

**THE SURVEY OF INCOME AND  
PROGRAM PARTICIPATION**

**THE EFFECT OF THE SIPP  
REDESIGN ON EMPLOYMENT  
AND EARNINGS DATA**

**No. 217**

**E. Lamas  
T. Palumbo  
J. Eargle  
Census Bureau**

THE EFFECT OF THE SIPP REDESIGN ON EMPLOYMENT AND EARNINGS DATA

by

Enrique Lamas, Thomas Palumbo, and Judith Eargle  
U.S. Bureau of the Census

August 2, 1996

The authors are with the Housing and Household Economic Statistics Division, U.S. Bureau of the Census. The views expressed are attributable to the authors and do not necessarily reflect those of the Census Bureau. The authors thank Jan Tin for programming assistance on this paper.

# THE EFFECT OF THE SIPP REDESIGN ON EMPLOYMENT AND EARNINGS DATA

Enrique Lamas, Thomas Palumbo, and Judith Eargle  
U.S. Bureau of the Census, Washington, D.C. 20233-8500

KEY WORDS: SIPP, Redesign, employment, earnings

## I. Introduction

Beginning with the 1996 Panel, the Survey of Income and Program Participation (SIPP) has undergone a comprehensive redesign which included the introduction of a new survey design, the use of computer-assisted personal interviewing (CAPI), and the development of a new longitudinally oriented processing system.<sup>1</sup> As part of the conversion from paper-and-pencil personal interviewing (PAPI) to CAPI, several content changes were introduced. Many of these content changes became feasible because of the new collection-mode. In addition, there were changes in the approach to gathering data on certain topics, in question wording, and additional new questions added to expand coverage of existing topics.

As part of the 1996 Panel redesign plan, there was a series of field tests to develop the new CAPI instrument. A dress rehearsal of the survey was conducted in 1995 consisting of 2 waves administered in February through May and June through August. During that period wave 7 and wave 8 of the 1993 Panel of SIPP were still in the field. As a result, data for the same time period are available based on the old (PAPI) and new (CAPI) versions of the instrument.

This paper describes the major changes introduced in the 1996 Panel CAPI instrument, focusing on the sections on employment status, job and employer characteristics, and earnings. We also compare the data from the dress rehearsal and the 1993 panel in an attempt to gauge the impact of the redesign changes. Since the dress rehearsal incorporated all aspects of the redesign, the impact of the changes in both mode of collection and content relative to employment and earnings are examined. We describe the differences between the SIPP PAPI and CAPI instruments (that is, between the pre- and post- redesigned instrument) and we measure the total effect of the redesign on employment and earnings data.

---

<sup>1</sup>The original SIPP design was a longitudinal panel survey interviewing approximately 20,000 households every four months for a period of 32 months (8 interviews). New panels were begun each year. Beginning with the 1996 Panel, the design was changed to introduce a larger panel (37,000 households) every 4 years and to extend the panel length to 48 months (12 interviews). In addition, the 1996 panel oversamples low income households based on the 1990 Census. For a discussion of the reasons for the design changes, see Weinberg and Petroni (1992).

## II. Content Differences

In the conversion from a PAPI to CAPI mode, there were several changes in the content of the instrument. Some of these changes resulted from differences in interviewing mode. The CAPI environment used responses and complicated logic from one part of the interview in subsequent parts of the interview. This CAPI environment allowed checking for inconsistencies and accuracy in the information collected while the interviewer was still in the household. The redesign also allowed collection of new information based on recommendations from the SIPP user community and research conducted at the Bureau. In some instances, the differences between the instruments reflect some combination of mode of collection as well as content changes.

In the comparison of the PAPI data with the CAPI data for those topics whose instrument differences are described, we present measures of total differences in the data. The dress rehearsal was designed as an operational test and as a way to assess the total differences in key statistics from PAPI and CAPI. The sample was selected from Primary Sampling Units (PSUs) that were in both the 1980 (PAPI) and 1990 (CAPI) design. Because of cost and other considerations, the SIPP dress rehearsal did not have separate treatment groups that would allow tests, for example, of the differences in key statistics resulting from interviewing mode change versus those that were due to content changes. Therefore, we cannot distinguish differences which were the result of collection mode changes, or content changes, or processing changes uniquely.

### A. Content Changes in the SIPP Instrument

The employment and earnings sections of the SIPP instrument collect three kinds of information:

- (1) an employment status for each week of the reference period;
- (2) characteristics of the jobs and businesses held during the reference period; and
- (3) wage and salary, and self employment earnings.

The major changes from the redesign in the way the SIPP instrument collects this information occurred mainly within areas (1) and (3). Although the SIPP is not primarily a labor force survey (as is the Current Population Survey), information on employment status (area 1) and characteristics of the job (area 2) are included in the SIPP to provide data on the labor force activities of individuals in the survey and to serve as background for the collection and the analysis of the earnings data, which are a major component of income.

A major difference between PAPI and CAPI involved the structuring of the sections which asked about the three topics mentioned above. In PAPI, the employment questions were separated from the job characteristics and earnings questions, which were combined (or integrated) in one section. In CAPI, the employment and job characteristics sections were combined into one section, and the earnings data were collected separately. The general flow of

the PAPI questions were:

- general employment status - where weekly labor force status was collected;
- job/business characteristics - where industry and occupation, hours worked, and other job specific information was collected;
- earnings - where hourly wage rate and monthly earnings were collected.

For the CAPI, the flow is:

- initial general employment status - where worker versus nonworker status is determined;
- job/business characteristics - where employer name, dates of employment, industry, occupation, and other job specific information is collected;
- final general employment status - where information on time spent looking or on layoff is collected;
- current situation - where employment status and employer names as of the interview date are collected;
- job/business earnings - where earnings for up to 2 jobs and 2 businesses are collected as well as some catchall category for any moonlighting work performed.

The reasons for this restructuring are discussed below.

## 1. Labor Force Status

In the redesign of the instrument, there was a fundamental shift in the approach to collecting the data to enable a classification of a person into one of the following employment status categories for each week of the reference period:

- employed, at work;
- with a job, but not at work;
- unemployed; and
- not in the labor force.

The PAPI instrument collected employment status data in one section.<sup>2</sup> The PAPI instrument took a direct approach to collecting these data. Except for persons who were at work for each week of the period, the instrument used a calendar to account for each week. The person was asked to look at a calendar and then to identify, by status, the calendar weeks he was in each of these statuses:

- with a job, at work;
- with a job, absent without pay;

---

<sup>2</sup>See, for example, the “Labor Force and Reciprocity” section, questions 1-7 of the 1993 Panel Wave 1 interview in SIPP.

- without a job, looking for work or on layoff; and
- without a job, not looking for work and not on layoff.

For those that were employed, the labor force status questions for each week were asked across all employers (i.e., not for a specific employer but the sum for all employers). The questions on each specific employer were asked later in the interview. Specifically, questions on the employer name, dates of employment, industry, occupation, and hours usually worked were asked for up to two employers and up to two businesses. These questions were separated from the employment status questions by an extended series of questions to establish income and asset reciprocity.

The PAPI approach of concentrating on a weekly calendar was cumbersome and burdensome to both respondents and interviewers especially for persons who had multiple changes in status over the period. In addition, collecting the weekly employment status and later collecting dates of employment for each specific employer was repetitive in many cases.

The CAPI instrument took a different approach in collecting employment status and job information. Information is collected about the specific jobs, and the employment status is derived from that information. The initial employment questions establish whether the individual was a worker or nonworker. Workers were then immediately asked for specific employer related information including employer name, dates employed, industry, occupation, and hours worked. Weekly employment status is derived from the dates of employment and additional questions are asked to determine for periods of unemployment (looking for work, layoff, and absent without pay<sup>3</sup>). This approach is more efficient in collecting the weekly employment status information from the dates provided for specific employers. However, this approach is significantly more difficult for persons whose type of work is irregular and who do not consider that they (1) have a definite arrangement with an employer or that they are (2) self-employed. For example, it is difficult to collect dates of employment with a specific employer for a person who cleans houses for several different individuals. This person may consider each individual to be an employer for whom they may work only one day per week or one day per month, making the collection of employment dates difficult. For these cases, the CAPI instrument collects information across all employers on a weekly basis in a way similar to the PAPI.

After the information is collected which determines employment status and job related information for the reference period, a series of items were included in the CAPI instrument designed to collect information on employment status as of the interview month to reduce the

---

<sup>3</sup>The layoff questions in the CAPI instrument have been updated to the new questions used in the CPS. The questions ask whether the employer gave any dates to return or any indication whether they could return to the job within six months.

“seam” problem.<sup>1</sup> The seam problem is the term used for an uneven distribution of month-to-month changes in reciprocity status where a much higher proportion of changes occur in the months between interviews, that is, the last month of one interview and the first month of the next interview. This pattern is evident in most income, employment, program participation, and other life statuses collected in SIPP. The seam problem is primarily the result of the survey design where there is a different reporting unit (monthly) from the reference period (4 months). Recall error leads to a high proportion of transitions at the seam between interviews. With the CAPI instrument, the respondent is reminded about the information collected in the last interview as an attempt to reduce the transitions at the seam.<sup>2</sup>

## 2. Earnings

Earnings, that is, wages and salary and self-employment income, are the largest source of income for most persons, accounting for approximately 80 percent of all personal income.<sup>3</sup> Earnings are known to be underreported in household surveys. Earnings collected in the SIPP are lower compared to those collected in the CPS. While the SIPP collects a higher number of wage and salary recipients (additional short-term recipients), the SIPP estimates lower means and medians for earnings. The aggregate estimate of wages and salary in SIPP was approximately 6 percent lower than the CPS estimate. This underreporting of wage and salary income can be partly attributable to the monthly reference period used in SIPP which makes the reporting of take home pay easier than reporting of gross pay for many respondents.<sup>4</sup> Other potential reasons for underreporting in SIPP are that respondents may miss additional pay periods in specific months (a fifth weekly payment or a third bi-weekly payment in a month) or that CPS respondents telescope their current earnings levels back to the previous calendar year.<sup>5</sup>

There are several major differences between the PAPI and CAPI methods of collecting earnings data. In PAPI, we asked for employer characteristics and followed with questions on monthly amounts received. Several changes were made to the CAPI instrument which were

---

<sup>1</sup>One of the first investigations of the seam problem in SIPP was in Burkhead and Coder (1985). They examined earnings, social security, unemployment compensation, Aid to Families with Dependent Children (AFDC), food stamps, private pensions, and Medicaid, and found consistently high ratios of seam to off-seam changes in status.

<sup>2</sup>The data available for this paper included only the first wave of the SIPP Dress Rehearsal. To analyze the seam effect the second wave is necessary. Therefore, we plan to look at seam to non-seam transitions in later research when the wave 2 data become available.

<sup>3</sup>Estimate based on the Income Supplement to the March 1995 Current Population Survey.

<sup>4</sup>See Vaughan (1993), p. 19.

<sup>5</sup>See Vaughan (1993).

designed to improve the collection of earnings data in SIPP. Specifically, (a) the earnings questions were separated from the employer/business characteristics questions to focus attention on the reporting of earnings amounts; (b) the question wording was altered to focus on specific payments received rather than on one amount for the month; (c) respondents were reminded how many payments they should have received in a month based on information on how frequently respondents were paid (weekly, bi-weekly, or monthly); (d) probes were added to make sure that amounts were reasonable, to verify that gross amounts were obtained, and to clarify the covered time period for the amount; (e) reporting period options were provided so that respondents could report on an annual basis if they can provide gross amounts more easily; (f) questions about total amounts for extra jobs/businesses or for casual work such as moonlighting were added; and (g) respondents were asked to obtain and refer to records whenever possible. The CAPI instrument used the ability to do much more complicated logic in the interview.

### III. Results

#### A. Employment Status

This section compares the results of the CAPI mode interviews reflecting changes discussed above to bridge data collected in the PAPI mode. Table 1 shows the distribution of persons 15 to 64 years of age by employment status for the last month of the reference period. The SIPP CAPI results showed a slightly lower number of persons with some labor force activity (68.1 million), that is, with a job, looking for work or on layoff, compared to the 69.8 million persons from the PAPI results. In terms of percentages of the population, the CAPI version had a lower percentage of persons with some labor force activity (72.2 in CAPI compared to 74.0 in PAPI). Additional labor force status information is presented in Table 1. The percent of persons with a job during the month was slightly higher in the CAPI compared to the PAPI results (71.4 vs. 70.6 percent, respectively) and the percent of persons with a job the entire month was approximately the same in the CAPI and PAPI results (69.7 vs. 69.5 percent). The difference in the percent of person with some labor force activity was in the percent of persons who did not have a job but who had some labor force activity. Specifically, those who looked or were on layoff the entire month (0.5 percent in CAPI compared to 3.2 percent in PAPI). As stated earlier in this paper, the CAPI instrument used a new sequence of questions on layoff which may have resulted in lower number of persons on layoff. Given the lower number on layoff it results in a higher percentage of persons with no labor force activity which was a higher percentage in the CAPI results, 27.8 compared to 25.7 percent.

Tables 2 and 3 present the labor force categories for selected characteristics. When we examine the labor force distributions by age and sex, we find that for males the distribution of persons with a job the entire month was similar, but the percent with no job in the month in each age group was lower in the CAPI compared to the PAPI. This result was also found for females in general, except for females age in the 55 to 64 age group who had a larger percent with a job the entire period in CAPI than PAPI and similar percent with no job the entire month in both.



When we look at the distributions by education and total personal income, we also find some differences. The percent of persons 15 to 64 years old who reported some labor force activity, but who did not report having a job during that month was lower in CAPI for each education category. This was also true for the lower income groups (groups with income less than \$3,000). However, for the higher income groups, the percent without a job but looking or on layoff was the same or higher in CAPI. In addition, the CAPI results for the higher income groups showed a lower percent of persons with a job the entire month (84.2 compared to 98.5 percent) and a higher percentage of persons with no labor force activity (13.1 compared to 1.0 percent).

## B. Earnings

Tables 4 and 5 present earnings data for persons 15 to 64 years old who had earnings. The most important finding is that the CAPI results show higher media, mean, and aggregate earnings and this is consistent across sex and age groups. The CAPI results show 57.6 million earners with a mean monthly earnings of \$2,641, while the PAPI results show 61.0 million earners with mean earnings of \$2,378. In terms of aggregate earnings, the CAPI earnings showed a 4.5 percent increase in monthly earnings (\$152.3 billion) compared to PAPI questionnaire (\$145.8 billion). This is a significant finding because as an income survey SIPP must reduce the underreporting of earnings, especially if it is going to become the source of the official income and poverty estimates. The results we found thus far suggest that the CAPI instrument and all the attention paid to improving earnings will give higher reporting of earnings. We plan to do more work in benchmarking the earnings data and the labor force data in the SIPP.

## IV. Conclusion

This paper describes the changes made in the collection of labor force and earnings data as part of the SIPP redesign. As described, the CAPI environment provides the opportunity to improve data collection. The first look at the SIPP Dress Rehearsal data presented in this paper indicate the CAPI results show the same percent of persons working all weeks of a month, but a lower percent with no job but looking or on layoff. In addition, while earnings in SIPP PAPI are known to be underreported, the SIPP CAPI results show higher mean and aggregate earnings which may reduce the level of underreporting in SIPP. Further work in benchmarking the earnings data is warranted.

## REFERENCES

Burkhead, D. and J. Coder (1985), "Gross Changes in Income Reciprocity from the Survey of Income and Program Participation," 1985 Proceedings of the Social Statistics Section, American Statistical Association, 1985.

Ryscavage P., and J. Bregger, "New Household Survey and the CPS: A Look at Labor Force Differences," Monthly Labor Review, September 1985.

Vaughan, D. (1993), "Reflections on the Income Estimates From the Initial Panel of the Survey of Income and Program Participation (SIPP)," Studies in Income Distribution, No. 17, U.S. Department of Health and Human Services, Social Security Administration, May 1993.

Weinberg, D. and R. Petroni (1992), "The Survey of Income and Program Participation in the 1990's," SIPP Working Paper Series, WP-9206, US Bureau of the Census, December 1992.

Table 1. Labor Force Status, Persons 15 to 64 Years Old

Labor Force Status	CAPI		PAPI	
	Number	Percent	Number	Percent
Total, 15 to 64 years	94,300	100.0	94,300	100.0
With some labor force activity	68,108	72.2	69,829	74.0
With job entire month	65,703	69.7	65,521	69.5
Worked each week	63,375	67.2	64,281	68.2
Absent 1 or more weeks without pay	2,328	2.5	1,240	1.3
With job part of month	1,565	1.7	1,044	1.1
Spent time looking for work or on layoff	599	0.6	585	0.6
No job during month	840	0.9	3,264	3.5
Looking/layoff entire month	420	0.5	2,999	3.2
Looking/layoff part of month	420	0.5	264	0.3
With no labor force activity	26,192	27.8	24,471	26.0

Table 2. Monthly Labor Force Status, by Sex and Age

Males	CAPI				PAPI			
	With Labor Force Activity			No Labor Force Activity	With Labor Force Activity			No Labor Force Activity
	Job Entire Month	Job Part Month	No Job in Month		Job Entire Month	Job Part Month	No Job in Month	
15-17 years	21.7	2.9	0.6	74.8	19.2	1.0	4.5	75.3
18-24 years	63.5	2.9	2.1	31.5	64.9	1.8	5.2	28.1
25-34 years	84.7	1.3	1.3	12.7	87.4	0.6	4.8	7.2
35-44 years	85.8	1.2	1.1	11.9	87.4	1.1	3.4	8.1
45-54 years	84.1	0.7	0.3	14.9	86.4	0.5	3.5	9.6
55-64 years	66.7	0.6	0.2	32.5	64.5	0.6	2.3	32.6
<b>Females</b>								
15-17 years	25.9	2.9	0.4	70.8	25.2	1.8	2.9	70.1
18-24 years	61.3	3.1	1.1	34.5	60.4	1.7	3.4	34.5
25-34 years	69.2	1.8	0.5	28.7	67.6	1.5	4.4	26.5
35-44 years	72.5	1.1	0.6	25.8	73.1	0.9	2.6	23.4
45-54 years	72.4	1.7	0.5	25.4	71.2	1.4	1.7	25.7
55-64 years	49.9	1.4	1.5	47.2	41.4	0.6	1.5	56.5

Table 3. Monthly Labor Force Status by Education and Total Personal Monthly Income, Persons 15 to 64 Years

Education	CAPI				PAPI			
	With Labor Force Activity			No Labor Force Activity	With Labor Force Activity			No Labor Force Activity
	Job Entire Month	Job Part Month	No Job in Month		Job Entire Month	Job Part Month	No Job in Month	
Less than high school	42.9	2.3	1.0	53.8	44.0	1.5	4.7	49.8
High school	68.7	1.8	1.0	28.5	70.9	1.4	3.7	24.0
Some college	76.9	1.5	0.7	21.0	74.4	0.8	3.6	21.2
College graduate	84.2	1.2	0.9	13.7	84.2	0.7	2.1	13.0
<b>Total Personal Monthly Income</b>								
Less than \$1,000	40.3	2.6	1.3	55.8	35.5	1.8	7.6	55.1
\$1,000 to \$1,999	90.1	0.6	0.6	8.7	89.9	0.9	0.9	8.3
\$2,000 to \$2,999	91.4	1.0	0.2	7.4	95.0	0.7	0.2	4.1
\$3,000 to \$3,999	93.1	0.1	0.3	6.5	96.9	0.3	0.3	2.5
\$4,000 or more	84.2	1.7	1.0	13.1	98.5	0.2	0.3	1.0

Table 4. Monthly Earnings for Persons 15 to 64 Years Old

	CAPI	PAPI
Number, 15 to 64 years (thousands)	57,652	61,041
1st Quartile (25%)	\$ 981	\$1,040
Median	\$1,900	\$1,820
3rd Quartile (75%)	\$3,068	\$3,000
Mean	\$2,641	\$2,378
Aggregate (billions)	\$152.3	\$145.8

Table 5. Monthly Earnings by Sex and Age

Characteristics	CAPI		PAPI	
	Median	Mean	Median	Mean
Males, 15 to 64	\$2,254	\$3,105	\$2,200	\$2,836
Females, 15 to 64	\$1,520	\$2,091	\$1,500	\$1,828
15 to 17 years	\$ 320	\$ 516	\$ 340	\$ 404
18 to 24 years	\$ 960	\$1,279	\$ 978	\$1,176
25 to 34 years	\$1,882	\$2,617	\$1,955	\$2,373
35 to 44 years	\$2,378	\$3,027	\$2,200	\$2,673
45 to 54 years	\$2,499	\$3,480	\$2,400	\$3,062
55 to 64 years	\$2,000	\$2,724	\$1,920	\$2,627