

**The Joint Program in Survey Methodology
and its Impact on the Federal Statistical Agency Workforce**

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Abstract

The Joint Program in Survey Methodology, initiated in 1993, has had a major impact on the workforce at federal statistical agencies. This paper discusses the history and structure of the program as well as its impact on the careers of its graduates. In particular, it examines how employees at one of these agencies – the U.S. Census Bureau – who were supported in the master’s degree program, have contributed to survey methodological research. It explores the impact of the contributions from these employees on the official statistics programs conducted by the Census Bureau.

Background

The Joint Program in Survey Methodology (JPSM) was founded in 1993 through a grant from the National Science Foundation to the University of Maryland. It is the nation’s oldest and largest program offering graduate training in survey methodology in the United States. The program is a partnership, drawing faculty from the University of Maryland, the University of Michigan, and Westat (a private survey research firm). It is funded by a consortium of twelve federal agencies, through a contract with the Census Bureau (which is also the largest contributor to the program’s funding). The JPSM offers courses both at the University of Maryland College Park campus, where the program is located, and, via video hook-up, at the University of Michigan and at the U.S. Census Bureau. It also shares courses via video with the University of Nebraska at Lincoln and the University of North Carolina at Chapel Hill.

The JPSM was established to strengthen the U.S. statistical system and the field of survey research more generally by offering advanced training in survey methodology to staff of both the federal statistical agencies and the survey firms that serve the statistical agencies, and to new entrants to the field who might ultimately join the federal statistical system or its private contractors. To carry out its mission, the JPSM offers five programs:

- master’s degree in survey methodology;
- doctoral degree in survey methodology;
- two graduate certificates;
- short courses and two associated citations; and
- summer internships for undergraduates.

To date, 104 students have received master’s degrees from the Joint Program. The Ph.D. program began admitting students four years ago; this summer, the first two Ph.D.s in Survey Methodology will be awarded. These will be the first doctorates

in survey methodology ever awarded. In the Fall of 2005, JPSM will have an enrollment of 59 degree-seeking students, including nine in the Ph.D. program and 50 in the master’s program. An additional 38 are currently enrolled in the certificate and citation programs. More than 180 undergraduates have participated in the summer internship program since its inception in 1998.

Survey of Master’s Graduates

The JPSM assembled an Alumni Council in the spring of 2001. As one of its first tasks, this group conducted the first-ever JPSM alumni survey. The content was finalized in the spring of 2002, while JPSM staff tracked down current e-mail addresses for all alumni.

At the time, there were a total of 70 alumni, and the Council was able to obtain email addresses for 69 of them. E-mail invitations asking the alumni to complete the survey were sent out in March of 2002. Two follow-up reminders were sent to survey nonrespondents. At the end of the data collection period in May, a total of 55 alumni had responded, for an overall response rate of 80 percent. Some of the highlights of the survey results are presented below.

- More than two thirds (69 percent) of JPSM graduates were employed by government statistical agencies; the majority of these graduates worked at the Census Bureau.
- The remaining JPSM graduates were employed by for-profit survey research organizations (15 percent), government contractors (9 percent), non-profit academic research organizations (5 percent), and non-survey research organizations (2 percent).
- Everyone who responded to the survey rated their academic experience at JPSM as being “excellent” (56 percent) or “good” (44 percent) — no one chose the other response options of “poor” or “very poor.”
- The graduates felt that the JPSM had been helpful in advancing their careers in survey research (58% said “very helpful” and 33% said “somewhat helpful”). Only four graduates indicated that JPSM was “not very helpful” and one reported that JPSM was “not helpful at all.”
- The alumni were making good salaries — among those working full-time, two thirds of JPSM graduates (68 percent) were earning more than \$70,000 per year.

- Among “early” JPSM graduates (1995-1998) working full-time, four of every five (83 percent) earned more than \$70,000 per year.
- The “recent” graduates (1999-2001) were also faring well, with 52 percent of those employed full-time earning more than \$70,000 per year.
- The graduates tended to stay in the Washington, D.C. area — 82 percent reported working in this area versus 18 percent who were working someplace else.

Table 1 displays the overall evaluation of the program by selected characteristics of the respondents.

Table 1. Quality of JPSM Academic Experience

	n	Excellent	Good
All Graduates	55	56%	44%
Employer Type			
Government	38	53	47
Other	17	65	35
Concentration			
Social Science	37	54	46
Statistical Science	18	61	39
Year Graduated			
1995-1998	31	65	36
1999-2001	24	46	54

Note: Two additional response options were provided (“poor” and “very poor”) but were not selected by any respondents.

The Census Bureau and the Joint Program in Survey Methodology

No other agency has taken advantage of the Joint Program to the extent that the Census Bureau has. Of the program’s 104 alumni, 40 are currently working at the Census Bureau. Similarly, of those enrolled in the master’s degree program next year, 14 are current Census staff (and two additional students will be working at the Census Bureau as graduate assistants).

Census Bureau support for Master’s Degree program participants. When the JPSM was initiated, the Census Bureau determined that it could maximize its participation in the program by encouraging and supporting employee participation in the Master’s degree program. The program required two academic years (four semesters) to complete. The Census Bureau felt, however, that it would get more benefit from the program if employees continued to work part-time while they were enrolled in the program rather than become full-time

students. The work environment would facilitate the transfer of knowledge between the academic and work assignments and vice versa. The Census Bureau envisioned that the employees would spend approximately half-time in each of their activities — academic and work — over a three-year period, including some course work in the summer. The Census Bureau offered employees who had worked at the Census Bureau for at least one year the opportunity to compete for a position in this program. Applicants for the program were reviewed by the Census Bureau and by the director of the JPSM to ensure that selectees for Census Bureau support would be admitted into the degree program.

The competition advertised six positions each year, with the expectation that there would be employees interested in each of the two tracks of the master’s program — statistical science and social science. Each person selected received the following support package: tuition and fees, administrative leave up to 20 hours per week for academic class participation and completion of course assignments when classes were in session, and full-time salary and benefits. The first competition was offered in 1993 with the inception of the program, and a competition has been offered annually since then. The number of selectees each year has varied between three and ten, depending on the caliber of the applicants, agency budgets for the upcoming year, and distribution of applicants across work groups. The completion rate for the program has been high — nearly 80 percent; however, there have been a few individuals who determined that the master’s degree program did not meet their career goals after enrollment and did not complete the program. A total of twelve Census Bureau enrollees have dropped out of the program without finishing.

The Census Bureau has had 40 JPSM graduates between 1996 and 2004, 23 of them graduating from the statistical science track, and 17 from the social science track. Thirty-six of the graduates are still with the Census Bureau, a retention rate of 90 percent. Participants in the program are required to sign an employment agreement with the Census Bureau for an approximate one year post-graduate commitment. The graduates of the two tracks of the master’s degree program are making major contributions to the agency statistical programs. Many are now in senior management positions or in critical technical positions where they are having an impact on program design and implementation.

Development of new programs to meet Census Bureau needs. One of the challenges that the Census Bureau initially faced in using the program was that some of the employees interested in the master’s degree program did not have the academic qualifications that JPSM was seeking in its admission policies. The employees had gained on-the-job experience in survey operations and methodology, but it was not clear how that knowledge would transfer to the JPSM academic environment. At the request of the Census Bureau, JPSM developed a senior level undergraduate course — *Fundamentals of Survey Methodology* — designed to provide an introduction to the discipline for employees. This course

was also envisioned as a screener course for admission to the JPSM master's degree program. Individuals without the JPSM academic qualifications who performed well in this course then were given serious consideration for admission to the degree program. This has allowed more Census Bureau employees to participate in the graduate program.

The Census Bureau also had individuals whose career needs and goals were not met by either of the Master's degree programs. Some of these needs are now being met through the development of the Citation in Introductory Survey Methodology, the Certificate in Intermediate Survey Methodology, and the Certificate in Survey Sampling — begun in 1999. The previously noted course — *Fundamentals of Survey Methodology* — is required for the citation and certificate programs in survey methodology. Mid-career professionals often found the Citation in Introductory Survey Methodology a good way to update their knowledge in a number of areas. The Certificate in Intermediate Survey Methodology requires six academic courses and has been used by individuals from varied backgrounds — with bachelor's or master's degrees in a number of disciplines — to gain knowledge of the academic literature in survey data collection, questionnaire design, applied sampling, statistical computing, and an elective area. The Certificate in Survey Sampling was designed specifically for individuals with a Master's degree in statistics without course work in sampling. In total, 25 certificates and citations have been awarded, ten to Census Bureau employees, with five Citations in Introductory Survey Methodology, three Certificates in Intermediate Survey Methodology, and two Certificates in Survey Sampling. Thirty-eight students are currently enrolled in these programs, 17 of them from the Census Bureau.

The strength of the JPSM program has been primarily in social and household statistics, as the initial faculty came from the disciplines of sociology, psychology, and statistics. However, several of the federal statistical agencies have had a need for more emphasis on economic statistics. The Census Bureau worked with JPSM in the development of an academic course in economic measurement. The Census Bureau supported a JPSM faculty member during the course design stages with the idea that Census Bureau staff would pilot test the course. That pilot test occurred several years ago, leading to the academic course — *Introduction to Economic Measurement*. In the interim, a number of short courses have been developed on specific topics of economic measurement. The academic course and the short courses will soon provide a second citation in Economic Statistics. This will expand the number of employees who can benefit from the JPSM at the Census Bureau, the Bureau of Economic Analysis, and the Bureau of Labor Statistics.

JPSM graduate assistantships at the Census Bureau. This coming year, the Census Bureau will be entering into a new partnership with the JPSM in which several full-time degree students will have graduate assistantship positions at the Census Bureau during the academic year. These individuals will be

funded through a contract with the University of Maryland, enabling the Census Bureau JPSM graduate assistants to receive the same benefits as other JPSM graduate assistants. The individuals will be placed in positions within the Census Bureau of interest to them and will work half-time while classes are in session. They could also be eligible for graduate internships during the summer.

JPSM Junior Fellows Program at the Census Bureau. In 1998, JPSM initiated a junior fellows program for undergraduates. The program sought to attract highly qualified individuals with quantitative backgrounds and interest in survey statistics for summer internships at one of the fifteen supporting statistical agencies. The junior fellows were hosted by JPSM and housed together in dormitories. They also participated in a weekly course that introduced them to survey methodology and had field trips to federal statistical agencies. To date, more than 180 undergraduates have taken part in the junior fellows program and the Census Bureau has hosted 49 of them. This year, ten of the junior fellows had internships at the Census Bureau. The Census Bureau has worked diligently to provide interesting assignments for these interns that might attract them either to apply for the JPSM program when they graduate or to consider the Census Bureau as an employer.

Use of JPSM to recruit individuals to the Census Bureau workforce. Over the ten years that the JPSM program has been in existence, the Census Bureau has tried to use the program to enhance its workforce. As discussed above, the Census Bureau structured a program to support current employees in the JPSM master's, certificate and citation programs. The Census Bureau has also recruited graduates of the program to be Census Bureau employees. Currently, there are four individuals who came to the Census Bureau after graduating from the JPSM. Additionally, two other non-Census Bureau supported JPSM graduates have worked at the Census Bureau for a period of several years before going on to other employment. The Census Bureau also sees the graduate assistantships as an opportunity to recruit individuals currently enrolled in JPSM as employees upon the completion of their master's degree program.

The Census Bureau also promotes its sponsorship of employees in the JPSM master's degree program when recruiting future employees. The agency's support of this program is an important benefit to bachelor's candidates looking for employment and graduate support to further their career. In particular, each summer the Census Bureau actively encourages the current JPSM junior fellows to consider the Census Bureau as an employer. These individuals are invited to the Census Bureau for a one-day session to find out more about job possibilities and employment opportunities. Seven of the junior fellows have become Census Bureau employees; five were at the Census Bureau while a junior fellow. Five junior fellows have returned to the Census Bureau for a

subsequent summer internship after the JPSM summer program.

Impact of the Census Bureau’s Participation in the Joint Program

To assess the impact of the Joint Program on the Census Bureau’s staff, the Census Bureau conducted a series of focus groups in May of 2004. Two focus groups were conducted with Census Bureau supported JPSM graduates from the master’s degree program and one focus group was conducted with supervisors of Census employees who graduated from the program.

Focus groups with the graduates brought together a combination of nineteen graduates, whose characteristics are summarized in Table 2.

Table 2. Composition of Focus Groups for Graduates from the JPSM Master’s Program

Sex	
Male	7
Female	12
Year Graduated	
1996 - 2001	9
2002 - 2004	10
Master’s Track	
Statistical Science	15
Social Science	4
Census Bureau Directorates	
Economic	7
Demographic	5
Decennial	3
Methodology and Standards	4

The focus group of supervisors brought together nine supervisors, whose characteristics are summarized in Table 3.

Table 3. Composition of Focus Group with Supervisors of Graduates from the JPSM Master’s Program

Sex	
Male	3
Female	6

Census Bureau Directorates	
Economic	5
Demographic	3
Decennial	1

Graduates had mostly positive comments about the effect of the JPSM program on their careers at the Census Bureau. Most felt that it was a huge benefit in their career development. Promotion was the one most measurable gain in their careers due to the JPSM training. Other benefits included:

- Opportunity for networking;
- Increased confidence in skills;
- Increased knowledge in survey methodology;
- Motivation to question methods and techniques used for years;
- Awareness of the survey methodology literature;
- Knowledge of the tools of survey methodology;
- JPSM degree credentials validated work experience; and
- Opportunity for some to make a career change.

Those working in the economic area felt that the JPSM program has helped their career, but that it needs to continue its efforts to incorporate applications and examples from establishment surveys into current courses.

Supervisors also had very positive appraisals about the effect of the JPSM program on Census Bureau survey methodological research projects and survey/census programs. They mentioned that they do take JPSM education into consideration when hiring. The supervisors felt that the JPSM graduates have a greater breadth of knowledge to understand better the implications of a methodological change on the data than other employees.

The JPSM graduates contribute survey methodological expertise to research projects and survey/census programs across all areas of the Census Bureau. They have worked on projects for the economic and decennial censuses, the American Community Survey, the Census 2000 Accuracy Coverage Evaluation, the Business of Survey Owners and the Census of Governments. They also worked on various economic and demographic surveys, evaluations and studies such as the National Crime Victimization Survey, the Survey of Income and Program Participation, the Current Population Survey, the American Community Survey, the Retail Indicator Survey, the Annual Finance Survey, the Juveniles in Justice Survey and the Survey of Construction.

Graduates and supervisors agree that the graduates provide a lot of technical knowledge and introduce ideas that otherwise would not be considered. In most cases, graduates directly apply what they learned in the program to work projects in areas such as sample design, sampling techniques, estimation, weighting, variance estimation, modeling, technical writing, imputation and editing, survey redesign, questionnaire design and cognitive interviewing.

Overall, the graduates and supervisors concur that the program provides increased knowledge of survey methodology, familiarity with terminology and increased technical skills and confidence to start projects on their own. The program helped the graduates improve writing and documentation skills, allowed greater participation in statistical discussions and gave them a better understanding of the research process and survey design.

Future Direction for the Use of the JPSM by the Census Bureau

The recent focus groups with graduates and their supervisors provided feedback on several areas that will enhance the value of the JPSM for Census Bureau employees. Several suggestions were made that will increase the relevance of the curriculum for some employees. The Census Bureau will address several other suggestions that affect how it administers its participation in the program.

Several of the graduates noted that they would have benefitted from more examples from establishment surveys in the existing course curriculum. The courses were initially developed by professors whose background was in sociology, psychology, and household survey methods; thus they had incorporated more examples from the household survey literature familiar to them. However, there has been an increase in the professional literature about establishment surveys since the inception of the JPSM program. This has been, in part, due to two conferences on establishment surveys in 1993 and 2000 with subsequent publication of conference monographs. The new JPSM Citation in Economic Measurement will also provide some examples that might be incorporated into the core academic curriculum.

The JPSM recently introduced a course in small area estimation, adding a faculty member with this expertise. Graduates would also like to see the JPSM initiate a course in statistical modeling. More theoretical exposure to statistical editing and imputation literature is desired. This could be structured as a new semester-long course. Another area of interest is statistical disclosure techniques, possibly combined with exposure to record linkage principles and routines.

One of the issues that Census Bureau supervisors noted was the potential stress on an individual office if more than one employee at a time is receiving Census Bureau support for the JPSM Master's degree. If several employees from the same

office were requesting first-time support in a given year, that would be identified in the current review process. However, the process does not identify other employees in the office that are currently receiving Census Bureau support. This factor will be taken into consideration in the review process in the future.

The focus groups validated the value of the JPSM to the Census Bureau for career development of its employees – providing the skills necessary to take on more challenging methodological assignments, and the broad base of knowledge needed to direct research and methodological work. Graduates also suggested opportunities for improving the administration of the program, and additionally noted that the JPSM should not be the only vehicle for providing master's level statistical training for Census Bureau employees. However, a large number of Census Bureau employees have benefitted from the program. We expect that it will continue to provide an exceptional value for our employees.

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