarek (CASRO), Fay Nash (CASRO), Barbara Sedivi (CASRO)

Data Access and Dissemination System

Our second project for the Census Bureau's new Data Access and Dissemination System (DADS), involved usability testing with actual users. Three rounds of usability testing occurred with low-fidelity (i.e., paper) screen displays. Reports were issued and changes were made by the DADS development team. Based on findings from our usability testing and recommendations from an outside expert, we developed a proposal to test options for interface and navigation redesign. The DADS staff agreed to develop and test portions of our research proposal, but due to development restrictions, this research was postponed. This collaboration with DADS allowed usability staff to gain experience in usability testing methods which was carried over to other projects.

Staff: Beth Sweet, Susan Ciochetto, Heather Tedesco

Decennial Internet Questionnaire

The third project also involved actual users and a product for disseminating data on a CD-ROM. The Census Bureau is redesigning its Economic CD-ROM to be released in July 1998. The current Economic CD-ROM was tested online to identify the strengths and weaknesses of the software. The usability findings were incorporated into the design for the new CD-ROM, which we then tested with low-fidelity (i.e. paper) screen displays. Different versions of the Introduction screen were systematically tested to determine users' preferences. Results of both tests and suggestions for redesign were included in reports presented to the development staff. Further testing of this CD-ROM will occur in FY98.

In a related part of this project, we wanted to develop and evaluate a Decennial Census short form to be accessed via the Web. A contractor through SAIC was hired, and three potential forms were developed in a group environment. Twenty-four participants evaluated the forms in the cognitive lab. Staff from several divisions of the Census Bureau and the University of Maryland organized this expert Review. While a research paper is to follow, no further work will be done on this part of the project because of confidentiality concerns raised by use of the Internet.

Staff: Beth Sweet, Chad Russell

Ethnographic Studies

A. Ethnographic Research to Improve Response to Surveys

The goal of this project is to learn more about causes of non-response in surveys, and to develop better survey approaches. Interviewers and respondents were observed during personal interviews collected on paper questionnaires for the National Health Interview Survey. Interviews were also collected by CAPI for Fish and Hunt, the Current Population Survey, and CATI for Fish and Hunt interviews. Hypotheses were developed about the effects of interviewers' interactions with respondents on case and item response rates, and factors influencing respondents' active vs passive refusals to be interviewed.

Staff: Leslie Brownrigg, Matt Salo

Statistical Computing

A. Analytical Methods for Administrative Lists

We completed a new version of re-identification

software used in the MCONFID microdata confidentiality system. In a comparison with a method of Fuller (*Journal of Official Statistics*, 1993), we were able to re-identify 100% of the records with probability 1.0, whereas the method of Fuller allowed re-identification of only 11% with probability greater than 0.8. In a second comparison, we applied a software package that has been widely used outside the Census Bureau to a large test deck with five discrete and six continuous variables. Although the software package indicated that the resultant output file was protected, we were able to re-identify 100% of the records with probability 1.0. The purpose of our re-identification software is to allow us to better protect our microdata, particularly those involving public-use files containing data from administrative lists.

Staff: Bill Winkler

B. General Edit/Imputation Support

Staff developed new theory, algorithms, and source code for implicit-edit generation. The methods typically hold for edit systems that do not contain skip patterns. We reduced the time of implicit-edit generation with main decennial edit/imputation from 6 hours to 2 minutes on a 200 MHZ Sparcstation Ultra.

We developed theory, new classes of computational algorithms, and wrote new source code for the 2nd generation version of the new SPEER software that does balancing (assuring that items add to totals). We performed tests with more than 250,000 records of data from different economic censuses. Better than 99.9% of edit-failing records are converted to records satisfying edits and balance equations.

Staff: Bill Winkler, Bor-Chung Chen

C. Exploratory Data Analysis(EDA)

Staff conducted three 40 hour EDA courses. This course is designed for the Bureau's Subject Matter Specialists and contains a minimum of formal statistics. We compiled a comprehensive (500+ page) reference manual/textbook for this EDA course.

Staff prepared a number of "Cookbooks" for individual Division's data. This cookbook provides the Subject Matter Specialists with an easy to implement guide to 10 powerful EDA techniques for analyzing their data. We set up a Census Bureau "Graphics Users Group" whose purpose is to promote the graphical analysis and display of our data, and to provide a forum for user support and discussion of outstanding EDA implementation problems.

Staff: Dave DesJardines

Technology

A. 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.

The staff built the first of a series of prototypes demonstrating variable and documentation access through the metadata Table of Contents. The repository was built using the Oracle Relational Database Management System and implements the Business Data Model and a subset of the Data Element Registry. These models were built using the ERWin modeling tool. The group received variable definitions and other documentation from the 1990 Decennial Census and 1992 Economic Censuses for further populating the repository. The Data Access Dissemination System (DADS) team adopted the metadata repository model developed by the Computer Assisted Survey Research Office (CASRO) and staff. The DADS staff gave staff the schema for their physical implementation of our metadata repository model for validation with the logical metadata repository model. Changes were made in both the physical and logical models to maintain compatibility. The metadata repository was incorporated into the second DADS prototype in September 1997. Staff met with DADS staff to evaluate the metadata browser screens that DADS developed for their prototype. This evaluation focused on completeness, correctness, and readability. A draft transition plan describing how the Bureau could move to a Corporate Metadata Repository was drafted by staff and CASRO.

Work has begun to develop the tools to access and populate the repository. A Memo of Understanding (MOU) among DADS, SRD, and CASRO that outlines the joint responsibilities for the creation and maintenance of a metadata repository was signed. An MOU among DSD, SRD, and CASRO which outlines the joint responsibilities for modifying FERRET to be able to communicate with a corporate metadata repository was also signed. Staff met with Administrative and Customer Services Division (ACSD), CASRO, and others to discuss the role of a metadata repository and a product registration tool. We worked with DADS and FERRET staffs to identify

and eliminate deficiencies in the metadata repository model. Staff researched and prepared procedures for accessing the metadata repository using Oracle WebServer 2.0. We examined and developed test document and product registration forms for entering values into the metadata repository. A search engine application for accessing documents located on Unix machines at the Census Bureau was installed, tested, and customized. We met with staff of FERRET to eliminate differences between their metadata repository model and ours. Changes to our model were made subsequent to these meetings. Connectivity with PC-DOCS SQL-Server database has been established. Interoperability between Web browser and DOCS Open Database through Cold Fusion Web development software was demonstrated. Staff also demonstrated interoperability between Web browser and metadata repository in Oracle database using Sapphire/Web 3.0 web application software. ample document registration and product registration templates for entering and retrieving metadata from the repository were developed by the staff. Requirements for product registration and customer registration were discussed with members of MSO. We are currently developing a more refined product registration and retrieval browser that meets their needs. Staff compiled and classified documentation available in FERRET's Document Management System. Classification information will be used to reference FERRET documentation from the metadata repository. Statements of work have been drafted and contract awarded for the building of metadata registration tools for interactively inputting metadata into the repository. Statistical metadata web pages were developed with links to the staff's metadata repository prototype, staff's metadata research papers, and other metadata research papers. These pages are available from the Census Bureau internal home page.

Staff: Marty Appel, Dan Gillman, Greg Lestina, Bill LaPlant, Ken Chu, Sam Highsmith

B. Metadata Standards Research

We presented the proposed Bureau of the Census metadata standards to the Standards Management Team. This standard was distributed to all Bureau units for comments.

Staff: Bill LaPlant, Greg Lestina, Sam Highsmith, Marty Appel

3. PUBLICATIONS

3.1 JOURNAL ARTICLES, PUBLICATIONS

Bell, W.R. (In press). "Comparing and Assessing Time Series Methods for Forecasting Age-Specific Fertility and Mortality Rates," *Journal of Official Statistics*.

Brownrigg, L. (1997). "Categories of Faunal and Floral Economic Resources of the Native Communities of the Peruvian Amazon," *Journal of Ethnobiology*, 16(2): 185-211.

DeMaio, T. (1997). "How to Conduct Pretesting," in *What Is a Survey?* Brochure Series, American Statistical Association, Alexandria, VA.

Findley, D.F., Monsell, B.C., Bell, W.R., Otto, M.C., and Chen, B.-C. (In press). "The New Capabilities and Methods of X-12 ARIMA," (Invited), *Journal of Business and Economic Statistics*.

Gerber, E. and Wellens, T.R. (1997). "Perspectives on Pretesting: Cognition in the Cognitive Interview?" *Bulletin de Methodologie Sociologique*, Vol. 55, 18-39.

Martin E., Laska, E., Hopper, K., Meisner, M., and Wanderling, J. (1997) "Issues in the Use of a Plant-Capture Method for Estimating the Size of the Street Dwelling Population," *Journal of Official Statistics*, 13(1), 59-74.

Schwarz, N. and Wellens, T.R. (1997). "Cognitive Dynamics of Proxy Responding: the Diverging Perspectives of Actors and Observers." *Journal of Official Statistics*, Vol. 13, No 2, 159-179.

Wellens, T.R., Scott, W.R., and Cole, R.E. (In press). *Improving Theory and Research on Quality Enhancement in Organizations: Report of a Workshop*. Washington DC: National Academy Press.

Wright, T. and Bates, L. (1996). "A Monte Carlo Study Comparing CensusPES and CensusPlus When There is the Possibility of Undercounting," *American Journal of Mathematical and Management Sciences*, Vol 16, 395-462.

Wright, T. (1997). "A Simple Algorithm for Tighter Exact Upper Confidence Bounds with Rare Attributes in Finite Universes," *Statistics and Probability Letters*, 36, 59-67.

3.2 BOOKS/BOOK CHAPTERS

Brownrigg, L. (1997). Discussion in "A Conversation about Contract Knowing - The Known, Unknown and Unknowable Anthropology," Rebecca Joseph, editor in *Anthropology Newsletter* 38:6: 10-14.

Esposito, J. and Rothgeb, J. (1997). "Evaluating Survey Data: Making the Transition from Pretesting to Quality Assessment," *Survey Measurement and Process Quality*, edited by L. Lyberg, P. Biemer, M. Collins, E. DeLeeuw, C. Dippo, N. Schwarz, and D. Trewing, New York: Wiley Interscience, 541-571.

Gerber, E. (In press). "The View from Anthropology: Ethnography and the Cognitive Interview," in *Cognition and Survey Research*, edited by M. Sirken, D. Herrmann, S. Schechter, N. Schwarz, J. Tanur, and R. Tourangeau. New York: Wiley and Sons.

Jenkins, C.R. and Dillman, D.A. (1997). "Towards a Theory of Self-Administered Questionnaire Design," in L. Lyberg, P. Biemer, M. Collins, E. DeLeeuw, C. Dippo, N. Schwartz, and D. Trewing (Eds.), *Survey Measurement and Process Quality*, New York: Wiley-Interscience, 165-196.

Martin, E. And Tucker, C. (In press). "Cognitive Aspects of Survey Methodology Methods, Practice, and Future Opportunities," in *Cognition and Survey Research*, edited by M. Sirken, D. Herrmann, S. Schechter, N. Schwarz, J. Tanur, and R. Tourangeau. New York: Wiley and Sons.

Moore, J., Stinson, L., and Welniak, E. (In press). "Income Measurement Error in Surveys: A Review," in *Cognition and Survey Research*, edited by M. Sirken, D. Herrmann, S. Schechter, N. Schwarz, J. Tanur, and R. Tourangeau. New York: Wiley and Sons.

Winkler, W.E. and Draper, L.R. (1997). "The SPEER Edit System," in *U.N. Economic Commission for Europe, Statistical Data Editing, Volume II*, Geneva, Switzerland: United Nations, 51-55.

Winkler, W.E. and Petkunas, T.F. (1997). "The DISCRETE Edit System," in *U.N. Economic Commission for Europe, Statistical Data Editing, Vol. II*, Geneva, Switzerland: United Nations, 56-61.

Willis, G., DeMaio, T.J., and Harris-Kojetin, B. (In press). "Is the Bandwagon Headed for the Methodological Promised Land? Evaluating the Validity of Cognitive Interviewing Techniques," in *Cognition and Survey Research*, edited by M. Sirken, D. Herrmann, S. Schechter, N. Schwarz, J. Tanur, and R. Tourangeau. New York: Wiley and Sons.

3.3 PROCEEDINGS PAPERS

Chakrabarty, R. (1997). "An Evaluation of Undercoverage in the Current Population Survey by Race, Residence, Family, and Person's Characteristics," *Proceedings of the 51st Session of the International Statistical Institute*, Istanbul, Turkey, August, 1997.

Hoy, C.E. and Dipbo, C.S. (1997). "Providing Metadata to Survey Staff via Internet," *Proceedings of the 51st Session of the International Statistical Institute*, Istanbul, Turkey, August, 1997, Book 2, 219-222.

Petroni, R.J., Kearney, A.T., Town, M.K., and Singh, R.P. (1996). "Should We Account for Missing Data in Dual System Estimation?" International Perspectives on Nonresponse, *Proceedings of the Sixth International Workshop on Household Survey Nonresponse*, October 25-27, 1995, 166-176.

Wright, T., Hu, P.S., and Young, J. (1996). "Variability in Continuous Traffic Monitoring Data," *National Traffic Data Acquisition Conference (NATDAC'96) Proceedings, Vol II*, Albuquerque, New Mexico, 137-177.

1996 Joint Statistical Meeting (ASA), Chicago, IL, August 4-8, 1996 .

- Bates N. and Good, C. (1996). "An Evaluation of the 1995 Test Census Integrated Coverage Measurement (ICM) Interview: Results from Behavior Coding," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 836-841.
- Dorinski, S., Petroni, R., Ikeda, M., and Singh, R. (1996). "Comparison and Evaluation of alternative ICM Imputation Methods," *1996 Proceedings of the Section on Survey Research Methods, Vol I*, American Statistical Association, 299-304.
- Evans, T., Moore, R., and Zayatz, L. (1996). "New Directions in Disclosure Limitation at the Census Bureau." *1996 Proceedings of the Section on Government Statistics*, (In press).
- Gillman, D., Appel, M., and LaPlant, W. (1996). "Statistical Metadata Management: A Standards Based Approach," *1996 Proceedings of the Section on Survey Research Methods, Vol I*, American Statistical Association, 55-63.
- Griffiths, R. (1996). "Current Population Survey Small Area Estimation for Congressional Districts," *1996 Proceedings of the Section on Survey Research Methods, Vol I*, American Statistical Association, 314-319.
- Hoy, E., Causey, B., Bailey, L., and Kaufman, S. (1996). "Estimating State Totals from the Private School Survey," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, 434-439.

- Ikeda, M. and Petroni, R. (1996). "Handling of Missing Data in the 1995 Integrated Coverage Measurement Sample," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 563-568.
- Kovar, J. and Winkler, W.E. (1996). "Editing Economic Data," *1996 Proceedings of the Section on Survey Research Methods, Vol I*, American Statistical Association, 81-89.
- Lestina, G., LaPlant, W., and Gillman, D. (1996). "Technical Development of the Proposed Statistical Metadata Standard," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 786-791.
- Marquis, K. (1996). "Towards an Error Profile for Estimates from Administrative Records," *1996 Proceedings of the Section on Government Statistics*, 117-122.
- Martin, E. (1996). "Household Attachment & Survey Coverage," *1996 Proceedings of the Section on Survey Research Methods, Vol I*, American Statistical Association, 526-531.
- Petroni, R., Kearney, A., and Gbur, P. (1996). "Handling Noninterviews to Provide Equitable Comparisons of ICM Estimates," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 569-574.
- Rosenthal, M., Schindler, E., and Navarro, A. (1996). "Census 2000 Sample Weighting," *1996 Proceedings of the Section on Survey Research Methods, Vol I*, American Statistical Association, 377-382.
- Scheuren, F. and Winkler, W.E. (1996). "Recursive Merging and Analyzing Administrative Lists," *1996 Proceedings of the Section on Government Statistics*, American Statistical Association, 123-128.
- Sweet, E., Russell, C. (1996). "A Discussion of Data Collection via the Internet.," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 774-779.
- Tsay, J., Isaki, C., and Fuller, W. (1996) "A Block Based Nonresponse Followup Survey Design," *Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 557-562.
- Williams, T. and Bailey, L. (1996). "Compensating for Missing Wave Data in the Survey of Income and Program Participation (SIPP)," *Proceedings of the Section on Survey Research Methods, Vol I*, American Statistical Association, 305-310.

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- Bogen, K., (1996). "The Effect of Questionnaire Length on Response Rates - A Review of the Literature," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 1020-1025.
- Davis, W., Wellens, T., and DeMaio, T. (1996). "Designing Response Scales in an Applied Setting," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 998-1003.
- Gerber, E., Wellens, T., and Keeley, C. (1996). "Who Lives Here? The Use of Vignettes in Household Roster Research," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 962-967.
- Hess, J. and Singer, E. (1996). "Predicting Test-Retest Reliability from Behavior Coding," *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 1004-1009.
- Moyer, L. (1996). "Which is Better: Grid Listing or Grouped Questions Design for Data Collection in Establishment Surveys?" *1996 Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 986-991.
- Von Thurn, D. and Moore, J. (1996). "Encouraging Respondents to Use Visual Imagery to Improve Accuracy of Reporting in the American Housing Survey," *Proceedings of the Section on Survey Research Methods, Vol II*, American Statistical Association, 906-910.
- Zukerberg, A. and Hess, J. (1996). "Uncovering Adolescent Perceptions: Experiences Conducting Cognitive Interviews with Adolescents," *Proceedings of the Section on Survey Research Methods, Vol II*, 950-955.

3.4 STATISTICAL RESEARCH DIVISION RESEARCH REPORTS

96/01, Alistair Gray and Peter Thomson, Institute of Statistics and Operations Research, Victoria University of Wellington, Wellington, New Zealand. "Design of Moving-Average Trend Filters using Fidelity, Smoothness, and Minimum Revisions Criteria." 2/7/97.

97/01, William Winkler, Bureau of the Census. "Views on the Production and Use of Confidential Microdata." 8/20/97.

97/02, Edward Porter and William Winkler, Bureau of the Census. "Approximate String Comparison and its Effects on an Advanced Record Linkage System." 8/20/97.

97/03, Jay Kim and William Winkler, Bureau of the Census. "Masking Microdata Files." 8/25/97.

97/04, William Winkler, Bureau of the Census. "Editing Discrete Data." 9/15/97.

97/05, Lisa Draper and William Winkler, Bureau of the Census. "Balancing and Ratio Editing with the New SPEER System." 9/16/97.

3.5 WORKING PAPERS IN SURVEY METHODOLOGY

97/01, Cleo Jenkins, Bureau of the Census. "Improving the Navigational Quality of the Decennial Census Short Form Requires Paying Attention to the Entire Mailing Package."

3.6 OTHER REPORTS

Bogen, K. (1997). "CASM II - SIPP Interview Summary."

Bogen, K., Lee, M., Griffiths J., and Polivka, A. (1997). "The Impact of Welfare Reform on the March CPS Income Supplement - Summary and Recommendations for March 1998 from Cognitive Interviews."

Bogen, K., Lee, M., and DeMaio, T. (1996). "Report of Cognitive Testing of Decennial Long Form Developed by 212 Associates."

DeMaio, T. and Wellens, T. (1997). "Cognitive Evaluation of Proposed Disability Questions for the 1998 Dress Rehearsal."

Gerber, E., Sweet, E., and Lee, M. (1997). "Grandparents as Caregivers: Report of Cognitive Research."

Gerber, E. and Wellens, T. (1996). "Rostering Strategies for Household Surveys: A Cognitive Evaluation."

Jenkins, C.R. and Lee, M. (1996). "Cognitive and Motivational Properties of Two Simple Form Mailing Packages Proposed for Inclusion in the 1997 National Survey."

Schwede, L. (1997). "Report to the Office of Management and Budget on Third-person Reporting of Hispanic Origin and Race in a Group Quarters/Establishment Census."

Schwede, L. and Ellis, Y. (1997). "Children in Custody Questionnaire Redesign Project Final Report: Results of the Split-Panel and Feasibility Tests."

Schwede, L. and Gallagher, C. (1996). "Children in Custody Questionnaire Redesign Project: Results from Phase 3 Cognitive Testing of the Roster Questionnaire."

4. TALKS AND PRESENTATIONS

Seventh International Household Survey Nonresponse Workshop, Rome, Italy, October 2-4, 1996.

- Rita Petroni, "Item Imputation's Effect on 1995 Census Test Estimates."

Annual Meeting of the Association for Consumer Research, Tucson, AZ, October 10-14, 1996.

- Tracy Wellens, Betsy Martin, and Frank Vitrano, "A Federal Government Perspective on Customer Satisfaction Measurement."

The UN/ECE Workshop on Statistical Metadata in Berlin (via telephone), October 23, 1996.

- Dan Gillman, "Statistical Metadata Management: A Standards Based Approach."

Conference of European Statisticians; Voorburg, the Netherlands, November 4-7, 1996.

- Bill Winkler and John Kovar, "Editing Economic Data," (invited).
- Bill Winkler, "The New SPEER Edit System," (invited).

Statistics Netherlands, November 8, 1996.

- Bill Winkler, "Advanced Methods for Record Linkage."

Seminar on Statistical Methodology in the Public Service/Consortium of Professional Associations on Federal Statistics; Bethesda, MD, November 12-13, 1996.

- Jenny Hess and Eleanor Singer, "Predicting Test-Retest Reliability from Behavior Coding."
- Terry DeMaio, discussant, "Validation of Cognitive Questionnaire Pretesting Methods."

Seminar on X-12 ARIMA at the Wharton School of Business of the University of Pennsylvania, November 13, 1996.

- David Findley, "New Capabilities and Methods of the X-12-ARIMA Seasonal Adjustment Program."

Annual Meeting of the American Anthropological Association, November 20-23, 1996.

- Laurie Schwede, "Changing Patterns of Family Planning Attitudes and Practices in West Sumatra, Indonesia."

Statistics Career Day, University of Virginia, Charlottesville, VA, November, 1996.

- Tim Evans, "Role of Statisticians at the U.S. Bureau of the Census."

InterCASIC Conference; San Antonio, Texas; December 11-13, 1996.

- Beth Sweet, "The R&D Internet Proof-of-Concept Study."
- Dan Gillman, "Metadata and CASIC."
- Jeff Moore, "Person- vs. Topic-Based Design for Computer-Assisted Household Survey Instruments."

Conference on National Statistics on Health and Social Welfare Programs, Committee on National Statistics, Washington, DC, December 12-13, 1996.

- Elizabeth Martin, "Statistical and Research Issues to be Addressed: Questionnaire Issues."

Annual Meeting of the American Economic Association, New Orleans, LA, January 2-6, 1997.

- David Findley, "New Capabilities and Methods of the X-12-ARIMA Seasonal Adjustment Program."

Annual Meeting of the Society for Applied Anthropology, Seattle, WA, March 4-9, 1997.

- Matt Salo, "Focus Group Research with Other Cultures."

International Monetary Fund, Washington, DC, March 17, 1997.

- David Findley and Brian Monsell, "The X-12 ARIMA Seasonal Adjustment Program."

Conference on Fathering and Male Fertility: Improving Data and Research, Bethesda, MD, March 13-14, 1997.

- Betsy Martin, "New Directions in Exploring Fathers' Attachments to Households."

The Record Linkage Workshop, Washington, DC, March 20-21, 1997.

- Bill Winkler and Fritz Scheuren, "Analysis Issues in the Presence of Linkage Errors."
- Ned Porter, "Advanced String Comparison and its Effect in an Advanced Record Linkage System."
- Phil Steel, "Post-Matching Administrative Record Linkage Between Sole-Proprietor Tax Returns and the Standard Statistical Establishment List."

Population Association of America Meeting, Washington, DC, March 28, 1997.

- Leslie Brownrigg, "Distribution of the Population in Group Quarters."

Census Advisory Committee Meeting, Washington, DC, May 1-2, 1997.

- Laura Zayatz, "Should We Use Noise for Disclosure Limitation?"

23rd Conference of the International Association of Social Science Information, Odense, Denmark, May 6-9, 1997.

- Dan Gillman, "The Statistical Metadata Repository: An Electronic Card Catalog of Survey Descriptions at the Census Bureau."
- Leslie Brownrigg, "Emerging Internet Images."

Washington Statistical Society, May 15, 1997.

- Bill Winkler, "Methods and Software for Editing Continuous and Discrete Data."

Symposium on the Interface: Computing Science and Statistics, Houston, TX, May 16, 1997.

- David Findley, "Novel Methods and Features in the Census Bureau's X-12 ARIMA Seasonal Adjustment Program."

American Association for Public Opinion Research Conference, Norfolk, VA, May 17-21, 1997.

- Meredith Lee and Andy Zukerberg, "Better Formatting for Lower Response Burden."
- Eleanor Gerber, Cathy Keeley, and Tracy Wellens, "The Use of Vignettes in Evaluating Household Roster Information: Does Anybody Read the Rules?"
- Laurie Moyer and Elaine Fansler, "How Do People Answer Income Questions?"
- Laurie Schwede, "Third-Person Reporting of Race and Hispanic Origin in a Group Quarters/Establishment Census."
- Cleo Jenkins, "Improving the Navigational Qualities of the Decennial Census Short Form."

Seminar on Seasonal Adjustment and X-12-ARIMA, University of Tulsa, Tulsa, OK, May 19, 1997.

- David Findley, "Seasonal Adjustment and the Census Bureau's New X-12-ARIMA Seasonal Adjustment Program."

Cognitive Aspects of Survey Methodology-II Conference, Charlottesville, Virginia, June 8-13, 1997.

- Jeff Moore, Linda Stinson (BLS), and Ed Welniak (HHES), "Income Measurement Error in Surveys: A Review."
- Eleanor Gerber, "The View from Anthropology: Ethnography and the Cognitive Interview."
- Terry DeMaio, Gordon Willis (NCHS), and Brian Harris-Kojetin (BLS), "Is the Bandwagon Headed for the Methodological Promised Land? Evaluating the Validity of Cognitive Interviewing Techniques."

Committee on National Statistics - Panel on Alternative Census Methodologies, Washington, DC, June 9, 1997.

- Cary Isaki, "A Transparent File for a One Number Census."

Joint Meeting of the Public Health Conference on Records and Statistics, and the Data Users Conference, Washington, DC, July 28-30, 1997.

- Laura Zayatz, "Disclosure Limitation for the 2000 Census of Housing and Population."

Dow Jones Global Equity Indexing Conference, (invited talk), New York, NY, July 23, 1997.

- David Findley, "Detection of Seasonal and Other Patterns."

1997 Joint Statistical Meeting (ASA), Anaheim, CA, August 9-14, 1997.

- William Bell and Mark Otto, "Bayesian Inference About Poverty and Income Statistics for States."
- Gregory Lestina and Martin Appel, "Bureau of the Census Metadata Repository: Use and Concepts."
- Timothy Evans, "Effects on Trend Statistics of the Use of Multiplicative Noise for Disclosure Limitation."
- Yuki Ellis and Laurie Schwede, "Evaluation of the Redesigned Questionnaire for the Children in Custody Census."
- Enrique Gomez and Laura Zayatz, "DADS and KIDS: Can They Get Along? How Much Data is Too Much Data?"
- Richard Griffith, Rita Petroni, and Rajendra Singh, "Dual System Estimation Search Areas for Census 2000."
- Elizabeth Huang and Jay Kim, "Modeling 2-Bedroom Median Rent of Occupied Housing Units Using American Housing Survey-Metropolitan Sample (AHS-MS) Data."
- Jay Kim, Robert Fay, and George Train, "Estimation of Correlation Between Years for the American Housing Survey."
- Gregory Lestina, Martin Appel, and Daniel Gillman, "Providing Document Retrieval Through a Metadata Repository at the Census Bureau."
- Ruben N. Mera, "Matrix Masking Methods Which Preserve Moments."
- Brian Monsell and David Findley, "An Empirical Evaluation of the Performance of SEATS/TRAMO."
- Rita Petroni, Anne Kearney, and Gregory Robinson, "Use of Hard-to-Count Scores and Inclusion Probabilities to Improve Dual System and Census Plus Estimates."
- Richard Smiley, "An Evaluation of the Quality of Demographic Data Collected in a Test of SBE Procedures."
- Phil Steel and Laura Zayatz, "Disclosure Limitation for Census 2000."
- Elizabeth Sweet, "Using Administrative Record Persons in the 1996 Community Test."
- Yves Thibaudeau and Tom Krenzke, "Non-ignorable Item Nonresponse Model for Edit and Imputation at the Census 2000."

- William Winkler, "Producing Public-use Microdata that are Analytically Valid and Confidential," and "Set-Covering Algorithms and Their Application to the Fellegi-Holt Model of Editing."

51st Session of the ISI, Istanbul, Turkey, August 19, 1997.

- David Findley, "New Capabilities and Methods of the X-12-ARIMA Seasonal Adjustment Program."

Presentation to the Senior Staff of Israel's Central Bureau of Statistics, Jerusalem, Israel, August 26, 1997.

- David Findley, "New Capabilities and Methods of the X-12-ARIMA Seasonal Adjustment Program."

New York AAPOR Chapter, New York, NY, September 18, 1997.

- Terry DeMaio and Betsy Martin, "The Toughest Job in Survey Research: Designing a "One-Size-Fits-All" Questionnaire for the U.S. Population."

Eighth International Household Survey Nonresponse Workshop, Mannheim, Germany, September 24-26, 1997.

- Rajendra Singh and Rita Petroni, "Handling of Household and Item Nonresponse in Surveys."

5. STATISTICAL RESEARCH DIVISION SEMINAR SERIES

Seminar Series Team: Jay Kim, Laurie Moyer, Barbara Palumbo

William Foddy, Senior Lecturer, Department of Anthropology and Sociology, Monash University, Melbourne Australia. 10/1/96. "An Empirical Evaluation of Probes Used for the In-Depth Testing of Survey Questions."

Bob Blodgett, Food and Drug Administration. 10/2/96. "One Reason Why Non-Linear Regression May Fail."

David M. Mount, Department of Computer Science and Institute for Advanced Computer Studies, University of Maryland at College Park. 10/9/96. "Approximation Algorithms for Routing and Clustering on Graphs."

Nancy Stout, National Institute for Occupational Safety and Health; Donald Ohi, HGO Technology, Inc. 10/16/96. "Standardized Occupation and Industry Coding (SOIC) Software: An Interactive Demonstration."

Charles F. Turner, Research Triangle Institute. 10/23/96. "Telephone Audio-CASI and Survey Measurement of Sensitive Behaviors."

Robert E. Fay, U.S. Bureau of the Census. 10/30/96. "Revising VPLX; Cognitive Foundations and Speculations."

Jaki Stanley, National Agricultural Statistics Services, USDA. 11/6/96. "Standardizing Interviewer Behavior Based on Results of Behavior Coding Interviews."

Bev Causey, SRD, U.S. Bureau of the Census. 11/20/96. "Estimation of SIPP Spell Lengths."

Eliot Christian, U.S. Geological Survey; 12/11/96. "Government Information Locator Service (GILS)."

Frederick Conrad, Bureau of Labor Statistics; Michael Schober, New School for Social Research. 12/18/96. "Reducing Survey Measurement Error Through Conversational Interaction."

Donald Martin, Howard University. 1/8/97. "Detection of Periodic Autocorrelation in Seasonal Time Series Data Via Zero-Crossings."

Lee H. Giesbrecht, Bureau of the Census. 1/15/97. "Estimating Bias in RDD Telephone Samples with Current Population Survey Data."

Jeffrey C. Moore, SRD, Bureau of the Census. 1/22/97. "Person- vs. Topic-Based Design for Computer-Assisted Household Survey Instruments."

Marilyn Blinkley, National Center for Educational Statistics. 1/29/97. "Document Literacy."

Dan Rope, Bureau of Labor Statistics. 2/5/97. "A JAVA-Based Graphics Production Class Library."

Pat Doyle, Bureau of the Census. 2/12/97. "Documenting CAI Instruments: An Experiment with Cases."

Keynote Speaker - Joseph Waksberg, Westat, Inc. Discussants - Margo Anderson, University of Wisconsin and Robert Groves, Joint Program in Survey Methodology. 2/19/97. "The Hansen Era: Statistical Research at the Census Bureau, 1940-1970."

Dave DesJardins, SRD, Bureau of the Census. 2/4, 2/5, 2/12, 2/13, 2/18, 2/20, 2/27, 1997. "Graphical Techniques for Exploratory Data Analysis (EDA)."

Brett C. Moore, University of Southwestern Louisiana, 3/7/97. "Combining Studies in Linear Models."

Marty Appel, Ken Chu, Dan Gillman, Sam Highsmith, Bill LaPlant, SRD, Bureau of the Census. 3/12/97. "Statistical Metadata Repository Prototype."

Lisa Fairchild, University of California, Riverside, 3/17/97. "A New Model for the Analysis of Cross-Over Designs."

Gers Snijkers, Statistics Netherlands, 3/19/97. "Computer-Assisted Qualitative Interviewing: A Method for Cognitive Pretesting of Computerized Questionnaires."

Tracie Clemons, University of Alabama at Birmingham, 3/20/97. "The Overlapping Coefficient for Two Normal Probability Functions with Unequal Variances."

Mark A. Gebert, Rice University, Houston, TX, 3/21/97. "Nonparametric Density Contour Estimation."

Graham C. Jones, Director, Census, Office for National Statistics, United Kingdom, 3/24/97. "The United Kingdom 2001 Census."

Matthew Kramer and William Bell, SRD, Bureau of the Census, 3/26/97. "Toward Variances of X-11 Seasonal Adjustments."

David DesJardins, SRD, Bureau of the Census, 3/27/97. "New Graphical Techniques for the Analysis of Census Data."

David Word, Bureau of the Census. 4/2/97. "Who Responds/Who Doesn't? Analyzing Variation in Mail Response Rates During the 1990 Census."

Charles H. Alexander and Lynn Weidman, Bureau of the Census. 4/9/97. "Statistical Research Issues for the American Community Survey."

Jerry L. McDonald, Bureau of the Census and Rick Rogers, Fenestra Technologies Corporation. 4/30/97. "The Bureau of Census Economic Directorate's Use of Computerized Self-Administered Questionnaires."

Cynthia Clark, Bureau of the Census, and Jean Martin, U.K. Office for National Statistics. 5/22/97. "Development and Implementation of CASIC in Government Agencies."

Sameena Salvucci, Synectics for Management Decisions, Inc., and Carrol Kindel, National Center for Education Statistics. 5/28/97. "Improving Customer Service at the National Center for Education Statistics."

Cary Isaki, SRD, Bureau of the Census. 6/4/97. "A Transparent File for a One Number Census."

Dawn Haines, North Carolina State University. 6/5/97. "Estimating Population Parameters Using Multiple Frame and Capture-Recapture Methodology."

Richard Griffiths, SRD, Bureau of the Census. 6/18/97. "Current Population Survey Small Area Estimation for Congressional Districts."

Thomas Kirchoff, University of Missouri-Rolla. 6/27/97. "Prediction of Future Observations in Unbalanced Growth Curve Models."

Randy J. Bartlett, ERES Consultants, Inc. 7/9/97. "Searching for Design Features Which Reduce Joint Faulting of Jointed Concrete Pavements."

Jun Shao, University of Wisconsin-Madison. 7/23/97. "Balanced Half Samples for Survey Data Under Imputation."

William S. Cooper III, Health Process Management Inc. 7/25/97 "Modeling Sequentially Collected Landmark Data."

Mark Apodaca and Robert Hood, National Agricultural Statistics Service. 8/6/97. "Interactive Data Analysis Systems (IDAS)."

Brenda S. Blackwell, Pennsylvania State University. 8/20/97. "Elaborating Power-Control Theory: Assessing the Need to Incorporate the Perceived Threat of Informal Sanctions."

David DesJardins, SRD, Bureau of the Census. 9/8/97. "Kickoff Meeting - New Census Graphics Users Group."

James Yen, Stanford University. 9/10/97. "Some Applications of Influence Functions and Weighted Empirical Functions."

Andrew M. Hartley, Old Dominion University. 9/24/97. "Analysis of Repeated Measures Data Under Circular Covariance."

David Livert, City University of New York Graduate School. 9/29/97. "A Multimethod Approach to Program Evaluation."

6. PERSONNEL ITEMS

6.1 HONORS/AWARDS/SPECIAL RECOGNITION

Election to Fellow, American Statistical Association, 1997.

- Cary T. Isaki, for outstanding work addressing statistical problems of design and estimation for major national surveys and the decennial census; and for contributions to survey research.

Bronze Medal Awards, Bureau of the Census

- Beverley D. Causey, for his technical research in mathematical statistics and collaboration over more than 25 years on a variety of topics, including important insights on the use of statistical methods in decennial census enumeration. Evidence of his scholarly efforts is given by his many publications in the leading statistical journals of the world.
- Cleo R. Jenkins, for demonstrating excellence and creativity in her work to improve the design of self-administered questionnaires, and to integrate literature from visual perception with survey methods literature to develop general questionnaire design principles for state-of-the-art advancement.
- Mark C. Otto, for developing the REGARIMA program and related computer software for time series modeling, which has provided important research tools and the foundation for development of the X-12 ARIMA seasonal adjustment program. This work has substantially advanced knowledge and the Census Bureau practice of modeling and adjustment of seasonal time series.

6.2 SIGNIFICANT SERVICE TO PROFESSION

Marty Appel

- Refereed paper for *Journal of Official Statistics*.

William Bell

- Chair, American Statistical Association's Committee on Section Status.
- Refereed papers for the *Journal of the American Statistical Association*, *Journal of Econometrics*, and *International Statistical Review*.

Leslie Brownrigg

- Appointed Participant, Inter-university and Inter-agency Seminar on Andean Society and Culture, George Washington University.
- Board Member, Columbia Graduate Anthropology Alumni Association.

Beverley Causey

- Refereed paper for *Journal of Transportation and Statistics*.

Terry DeMaio

- Chair, American Statistical Association's Survey Review Committee.
- Secretary/Treasurer, American Statistical Association's Survey Methods Research Section.
- Secretary-Treasurer, AAPOR.
- Refereed papers for *Journal of Official Statistics*.

David Findley

- Nominating Committee, Institute of Mathematical Statistics.
- Refereed papers for *Journal of Survey Methodology*, *Statistica Sinica*, and *Journal of Multivariate Analysis*.
- Taught a short course on the "beta" version of X-12-ARIMA for the Training Institute for European Statisticians of Eurostat, Madrid, April 10, 1997.
- Taught a short course on the "final" version of X-12-ARIMA for Israel's Central Bureau of Statistics, Jerusalem, August 26 and 30, 1997.
- Taught a Census Bureau short course on Time Series Modeling and Seasonal Adjustment with X-12-ARIMA (with Bill Bell and Brian Monsell), September 5, 8-10, 1997.

Daniel Gillman

- Refereed paper for *Journal of Official Statistics*.

Cary Isaki

- Associate Editor, *Journal of the American Statistical Association*.
- Refereed a paper for *Metrika* and two papers for *Journal of Official Statistics*.

Cleo Jenkins

- Refereed paper for *International Journal for Public Opinion Research*.

Betsy Martin

- Member, Organizing Committee for the Second Advanced Seminar on Cognitive Aspects of Survey Methodology.
- Refereed papers for *Public Opinion Quarterly*, *Science*, and *Journal of Official Statistics*.
- Taught course on Questionnaire Design, JPSM, University of Maryland.
- 1998 Program Chair, ASA's Survey Research Methods Section.
- Councillor-at-Large, AAPOR.

Rita Petroni

- Refereed papers for *Journal of Official Statistics* and *The American Statistician*.

Jennifer Rothgeb

- Refereed paper for *Journal of Official Statistics*.

Matt Salo

- Board of Directors, Gypsy Lore Society, (also on Society's Journal Editorial Board).
- Refereed papers for *Journal of Official Statistics* and *Journal of Current Anthropology*.

Phil Steel

- Refereed paper for *Journal of Survey Methodology*.

Yves Thibaudeau

- Refereed paper for *Journal of Transportation and Statistics*

Dawn Von Thurn

- Co-chair, AAPOR Conference Operations Committee.

Bill Winkler

- Co-Chair for the Record Linkage Workshop.

Tommy Wright

- Editorial Board, *American Journal of Mathematical and Management Sciences*.
- Editorial Board, *Journal of Transportation and Statistics*.
- Treasurer and Board of Directors, Tennessee Mathematics and Computer Sciences Foundation, Inc.
- Board of Industrial Advisors, Statistics Department, The Ohio State University.
- Committee on Applied and Theoretical Statistics, Board on Mathematical Sciences, National Academy of Sciences.
- Refereed paper for *Journal of Transportation and Statistics*.
- Prepared one review for *Mathematical Reviews*.

Laura Zayatz

- American Statistical Association's Committee on Privacy and Confidentiality.
- Refereed papers for *Statistica Neerlandica* and *Journal of Official Statistics*.
- EUROSTAT's Program Committee for Conference on Statistical Disclosure Control.

6.3 PERSONNEL NOTES

Pascal Buser, an intern with the Hispanic Association of Colleges and Universities Program, spent the summer in the division evaluating the administrative records databases constructed for the 1996 Test Census.

Wendy Davis completed her Master's Degree work in the Joint Program in Survey Methodology and accepted a new position with DSSD.

Tim Evans left the Census Bureau to return to graduate study at Rutgers University.

Elaine Fansler retired from the division after 20 years of service.

Sam Highsmith joined the division to work on the metadata project.

Julia Klein Griffiths joined the division. She will be working on questionnaire research on CPS and SIPP.

Three mathematical statistics interns joined the division: Tom Krenzke, Miriam Rosenthal, and Richard Griffiths.

Lakeena Courtney joined the division to work with the time series staff.

Tom Krenzke left the Census Bureau to join WESTAT.

Esther Miller left the division to join the Population Division.

Mark Otto left the Census Bureau to join the Patuxent National Wild Life Center.

Phil Steel joined the division to do research on disclosure limitation.

Heather Tedesco joined the division as a co-op student to work on usability testing and questionnaire evaluations.

Dawn Von Thurn left the Census Bureau to join Price-Waterhouse.

Robert Templeton of Statistics New Zealand, visited to work with the time series staff from April through June.

Statistical Research Division

Assistant Division Chief for Computing and Technology

Robert Creecy
Barbara Palumbo

Computer Support Staff

Chris Dyke
Neal Bross
Joyce Farmer
Jeannette Robinson
Chad Russell
Mary Ann Scaggs
David Smith

Statistical Computing Research

Bill Winkler
Bor Chung Chen
Ken Chu
David DesJardins
Judi Norvell
Ned Porter
Yves Thibaudeau
Todd Williams
VACANT
VACANT
VACANT

Technology and Human Factors Research

Marty Appel
Leslie Brownrigg
Carol Corby
Dan Gillman
Samuel Highsmith
Bill LaPlant
Gregory Lestina
Larry Malakhoff
Tom Petkunas
Nita Rasmann
Matt Salo

Assistant Division Chief for Mathematical Statistics

Easley Hoy
Alice Bell

Sampling Research

Cary Isaki
Maria Cantwell
Ram Chakrabarty
Elizabeth Huang
Mike Ikeda
Jay Kim
Raj Singh
Julie Tsay
VACANT

Statistical Estimation and Analysis Research

Leroy Bailey
Tina Arbogast
Bev Causey
Pam Ferrari
Anne Kearney
John Linebarger
Ruben Mera
Rita Petroni
Denise Sanders
Philip Steel
Laura Zayatz
VACANT

Time Series Research

Bill Bell
Lakeena Courtney
David Findley
Catherine Hood (Intern)
Matt Kramer
Brian Monsell
VACANT

Assistant Division Chief for Survey Methodology

Center for Survey Methods Research

Elizabeth Martin
Carol Macauley

Measurement Error Research

Jeff Moore
Karen Bogen
Bonnie Carver
Julia Klein Griffiths
Cathy Keeley
Laurie Moyer
Lorraine Randall
Andrew Zukerberg
VACANT

Questionnaire Design Research and Pretesting

VACANT
Susan Ciochetto
Terry DeMaio
Catherine Gallagher
Eleanor Gerber
Linda Hiner
Laurie Schwede
Richard Smiley
Tracy Wellens
VACANT
VACANT
VACANT

Questionnaire Evaluation and Measurement Research

Kent Marquis
Jennifer Hess
Cleo Jenkins
Meredith Lee
Elizabeth Nichols
Jennifer Rothgeb
Heather Tedesco (Co-op)
VACANT
VACANT

Office of the Chief

Tommy Wright
Hazel Beaton
Charlene Bickings (Detail)