THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

REFLECTIONS ON THE INCOME ESTIMATES FROM THE INITIAL PANEL OF THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

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Certain of the estimates presented here are based on the SIPP 1984 Panel Longitudinal Research File. This file was released by the Bureau of the Census for research to improve understanding and analysis of SIPP data. The data on the file are preliminary and should be analyzed and interpreted with caution. At the time the file was created, the Census Bureau was still exploring certain unresolved technical and methodological issues associated with the data set. The Census Bureau does not approve or endorse the use of these data for official estimates.

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I. Introduction

The Survey of Income and Program Participation (SIPP) represents a major effort on the part of the Federal statistical community to improve the quality and comprehensiveness of -information on the economic resources of the household sector and to permit a more accurate portrayal of the impact of government tax and transfer programs on the economic status of the population.

Throughout the postwar period, the Current Population Survey (CPS) has been the major recurring source of information on the economic status of the population. However, by the early 1970's it had become clear that the CPS could not be redesigned to meet the need for better and more comprehensive data on the economic resources of the population while continuing to fulfill its primary role as the source of information on employment and unemployment. The SIPP was developed and tested during the last half of the 1970's in response to this growing need for better information on the economic well-being of the population. Given the substantial commitment of resources to the SIPP program and its charge to produce more comprehensive and better quality data, assessments of the key SIPP statistics on income are quite clearly of some importance.

This paper will not offer a comprehensive and definitive statement on the quality of SIPP income data. Neither the time nor resources available to the author, nor indeed, the state of SIPP data products, would permit making such a statement. However, enough information is available to offer a tentative interpretation of important aspects of the income data available from the- first SIPP panel. Two broad themes will be touched upon. Since it is generally believed that the major technical defect of income surveys is the substantial tendency to under identify the sources and amounts of income received by the population, the issue of the completeness of the SIPP money income estimates will be the central issue. A second important aspect of income data has to do with its suitability for analytic purposes.

With regard to the SIPP, of course, a principal goal is to better represent the role played by government transfers and taxes in determining the overall economic position of individuals and their families. Consequently, some attention will be given to the SIPP's capacity to represent important structural features of the tax and transfer system.

Difficulties in Income measurement: the CPS experience.

Annual income data have been collected for about 30 years in the Current Population Survey. Over this time, the amount of income detail obtained in the CPS has expanded a great deal, and the attention given to processing the data collected has grown commensurately. However, major shortcomings in the CPS income data are quite evident and have been for many years. For example, while comparison to independent estimates suggests that overall the CPS does a relatively good job of measuring money income (in 1983 the CPS aggregate amounted to 90 percent of the independent estimate) and that the CPS estimate of earnings is quite complete, perhaps 20 percent of transfer income and 55 percent of property income is not identified.

In addition, the CPS income data tend to be subject to relatively high levels of item nonresponse. The Bureau of the Census has developed a set of sophisticated imputation procedures to cope with the item nonresponse problem. While these procedures undoubtedly have a favorable impact on the quality of final estimates, one is left with the fact that typically 20 percent of aggregate income represented in the CPS is assigned to sample individuals by imputation.

The problem of nonresponse is all the more serious because for a substantial fraction of the sample individuals affected by item nonresponse, information on receipt as well as amount of income is not reported. Thus despite the fact that the Bureau's procedures take into account missing information on receipt, for a significant fraction of the sample individuals, there is substantial uncertainty concerning even the sources of income received.

Most analysts believe that there are two major impediments to obtaining better income data in the CPS context. Most importantly, the CPS is primarily a labor force survey, and so collection of information about income is necessarily a secondary activity. This basic aspect of the CPS environment has long been thought to negatively affect the quality of its income data. It clearly constrains what and how much may be asked and is commonly believed to dampen interviewer performance and respondent motivation. Second, many components of annual money income are transitory. Often sources are received only part of the year and amounts may vary over the period of receipt. Since the CPS asks about income for the prior calendar year in March of the subsequent year, there is ample opportunity for respondents to overlook important aspects of their prior year's income experience. This design weakness is generally believed to have the biggest impact on estimates of those transfers with a substantial transient component such as unemployment compensation, Aid to Families with Dependent Children (AFDC), food stamps, and Medicaid.

The SIPP design.

The SIPP is designed to meet both of these weaknesses directly. With income and participation in government transfer programs the central focus of the survey, interviewers should view collection of income data as their primary task, and there is ample time and questionnaire space devoted to the identification and proper classification of income. The relatively short 4-month survey reference period reduces the average time between the occurrence of an income-related event and interview from 7 months to two, presumably moderating harmful recall effects.

Summary of findings.

These design features should have a beneficial effect. The balance of the paper will be devoted to a review and interpretation of a selection of SIPP estimates to determine if this is so, and, if so, to what extent. The SIPP data will be evaluated by comparison with estimates from the CPS, and with readily available independent sources of information, such as those provided by government program statistics. Emphasis will be placed on monthly and annual cross-sectional estimates. Issues related to the measurement of month-to-month income change will not be discussed. Six

basic conclusions will be reached:

- The SIPP has resulted in major gains in the measurement of public and private transfers. This is evidenced by larger numbers of recipients, bigger aggregates, and a notable reduction in the effects of item nonresponse. By and large, these gains are corroborated by comparisons to independent estimates where available. Despite notable improvements, problem areas remain. These are discussed in some detail.

- The picture with regard to earnings, particularly wage and salary income, is less certain. Increased numbers of recipients are countered by slightly lower aggregates and apparently lower means. Evidence suggests that the lower means are substantially a function of more part-year and part-time workers in the SIPP, a finding in keeping with expected SIPP design strengths. However, the 12-month SIPP wage and salary aggregate is marginally lower than that of the CPS, and preliminary research by Bureau analysts indicates that the sub-annual reports of wage and salary amounts fall short of those obtained in the annual SIPP roundup interview by a similar margin.

- The SIPPs unorthodox measure of self-employment income shows definite signs of providing a more valid portrayal of the livelihood which the self-employed obtain from their businesses than the more traditional measures of net self-employment income as employed in the CPS, and other surveys.

- While there are clear signs of more complete enumeration of property income in the SIPP as compared to the CPS, particularly as signaled by numbers of recipients, SIPP property income aggregates are still substantially incomplete. Review of certain features of the post enumeration processing in the SIPP and new innovations in imputation methodology recently put into place in the CPS suggest possibilities for modest yet significant gains in the completeness of SIPP property income aggregates. However, a fundamental reduction in the remaining bias is not likely to follow implementation of such measures. An alternative approach offering major reductions in bias for both flows and stocks of financial assets is proposed.

- This review of the quality of SIPP estimates underscores basic shortcomings in available independent estimates, particularly in regard to private pensions and income from financial assets. More attention needs to be given to developing independent estimates that are appropriate to the survey universe and to survey income concepts.

- **!** Certainly the completeness of SIPP income estimates must be assigned a high priority in arriving at an assessment of the adequacy of the SIPP data on income. Equally important, however, is the context which the SIPP provides for its income estimates. The survey's very broad conception of economic circumstances and its explicit representation of tax and transfer program structure lend special significance to the SIPP income data. This theme will be developed in the final section of the paper.

SIPP income measurement procedures are quite similar to those employed in the largest of the pilot panels fielded as part of the SIPP development effort, the 1979 Research Panel of the Income Survey Development Program (ISDP). Findings concerning the quality of the income data from the initial SIPP panel will be reviewed in light of similar assessments of the quality of the income data obtained from the 1979 Research Panel. This review will demonstrate that the strengths and weaknesses of the income data from the 1984 SIPP panel mirror those of the earlier pilot survey. It is suggested that these similarities are plausibly attributable to design features basic to the SIPP, i.e., the explicit focus on income and economic resources, short reference periods, and detailed questioning.

Presentation of findings.

The findings will be reviewed in five basic sections. The first section will introduce the SIPP estimates via a comparative review of SIPP and CPS income aggregates by type of income for calendar year 1984. The impact of item nonresponse in the two surveys will also be discussed and reviewed in the light of the experience with the 1979 Research Panel. Subsequent sections will take up, in turn, SIPP estimates of transfer income, earnings, and property income. A final substantive section will outline novel features of the SIPP income data per se and the special importance of the broad range of background information also obtained by the survey.

II. Calendar year Income aggregates: 1984

Relatively detailed information on income aggregates by type for the SIPP and CPS for calendar year 1984, given in appendix table A- 1, is summarized in text table H- I (text tables appear at the end of each section). The SIPP aggregates were developed by summing cross-sectional quarterly estimates by type, and are based on detailed tabulations produced at the Bureau of the Census. CPS estimates are also based on routine Bureau tabulations of internal Bureau files. Thus, both sources are free from the effects of explicit topcoding, but physical constraints of the CPS income questionnaire limit maximum amounts by source to $99,999 while no such limit was imposed on SIPP maximums.

The reader may peruse the detailed table at his or her leisure. Its main findings are brought out by focusing on major income components: Total money income, the major elements of regular money income (earnings, public and private transfers, property income, all other) and lump sum payments.

At the level of total money income, there is basically a standoff, with both surveys registering slightly more than $2.4 trillion. When restricting the comparison to regular money income (after eliminating $5 billion in lump sum payments which are collected in the SIPP but not the CPS) each survey still records slightly more than $2.4 trillion. The interesting differences, then, lie at the level of the major components of regular money income. Perhaps the most notable difference at this level occurs for public and private transfers in which the SIPP aggregate exceeds the CPS aggregate by about 12 percent or $35 billion. For total earnings and property income, the aggregates for both surveys are quite close in percentage terms. The CPS aggregate for earnings is 1.8 percent larger than the SIPP aggregate, while for property income, the SIPP exceeds the CPS by about 3 percent. Finally, the SIPP aggregate for all other money income is only 37 percent that of the CPS. The significance of this rather substantial difference is uncertain, but since the category represents a true residual in each survey (that is, the category "all other" represents income reported in each survey which was not categorized in terms of the explicit categories offered the respondents), the lower aggregate in the SIPP may indicate more adequate classification of reported income.

The other issue addressed by this summary information concerns the extent to which the aggregates are affected by item nonresponse. Here we can see very clear differences between the surveys. Overall, about 11 percent of aggregate income in the SIPP stems from imputation due to item nonresponse. For the CPS, about 20 percent of the aggregate is based on imputation. Substantial differences in favor of the SIPP are present for each of the major components considered, with the SIPPs percent of the aggregate due to imputation slightly more than half that of the CPS for earnings, about three-fifths that of the CPS for public and private transfers and three-fourths that of the CPS for property income. These differences are similar to those observed between the 1979 Research Panel and the CPS at that time (Vaughan, Whiteman and Lininger, 1984:114-115) and are consistent with the view that the SIPP, by focusing the attention of both interviewers and respondents on the importance of income information, is able to obtain more complete reporting of income amounts.

Since the major SIPP gains appear to be in the area of public and private transfers, a natural follow-on question is: Just how much more complete are the resulting SIPP estimates compared to the CPS and the total amount of public and private transfers received by the household sector? One way to make such an assessment would be to compare the CPS and SIPP estimates to independent estimates by type of transfer. However, our only annual aggregates for the SIPP pertain to calendar year 1984, and the latest complete set of independent estimates are for 1983. Consequently, such a straightforward approach is not feasible at this time. It is possible to construct a plausible answer to the question using CPS and independent estimates for 1983 and constructing hypothetical SIPP estimates for 1983 based on the ratios of SIPP to CPS aggregates observed in 1984. (For example, the SIPP estimate of aggregate s(x-ial security and railroad retirement income was about 9 percent higher than the CPS aggregate in 1984, so the hypothetical 1983 SIPP aggregate is taken to be 1.09 times the observed CPS aggregate for 1983). The results of this exercise are shown in table 1. The first column gives the independent estimate, the next two columns show the actual CPS and hypothetical SIPP aggregates, followed

by the shortfall associated with each. The last two columns express the survey aggregates for each survey as a percent of the corresponding independent estimate.

Overall we see that the independent estimate of public and private transfers is $336 billion, while the CPS estimate is $278 billion and the SIPP $306 billion. The shortfall for the CPS is $59 billion and in the SIPP $30 billion, for a reduction of 48 percent. Finally, the CPS aggregate amounts to about 83 percent of the independent estimate, while the overall SIPP aggregate accounts for 91 percent. Thus while the SIPP appears to have made significant gains in accounting for transfer income, there is still opportunity for additional progress.

In reviewing the more detailed information by source we see a range of outcomes. For social security and railroad retirement, a CPS shortfall of about $13 billion drops to just over $1 billion in the SIPP, for about a 90 percent reduction. For pensions, the gap falls from $23 billion to $11 billion, for a reduction of 50 percent. There is a drop of a little more than 50 percent in the gap for veterans' payments, and a 42 percent decline in the gap for public assistance. However, there is little improvement for unemployment compensation or workers' compensation and related sources (a 5 and 11 percent reduction, respectively, in the survey shortfalls). In terms of percentage of the independent estimate, pension income rises from 78 percent in the CPS to 89 percent in the SIPP, veterans' payments from 63 percent in the CPS to 82 percent in the SIPP, and public assistance rises from 83 percent in the CPS to 90 percent in the SIPP. Unemployment compensation hovers near 75 percent in both surveys, while workers' compensation and related income rises only slightly from 47 percent of the independent estimate in the CPS to 53 percent of the independent estimate for the SIPP.[1]

If we were to stop right here, the basic outlines of what is different about SIPP income data would be apparent, that is a significant increase in the reporting of public and private transfers, coupled with roughly comparable performance to the CPS in the measurement of earnings and property income, and a substantial decline in the impact of item nonresponse on the integrity of the income estimates. However, this level of generality necessarily obscures many details of considerable importance. The rest of this paper will be devoted to a closer look at the SIPP income estimates. Transfer income will be discussed first, followed by a section dealing with earnings. Property income estimates will be taken up last.

[1]While the SIPP estimates for workers compensation will not be discussed separately, an easily corrected anomaly in the SIPP measurement of workers' compensation recipiency should be noted. Both the SIPP and the CPS employ a recipiency measurement approach that focuses separately on income received on the basis of widowhood, work disability, and retirement. Workers' compensation is included in the widow(er) module in the CPS but not int he SIPP. Since about 15 percent of aggregate workers' compensation payments are made to survivors, principally widows, elimination of this oversight would most likely improve the workers' compensation estimate in the SIPP.

Text table II-1. Aggregate Income, by type, 1984 (In Billions)

Type of Income	SIPP	CPS	SIPP as % of CPS	Percent Imputed SIPP	Percent Imputed CPS
Total money income	$2,419.7	$2,417.4	100.1	11.4	n.a
Regular money income	2,414.6	2,417.4	99.9	11.4	20.1
Earnings	1,872.5	1,906.0	98.2	10.0	18.9
Public and private transfers	335.2	300.2	111.6	12.1	20.7
Property income	200.9	194.9	103.1	23.9	32.4
All other regular money income	6.0	16.3	37.0	15.4	22.3
Lump sum payments	5.1	n.a	n.a	5.6	n.a

n.a.- applicable

Ill. Transfer Income

The discussion of public and private transfers will be organized by type of income, and will vary in detail as warranted by the amount of information available and the issues requiring attention.

Social Security Income.

The social security program (more technically Old Age, Survivors and Disability Insurance (OASDI)) is the largest single source of public or private transfer income in the United States, accounting for approximately 45 percent of the total. While traditionally the best measured transfer in the CPS context, and probably in other household surveys as well, the incompleteness in social security estimates is nonetheless of some importance. In 1983, for example, the $13 billion of social security and railroad retirement income believed to be missed by the CPS was roughly equivalent to the entire amount expended through such programs as AFDC or veterans payments and fully 1.4 times larger than the entire expenditure for Supplemental Security Income (SSI). Furthermore, research conducted in -the mid-1970's indicated that for the most part, missed social security income in the CPS was generally traceable to the failure to report receipt rather than the less serious problem of under reporting income by identified recipients. Importantly, nearly half the missing benefits were received by children as opposed to adults (Vaughan 1979, pp. 56-70).

A good deal of attention was devoted to improving the measurement of social security in the SIPP, and as suggested by the earlier review of aggregate income statistics, this effort resulted in considerably improved estimates. The findings based on the review of income aggregates is confirmed by comparisons of SIPP data to independent estimates of the number of social security

recipients and aggregate benefits over the first six quarters of the 1984 panel. Average monthly estimates of recipients and aggregate benefits between the third quarter of 1983 and the fourth quarter of 1984 are presented in table 2. Over this period the average monthly number of recipients per calendar quarter ranged between 96 and 99 percent of the corresponding independent estimates. Over the course of calendar year 1984, the recipient count averaged 97.5 percent of the independent estimate while aggregate monthly benefits for calendar year 1984 actually exceeds the independent estimate by about 1 percent. (It is likely this arises from a bias in the independent estimate rather than over reporting of social security income in the survey. See Vaughan 1989). In sum it appears that the SIPP has substantially eliminated bias in estimates of social security recipiency and benefits. This represents a considerable accomplishment.

Means-tested cash transfers.

There are three major means-tested programs with Federal involvement that provide cash payments to individuals: Aid to Families with Dependent Children, Supplemental Security Income, and Veterans Administration pensions for indigent veterans and their survivors.

While the SIPP distinguishes between the means-tested pensions and compensation payments made to living veterans and their survivors, to my knowledge separate independent estimates for these two components of the program have not been developed. An evaluation of the distinction between compensation and pension components of veterans' payments was undertaken for the 1979 Research Panel (Vaughan, Lininger & Klein, 1984). The results were encouraging and recommendations were made to further improve the ability to distinguish between the two types of payments. These changes were introduced in the SIPP, but have not been evaluated. Consequently, in the present context, compensation and pension payments will be treated as a single entity.

Prior experience with measuring SSI and AFDC In household surveys. In the CPS, income from both AFDC and SSI appears to be significantly under reported. In 1983, for example, according to comparison with independent estimates the CPS identified only 76 percent of AFDC benefits and 85 percent of SSI benefits. Considerable effort was devoted to improving the measurement of both these income sources over the course of the SIPP development program. Based on research relying on matches between survey and administrative records, it was determined that in fact 90 percent or more of recipients and benefits were being reported in the survey interview (Vaughan, 1979, 1980; Klein & Vaughan, 1980; Goudreau, Oberheu & Vaughan, 1984; Logan, Kasprzyk, and Cavanaugh, 1988). The apparent shortfall in the survey estimates arose because the income in question was misreported as some other form of income (usually general assistance, other unspecified cash welfare, or child support in the case of AFDC, and social security in the case of SSI). Once uncovered, a good deal of attention was given to developing techniques to avoid such misreporting. While at the time it seemed that the approaches developed for SSI were largely successful, effective techniques were not found to deal with AFDC misreporting.

The survey estimates for SSI and AFDC. This short review of prior experience with measuring

SSI and AFDC sets the stage for the assessment of the current SIPP estimates. As noted earlier in the preliminary discussion of the SIPP and CPS aggregates for private transfers, the SIPP aggregates for public assistance exceeded those from the CPS. A more precise comparison is given in text table III-1.

The recipient and case comparisons (the data for AFDC roughly correspond to cases; they exclude child recipients and in the SIPP nominally include only one adult recipient per case) indicate SIPP estimates that are about 13 percent higher than the CPS for both programs in the 1983-84 period. Comparison of the aggregates also suggests SIPP gains, although perhaps not as large as those on the recipient side. For SSI, calendar 1984 comparisons are similar to those for 1983-84, while for AFDC, the relative gain registered by the SIPP for calendar year 1984 is nominally about two-thirds that for 1983-84[2]

We are fortunate to have independent estimates for the SSI and AFDC programs and so we can go beyond simple SIPP-CPS comparisons. Average monthly estimates of numbers of recipients (or again for AFDC, cases) and aggregate benefit income are given in table 2. The picture for the SSI program is basically quite positive. The average monthly estimate for recipients in calendar year 1984 amounts to 97 percent of the independent estimate while the survey estimate of average monthly aggregate benefits appears to be similarly complete (98 percent of the independent estimate). However, there does seem to be an upward trend in the relative completeness of the recipient and aggregate benefit estimates over the course of the six calendar quarters shown. Estimates for the last two calendar quarters of 1983 are nominally somewhat lower than for the second through fourth quarters of 1984. A rather thorough review of the completeness of SIPP social security estimates for the last trimester of 1983 did uncover evidence of the misreporting of SSI benefits as social security income (Vaughan, 1989). Estimates of the level of misreporting, though not highly reliable, are generally consistent with the extent of the shortfall in the SSI estimates seen here for late 1983 and early 1984. It is certainly possible that over the course of a few interactions between interviewer and respondent, problems of misreporting might be straightened out. While there is some anecdotal evidence to suggest that this may have taken place in at least some instances (Coder, Burkhead, Feldman-Harldns & McNeil, 1987, Appendix A, p. 22), no systematic assessment of this possibility has been undertaken. In sum, while some questions about the nature of SIPP SSI estimates remain to be answered, particularly regarding benefits received by children under age 18,[3] it is likely that misreporting has been substantially reduced, and that in turn, this has led to notably more complete estimates.

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[2]The 1983-84 data for the SIPP are based on the Bureau's longitudinal research file; for the CPS a weighted average of 1983 and 1984 estimates is employed. For 1984, the SIPP estimates are based on summing cross-sectional estimates for the four calendar quarters; the CPS data are based directly on the March 1985 CPS (income year 1984).

[3]Approximately 200,000 children under age 18 receive SSI benefits. However, the SIPP does not explicitly include such individuals in its income universe (neither does the CPS for the most part). There is some evidence that at least a portion of these child benefits appear in the survey records of nonrecipient parents.

We saw above that the SIPP estimates for AFDC appeared to be more complete than those of the CPS. Comparison of the SIPP estimates to independent estimates Will indicate just how close to complete the SIPP estimates actually are. These comparisons are made in table 2 and are somewhat disappoint though not unexpected. For calendar year 1984, the SIPP estimates of the average monthly number of cases and aggregate benefits constituted only 83 percent of the corresponding independent estimates. Over the course of the six calendar quarters observed in 1983 and 1984 the SIPP estimates of number of cases ranged from a low of 78 percent to a high of 86 percent of the independent estimates; the range was similar for aggregate benefits. However, there was no upward trend as observed for SSI.

While these estimates are at least nominally more complete than those obtained in the 1979 ISDP Research Panel, where the case count averaged about 75 percent and aggregate benefits only 64 percent of their respective independent estimates (Vaughan, Whiteman & Lininger, 1984, p. 118), they remain substantially biased. As mentioned, however, these results were not unexpected because AFDC estimates are known to be affected by misreporting and no procedures known to reduce AFDC misreporting were available for use in the SIPP. Is it possible that these relatively low AFDC estimates reflect misreporting rather than outright nonreporting? While misreporting is clearly undesirable, it is also preferable to nonreporting because it may be possible to identify and reclassify misreporters; for nonreporters, this opinon clearly does not exist.

The first indication of the existence of misreporting of AFDC comes from an examination of estimates for general assistance, a means-tested program run totally under State and local government control. As noted earlier, record check studies have shown that general assistance is the most likely source under which AFDC will be misreported. While independent estimates of recipients and aggregate benefits are not available on a monthly basis for general assistance, an independent estimate of aggregate benefits is available for calendar year 1984. As shown in table 2, the survey aggregate, at 96 percent of the independent estimate, appears to be considerably more complete than the survey estimate for AFDC benefit income. Of course this might actually be the case, but it is also consistent with the misreporting of AFDC as general assistance.

This finding suggested that further investigation of the possibility of AFDC misreporting was warranted. Given previous research results, and the fact that States and localities have little or no incentive to maintain people on general assistance if they qualify for the AFDC program, persons reported as receiving general assistance who meet the eligibility requirements for AFDC are likely to be persons whose AFDC payment was misreported as general assistance. Given the extensive set of information available in the SIPP for simulating program eligibility, this possibility could be evaluated in a fairly rigorous manner. Unfortunately, since AFDC eligibility requirements are quite complicated and vary by State, making detailed eligibility determinations for a large number of putative general assistance recipients was not possible.

However, one key aspect of eligibility for AFDC benefits is readily observable, namely being a single parent of minor children. nus single parenthood may be used as a rough proxy for AFDC eligibility. Of course there are undoubtedly some single parents who actually receive general

assistance because they do not qualify for AFDC based on some other aspect of the eligibility test. On the other hand more than 20 states provide AFDC benefits for two-parent families under the unemployed parent segment of the program and in other instances AFDC benefits are provided to couples with children when one of the parents is incapacitated. Consequently, the indicator is potentially biased in the other direction as well.

Still, since the present purpose is to test for the possibility of AFDC misreporting as opposed to definitively establishing that it occurred or actually editing reported recipiency, the single parent proxy for AFDC eligibility represents an acceptable alternative to a detailed eligibility test.[4] The results are given in table 3. SIPP estimates for AFDC cases and aggregate benefits given in table 2 are presented along with the number of persons meeting the single parent test. Specifically, the test selected all married-spouse absent, separated, divorced, widowed, and never-married parents living with their own children under age 18, and reporting either general assistance or some form of unspecified cash welfare. The results are quite provocative and consistent with the presence of a significant level of AFDC misreporting. Over the six quarters considered, approximately 300-400 thousand single parents reported receiving general assistance or some other unspecified form of cash welfare benefits. These single parents accounted for between 9 and 11 percent of the independent estimate of the average monthly number of AFDC cases over this period. When added to the observed cases of AFDC, the average monthly estimate for 1984 based on the survey reaches 94 percent of the independent estimate. Roughly similar results are obtained for aggregate benefits. By calendar quarter, aggregate benefits received by this group amounted to 7-9 percent of the independent estimate for AFDC. When added to the observed AFDC aggregate for 1984, the survey estimate of average monthly benefits reaches 91 percent of the independent estimate.

This result must be seen as encouraging and entirely consistent with the earlier research findings. Obviously more work must be done before AFDC misreporting can be established with certainty. Hopefully, this evidence will encourage such an undertaking.

Veterans' compensation and pensions. The last source of cash income dealt with in this section is Veterans' compensation and pensions. The earlier comparison of CPS and SIPP aggregates suggested that although the SIPP was identifying fully 30 percent more aggregate income from veterans payments, even at those levels, the SIPP aggregate would only amount to about 82 percent of the independent estimate.

A somewhat different perspective on the nature of the Veterans' compensation and pension data is given by the comparison of recipient and aggregate estimates from the survey to independent

[4]Microsimulation modelers will undoubtedly turn their attention to AFDC modeling in the SIPP context. They could make a substantial methodological contribution by pursuing the possibility of AFDC misreporting more rigorously than is possible here. The research of Ruggles and Coder (1988) is an excellent example of this sort of contribution. Record check studies under way at the Bureau of the Census may also make more direct evidence available on this point.

estimates in table 2.[5] Here we see that recipient estimates are considerably more complete than the estimates of the aggregate benefits. Over the course of the six quarters reviewed, the survey estimates of the number of monthly beneficiaries fluctuated in a narrow range between 89 and 93 percent of the independent estimates. For 1984 as a whole, the survey estimates averaged 91 percent of the independent estimate of the number of monthly recipients. This contrasts rather sharply with the estimates of aggregate monthly benefits which ranged between 75 and 80 percent of independent estimates, and averaged only 77 percent for calendar year 1984. In short, the SIPP seems to be doing a fairly good job of identifying recipients of compensation and pensions, but rather less well as far as aggregate benefits are concerned.

This pattern closely resembles the ISDP experience where the number of recipients reached ..,92 percent of the independent estimate while aggregate benefits amounted to only 82 percent. Consequently, there is reason to believe that what we are observing here is a fairly well-defined phenomenon. Indeed, this difference may provide an important clue to the underlying error structure affecting the survey estimates. Available research on reporting of transfer income amounts indicates that most often those who report income tend to do so with relatively little bias. In the past, a pattern of relatively more complete recipient estimates has been associated with the tendency of SSI recipients with the largest payments (those who were not also receiving a social security payment) to misreport their benefits as social security (Vaughan, 1979, 1980). In the context of veterans' payments the analogue for misreporting is military retirement, although our subsequent review of military retirement estimates will not lend support to this hypothesis.[6] It is also possible that some relatively separate payment stream, such as special amounts for rehabilitation needs, are properly included in the independent estimate but are not explicitly asked about in the survey. The identification of benefits in families in which only minor children are receiving payments should also be evaluated.

Means-tested noncash transfers

Food Stamps. Food Stamps and Medicaid are two of the country's largest means-tested noncash programs. Particularly in the case of Food Stamps substantial differences exist between the SIPP and CPS estimates. As seen in text table In-2, SIPP estimates of the number of food stamp units, the number of persons ever receiving food stamps during a year as well as aggregate benefits are all notably above those from the CPS. In percentage terms the differences are greatest for units, followed by recipients, with the SIPP advantage with respect to aggregate benefits, while still quite large (19 percent), apparently lower than for units or persons. The reasons for these variations across the different dimensions of Food Stamp participation deserve comment, but that

[5]The initial comparisons presented in table 1 included veterans' educational benefits as required to make comparisons between the SIPP and the CPS. The data in table 2 are restricted to compensation and pension payments only.

[6]A survey of March CPS interviewers conducted in the mid-1970's indicated that at least interviewers believed that respondents tended to confuse veterans' payments with military retirement. The current SIPP data set contains a number of pieces of information which would permit this possibility to be put to the test.

will be taken up a little further on in the discussion.

Because the CPS collects information on the number of months Food Stamps were received in the prior year, the distribution of recipients by the number of months of receipt may be compared to similar estimates from the SIPP. As shown in table 4, this comparison turns out to be quite insightful. Since the Food Stamp program is characterized by a high level of transitory participation, we would expect that the SIPP would do relatively better than the CPS in identifying participants with less than annual spells of receipt. While this should be true for a number of programs, information on the number of months of receipt for other types of transfers is not collected in the CPS, and so this issue cannot be addressed directly.

The data are clearly consistent with the hypothesized difference between the two surveys. 'ne CPS estimate of persons ever receiving Food Stamps in the prior year comes to 79 percent of the SIPP estimate. However, for 12-month recipients, the CPS reaches fully 95 percent of the SIPP estimate. This stands in stark contrast with the estimate of recipients with 1- 11 months of benefit receipt. For this group, the CPS count amounts to only 63 percent of the estimate from the SIPP.

This finding also demonstrates why in percentage terms the SEPP gains over the CPS for units and recipients are relatively larger than for aggregate benefits. Other things being equal, the more months benefits are received, the larger the annual benefit; the fewer the months, the smaller the annual benefit. Since part-year participants, that is those with smaller annual benefim are those added to the SIPP estimate, appropriately they contribute relatively more to the unit and recipient estimates than to the estimate of aggregate benefits.

A final aspect of this review of SEPP Food Stamp data focuses on comparisons with independent estimates. While independent estimates have been developed for calendar year periods (U.S. Bureau of the Census 1985a, 1985f), the nature of the unit and recipient portions of these estimates must be somewhat suspect because they are not based directly on administrative data.[7] On the other hand, administrative data on the monthly number of food stamp units, recipients and aggregate benefits are available and are given in table 5 along with the corresponding survey estimates for late 1983 and throughout 1984. The data indicate that over the course of 1984 the SIPP average monthly estimates of persons receiving Food Stamps fluctuated between 90 and 92 percent of the independent estimate. Comparison to the parallel series of independent estimates on numbers of food stamp units indicates a very similar level of completeness for units (89-90 percent over the five consecutive quarters). For aggregate monthly benefits (technically coupon value), the survey estimates were somewhat less complete than for persons, varying between 84 and 87 percent of the independent estimates over the four calendar quarters of 1984. For the

[7]Comparison of the results presented in table 5 with those that are implied by comparing the SIPP ever received estimates for units and persons to the Bureau's annual independent estimates for 1983 and 1984 suggests that those annual independent estimates are about 10 percent too low. Indeed, the 1983-84 CPS estimates for food stamp households and recipients would reach only about 65 and 75 percent of corrected independent estimates instead of 73 and 79 percent as based on the published data (BOC, 1985a, 1985f).

entire year, the SIPP estimates averaged 91 percent of recipients and 85 percent of aggregate benefits.

In light of the fact that the survey estimates of the number of recipients seem to be somewhat more complete than estimates of aggregate benefits, it is significant that there appears to be no differential bias in person and unit estimates. Importantly, this finding implies that there is no systematic bias in the survey estimates by size of unit, [8] which is an important covariate of the size of benefit. If, for example, persons' estimates were clearly less complete than unit estimates, we might expect relatively less complete estimates for benefit aggregates as well. Because this appears not to be the case, the explanation for the larger bias in the benefit aggregates must be attributable to some other factor.[9]

Medicaid coverage. Medicaid is a particularly challenging program for which to evaluate the completeness of survey estimates because fully credible independent estimates of coverage (as opposed to utilization of Medicaid reimbursed services) are not available. However, CPS estimates are generally felt to be incomplete, and at times in the past this has been evident even when the CPS coverage data are compared to independent estimates which are known to be incomplete (BOC, 1982, p. 187).[10] Probably the best independent source of information on Medicaid coverage for the noninstitutionaaed population is provided by the National Medical Care Surveys of the National Center for Health Statistics. Data from the 1977 survey were used to evaluate the relative completeness of the ISDP and CPS estimates for 1979 (Vaughan, Whiteman & Lininger, 1984, pp. 120-123). At that time, Medicaid coverage rates estimated from the ISDP panel appeared to be unbiased relative to those based on the National Medical Care Expenditure Survey (NMCES). The CPS coverage rates were 15 percent lower.

A comparison of SIPP and CPS Medicaid estimates for the 1983-84 period is given in table 6. Data for the number of covered individuals, as well as rates of coverage, are provided by age. Ile CPS coverage rates for both minors and adults reach only about 90 percent of those given by the SIPP. However, the difference is not quite as great as for the 1979 ISDP/CPS comparisons.

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[8]If estimates of persons were relatively less complete than unit estimates, it would imply that large units were differentially undereidentified. The converse would be true if estimates of persons were relatively more complete than estimates of units.

[9]It may be worth nothing that Carlson and Dalrymple (1986) find relatively fewer households simultaneously receiving food stamps and AFDC than indicated by administrative records. If, an overage, AFDC units were to receive higher benefits than non-AFDC units, the bias in the representation of AFDC-linked units could result in benefit aggregates that were relatively less complete than estimates of the number of food stamp units.

[10]More recently, the CPS is doing better with regard to this class of independent estimates. In 1983 and 1984, for example, the CPS estimates exceeded the suspect independent estimates by 5.2 and 3.2 percent respectively (BOC, 1985a, p. 124; BOC, 1985f, p. 112). If the bias in these independent estimates has remained the same over the years this would indicate some improvement in the completeness of CPS estimates, since in 1979, the CPS estimate fell 13 percent below the independent estimate (BOC, 1982, p. 187).

There are at least two likely sources of continued bias in the SIPP Medicaid estimate. Coverage rates for SSI child beneficiaries under age 18 (about 200,000 in 1983-84) are probably lower than they should be since their SSI recipiency is not being established and so, at a minimum, the consistency edit that assigns Medicaid coverage to SSI recipients is not being called into play. Similarly, the edit is not employed when AFDC benefits are misreported as general assistance or some other form of cash welfare. However, it is highly unlikely that elimination of these shortcomings would increase the coverage rate by more than 0.5 percentage points.

Unemployment Compensation

Unemployment compensation is very incompletely measured in the CPS. As we saw in the introductory discussion, the 1983 CPS aggregate amounted to only three-quarters of the independent estimate. Given the large amount of turnover among recipients over the course of a year, the impact of the SIPP design on estimates of part-year recipients ought to be similar to that seen for Food Stamps (table 4), and as a result, the overall SIPP estimates ought to be considerably more complete. nis expectation is all the stronger, since record check studies carried out in conjunction with the SIPP development program indicated that 87 percent of actual Unemployment Compensation recipients were properly identified in the initial contact interview (Nelson as reported in Logan, Kasprzyk & Cavanaugh 1988, p.51).

However, comparison of the CPS and SIPP aggregates for 1983-84, as well as calendar year 1984, gives no indication of a significant overall improvement in the completeness of the SIPP estimates (text table III-3). The SIPP aggregate is actually somewhat less than the CPS for 1983-84 (possibly due to the wide swings in actual aggregates as the effects of the recession waned in 1984) and only slightly above the CPS aggregate for calendar year 1984 when the comparison is less subject to the effects of the necessarily ad hoc procedure for combining CPS estimates for 1983 and 1984. In any case, as noted in the discussion of hypothetical SIPP aggregates for 1983, the SIPP estimates appear to be no more complete than those of the CPS.

Comparison of SIPP and CPS recipient estimates is difficult using available tabulated data because of problems of aggregation. Each survey establishes receipt of three forms of income falling under the general category of unemployment compensation and related sources, that is, government unemployment insurance benefits, private sector supplemental benefits and strike pay. Unfortunately, while CPS estimates of recipients represent the unduplicated intersection of these three separate sources, available SIPP estimates based on the 12-month longitudinal file are disaggregated at the single source level. Consequently, the estimate for the intersection of the three can only be determined from tabulation of the microdata. Since this was not possible, a range for the possible unduplicated estimate must be used (the lower bound assumes complete overlap among the three sources and is equivalent to the simple estimate of the number of persons receiving government unemployment insurance benefits; the upper bound assumes no overlap among the sources). Comparison with the unduplicated CPS recipient count indicates that the unduplicated SIPP estimate may be as little as 3 percent higher than the CPS estimate or as much as 13 percent higher. In neither case is the difference very impressive.

In large measure, these evaluations at the annual level are essentially confirmed by comparison of SIPP data to independent estimates at the monthly level (table 2). Taken directly from the Bureau's SIPP P-70 Series publications, the information shows that the SIPP estimates for monthly recipients and aggregate benefits fell substantially short over the course of calendar year 1984 amounting to only 85 percent of recipients and 87 percent of benefits.

However, the data present a curious pattern. There appears to be a good deal of fluctuation in the completeness of the survey estimates over the fun six calendar quarters (the four in 1984 and the last two of 1983). For the last two quarters of 1983 and the last quarter of 1984, the survey estimates appear to be complete or nearly so. During the first three quarters of 1984, however, they vary between about 80 and 85 percent of the independent estimates. Overall the summed monthly estimates from the survey for aggregate benefits seem relatively more complete than suggested by comparisons for an annual time period where it appears (as noted earlier) that the SIPP aggregate accounts for only about 75 percent of the independent estimate.

Prior to the appearance of the estimates for the fourth quarter 1984 and the realization that the monthly and annual independent estimates yielded a contrasting sense of the completeness of the survey data, it seemed that the pattern of initially complete estimates followed by a falloff in estimates based on subsequent interviews paralleled the experience of the 1979 Research Panel (Vaughan, Whiteman & Lininger, 1984). Over the first four months of 1979, there appeared to be a steady decline in the completeness of the pilot survey estimates of recipients and aggregates. From a high of 90-95 percent of independent estimates in January, the survey estimates fell to a low of 65 percent in April (see the third row from the bottom in table 7). Given that the estimates for January were produced wholly from the first interview while those for April were based solely on the second interview, it seemed plausible that the rather steep decline in the completeness of the estimates might have arisen from some aspect of the recipiency update procedure for the first update interview. [11]

Since the intermediate months, February and March, were represented in the reference periods of both interviews, it was possible to develop rather conclusive evidence that there had been a failure in the second interview measurement of unemployment compensation (see the last two rows of table 7). With respect to recipients, for example, February and March estimates derived solely from the first interview exceeded 90 percent of the independent estimates. Second interview estimates for these months amounted to only a little more than 70 percent of the number of recipients believed to belong to the survey universe. This pattern was duplicated for aggregate benefits.[12]

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[11]This suppostion was reinforced by review of the implementation of the income update procedure in the initial annual pilot panel conducted in 1978. It was determined that receipt of unemployment compensation in the initial interview was not noted in the second wave income update roster for 19 percent of first interview recipients (Schneider 1979).

[12]Given the abrupt termination of the Development Program, these findings were not pursued.

The relevance of these findings for the 1984 panel experience seemed clear at first. However, the resurgence of the fourth quarter 1984 estimates was puzzling. The whole picture was complicated further by Coder's (1987) discovery that the monthly independent estimates did not account for all public sector unemployment benefits. Specifically, activity under the Federal/State Extended Benefits (EB) program and the Federal Supplemental Compensation (FSC) program was not covered by the P-70 series independent estimates.

As it turns out, activity under the EB program was not very substantial in relative terms (amounting to about 2 percent of regular benefits in the last half of 1983 and less than .5 percent in 1984). However, activity under the FSC program was substantial, amounting to about 25 percent of regular benefits in the last half of 1983 and 15 percent in 1984.[13]

Given the importance of the unemployment insurance program and these anomalies surrounding its measurement, some clarification of the contradictory dimensions of the problem would be helpful. The final section of the discussion of the unemployment compensation estimates will consider three possibilities:

- Is it possible that failure to identify FSC is related to the apparent fluctuations in the completeness of the survey estimates?

- Is there any evidence of a failure in the update procedure similar to that which apparently occurred in the 1979 Research Panel? If so, what might have caused it?

- Is there some aspect of the questionnaire treatment of unemployment compensation receipt per se, apart from the identification of FSC benefits, which may have contributed to a failure to enumerate receipt?

As we shall see, these issues are not easily separated.

Estimates of aggregate FSC (and EB) benefits are available by calendar quarter, and so may be easily added to information on activity under the regular State/Federal program to arrive at estimates of total aggregate benefits by quarter. However, data on recipients is restricted to first payments. While it might be possible to use this information in conjunction with data on recipients in the regular State program to develop a reasonable set of independent estimates for total recipients, that task lies beyond the scope of this paper. So comparisons will be restricted to average monthly estimates of aggregate benefits by calendar quarter.

This comparison is given for the third quarter 1983 (Q3:1983) through the fourth quarter 1985 (Q4:1985) in table 8. The independent estimates including supplemental and extended benefits,

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[13]My thanks to Ralph Smith, of the Congressional Budget Office for sharing his summarization of activity under these various supplemental programs. The underlying data were supplied by the U.S. Deparatment of Labor, Employment and Training Administration, Unemployment Insurance Service, Division of Acturial Services.

expressed at an average monthly rate, appear on the top line. Immediately below is the percent of the total attributable to EB and FSC activity. From a high of 26 percent in Q3:1983 it declines monotonically until virtually disappearing by Q3:1985. Throughout 1984 it ranged between 12 and 15 percent per quarter. To what extent is this variation related to apparent variations in the completeness of the survey aggregates? This question is answered by rows three and four of the table which give the survey estimates for aggregate benefits and the percentage that they represent of the independent. estimates.

As expected, the level of the survey aggregates as a percentage of the corrected independent estimate is lower. However, the basic pattern of the relationship between the survey and independent estimates remains the same: relatively complete estimates in the last two quarters of 1983, a falloff in completeness in the first through third quarters of 1984, followed by a rebound in the fourth quarter. Note also that in the extended part of the series not shown earlier, the fourth quarter rebound extends into the first quarter of 1985. Then the estimates fall back to approximately the same relative levels seen in the first three quarters of 1984.

Clearly, the flow of FSC and EB benefits cannot lie at the root of gross patterns of fluctuation in the completeness of the survey benefits. If this were to be the case, there should be a steady increase in completeness of the estimates over the quarters reviewed as the importance of FSC and EB benefits waned. Estimates for quarters three and four in 1985 would be expected to be the most complete with the corresponding quarters in 1983 the least complete. The observed pattern is nearly the direct opposite, with the additional anomalous jump in the estimates in Q4:1984 and Ql:1985.[14] On the basis of this pattern, it would be difficult to conclude that problems in the measurement of EB and FSC benefits lie at the root of the problem with the unemployment compensation estimates.

What about the possibility of a substantial falloff in the completeness of the estimates in association with the initial update interview as occurred in the 1979 Research Panel? Ignoring the rebound of the Q4:1984/Ql:1985 estimates, this hypothesis is superficially attractive. After all, the estimates are initially more complete, and then seem to fall off dramatically in Ql:1984 to about 70 percent of the independent estimate for three quarters in a row.

This possibility is assessed by means of information given in table 9. Survey estimates of the monthly number of recipients are given for all the calendar months from October 1983 through December 1984. They are presented in two basic ways-combined wave and single wave. As in the 1979 Research Panel estimates for a given calendar month are generally based on data obtained from two adjacent interviews. Thus, combined wave estimates are the usual type of

[14]It may be possible to discern a subtle, yet still important, effect of the FSC activity. For comparisons with only regular benefits included in the independent estimates, Q3-Q4: 1983 and Q4: 1984 were similarly complete; after including EB and FSC activity in the independent estimates, Q3-Q4: 1983 estimates appear to be somewhat less complete than those for Q4: 1984. This is the sort of pattern which might arise if FSC and EB benefits, when present, were less well identified than regular benefits.

estimates obtained in the survey. Single wave estimates may be constructed by weighting based on the proportion of the total sample available for a given month that is attributable to the single wave in question. For example, if the second interview accounted for half the observations in a given month, dividing its share of the estimate by .5 would give the single wave estimate for that month. In the absence of nonsampling error, such single wave estimates for a given calendar month from adjacent interviews should yield nominally equivalent estimates of level. Observation of substantial and systematic differences between single wave estimates, such as seen in the 1979 Research Panel, suggests some sort of error generating mechanism associated with the update procedure.

With the exception of the fifth interview, single wave estimates from succeeding interviews are systematically lower than single wave estimates based on prior interviews. However, the differences are not nearly so substantial as observed in the 1979 Research Panel. Perhaps a little curiously, the first sizable difference arises for the second update interview (wave 3). It is repeated again in wave 4, affecting basically the Q2:1984 estimates. The wave 3 - wave 4 difference extends into Q3:1984, but since five-sixths of the Q3:1984 estimate is based on the wave 4 sample, it has little overall impact on Q3:1984 estimates. The difference in estimates of level between adjacent pairs of interviews is not especially large (on average, wave 2 calendar month estimates for Q3:1983 are 96 percent of wave 1 estimates, wave 3 calendar month estimates are 88 percent of wave 2 estimates for Q 1: 1984, and wave 4 estimates are 88 percent of wave 3 estimates for Q2:1984). However, the effect is cumulative and, as such, of considerable practical importance. Indeed, Q3:1984 estimates are about 26 percent lower relative to the Q3:1983 estimates based on the first interview (that is (1-((.96) (.877) (.882)) =.26)) than they would have been in the absence of this effect.

Review of the information developed by Burkhead (Coder, Burkhead, Feldman-Harkins and McNeil 1987, Appendix J) on month-to-month recipiency transitions provides direct evidence of a sharp decline in reported receipt of unemployment compensation associated with the transition between the second and third interview. During the first interview reference period, the monthly number of new recipients averaged 90 percent of the number leaving the rolls. For the seam between interview periods 1 and 2 (between reference months 4 and 5), the new recipients amounted to 89 percent of those leaving the rolls, indicating no precipitous falloff in recipiency associated with the transition between the first two interviews. For the months covered by the second interview, the number of new recipients averaged 109 percent of those leaving the rolls, but for the two months on either side of the seam between the second and third interviews (reference months 8 and 9), the number of new recipients amounted to only 62 percent of the number of recipients leaving the rolls. For months within the third interview reference period, the identification of new recipients rebounded to 86 percent of the number leaving the rolls. Burkhead's data do not extend beyond the end of the third interview reference period, but from table 9 we see that the transition from the fourth to the fifth. interview was associated with a net increase of 24 percent in the recipient estimates (see the lower left hand panel of the table).

Clearly, something went awry between the second and third interviews and was subsequently

reversed in the fifth. Whether the substantial falloff in recipiency estimates associated with the transition between the second and third interviews was a mechanical failure, such as occurred with the posting of recipiency information in the 1978 pilot panel; a loss of receipt information during the data processing phase of the file preparation; or some interaction between recall effects and variation in the actual number of recipients, is uncertain. Just as curious is the rebound of the estimates in interview 5 and, based on the pattern shown in table 8, their renewed decline later in calendar year 1985. Since information should exist on internal Bureau files to establish whether either of the two mechanical factors affected the integrity of the estimates, some priority should be given to looking further into these matters.

The questionnaire itself was also reviewed for possible problems with skip patterns and/or wording. No obviously critical shortcomings were uncovered. Most particularly, review of the recipiency sections for waves 3 and 5 uncovered no changes that could account for either the anomalies revealed by the Burkhead data or the increases associated with the wave 5 interview. However, two issues of some concern were identified.

First, the lead item in the recipiency sequence focuses solely on State unemployment compensation benefits. If the respondent answers no, the item on Supplemental Unemployment Benefits (SUB) is not asked. (This item is actually intended only to identify private supplemental benefits such as those disbursed by joint employer-union funds in the auto industry.) Thus the sequence would nominally preclude the reporting of FSC and EB. While review of the behavior of the estimates does suggest that a substantial share of FSC and EB benefits was identified despite this shortcoming (perhaps by identifying it as State payment even though it was not), it would still be prudent to modify the skip sequence and always ask about other government unemployment payments. The current item referring to SUB benefits could be retained but might be expanded to explicitly mention strike benefits also.

Second, a review of the effect of skip sequences employed in the update interviews might also prove to be helpful. Fortunately, differences between the initial and update interview questionnaires provide a pseudosplit panel test appropriate for this purpose. In the first interview all sample adults are asked about unemployment recipiency while in the update interviews two groups are skipped around the unemployment receipt items: (a) all persons who affirm that they were never absent from their job without pay for any full weeks during the reference period, and (b) persons without a job during the entire reference period who spent no time looking for work, or on layoff and who said they did not want a job.

On the surface of things, this seems reasonable enough, especially since all persons who received unemployment compensation in the prior period are nominally asked about continued receipt at a later point in the interview. However, one relatively small group of individuals receiving unemployment compensation benefits will definitely be missed by this approach-persons who receive payments because they are forced to work reduced hours because of slack work. In addition, the screener item may rely excessively on the respondent's avoidance of telescoping errors and on a tidy relationship between unemployment compensation receipt and labor force

activity which may not always obtain in the real world.

Fortunately, since all persons in the wave 1 interview were asked about unemployment receipt, and the two suspect groups can be identified in wave 1 as well, their wave 1 unemployment recipiency profile can be established. If a significant number of these individuals reported receipt in wave 1, their exclusion from the recipiency sequence in the update waves probably contributes to biases in the unemployment compensation estimates.

Employee pensions [15]

Overview. According to generally accepted independent estimates, employee pensions have accounted for about 30 percent of all public and private money income transfers in recent years. Although there is no accepted independent estimate for the number of individuals receiving pension income, the SIPP indicates that the number of pension payments was at the rate of more than 15 million per month in the last quarter of 1984 (BOC 1986a, table D-4; note that individuals may receive payments from more than one pension). However, from the perspective of conventional independent estimates, it would appear that a survey such as the CPS may fail to identify as much as 20 to 25 percent of pension income received by the survey population in a given year. Furthermore, the missing pension income appears to account for nearly 40 percent of missed income in the group of public and private transfers for which independent estimates are available (see table 1.)

SIPP-CPS comparisons. SIPP and CPS estimates of the number of pension recipients and aggregate pension income are compared in table 10. Recipient estimates are presented on a 12-month basis for the 1983-84 period. Aggregate pension income is given for the analogous time period and for calendar year 1984 as well. The SIPP estimates are universally above the CPS estimates. This is particularly so for Federal civilian and State and local government employee pensions where the recipient counts from the SIPP exceed those from the CPS by 23-24 percent. The SIPP estimate for U.S. military retirement recipients is only 1 percent above the CPS estimate, but this reflects the fact that the CPS estimate was relatively unbiased to begin with. Comparison of SIPP and CPS estimates of aggregate public pension income presents no surprises, largely following a pattern set by the recipient estimates. Differences in favor of the SIPP are relatively large for Federal civilian and State and local government pensions and quite modest for U.S. military retirement. The relative size of the aggregates is generally comparable for the 1983-M and calendar year 1984 periods.

The SIPP estimates for private pensions are also higher than the corresponding CPS estimates. However, problems of aggregation introduce some uncertainty into the comparisons, particularly

[15]The term employee pensions is used to refer to retirement, disability, or survivors benefits paid to a disabled or retired person or to his survivors by a former employer or by a union, either directly or through an insurance company on a periodic basis. Military retirement pay received by former members of the Armed Forces of the United States is also included.

with regard to recipients. Both the SIPP and the CPS collect information on three separate sources of income that are conventionally treated as constituting the private pension universe (private pensions, annuities, and retirement and survivors' pensions not classified elsewhere). In the current CPS context [16] these distinctions are lost at the data processing stage. In both published tabulations and the microdata file, only the union of the three separate sources is identifiable.

The SIPP side of the equation presents no technical impediments to constructing a comparable recipient estimate (i.e., the union of the three separate sources). However, the required estimates have not been prepared, and the data processing resources needed to construct them were not available to the author. Thus the SIPP estimate for private pension recipients given in table 10 is necessarily quite conservative, representing only private pensions per se. Excluded from the recipient count are those individuals who did not report private pensions, but did report annuities or retirement and survivors pensions which could not be classified (for the 12-month period covered by the longitudinal research file, there are 1.1 million of the former). Given that very little overlap between private pensions and annuities was observed in the 1979 Research Panel, it is quite possible that the combined SIPP estimate of the number of recipients of either source would approach 9.6 million, 23 percent above the CPS estimate. [17] If this level is confirmed, the SIPP gains for private pensions would be approximately similar to those seen for Federal civilian and State and local government pensions.

These problems of aggregation do not affect the comparison of income aggregates nearly to the same degree, since unlike recipient estimates, no distortions arise from simple addition of the components.[18] The comparisons indicate that the SIPP aggregate was about 12 percent higher than the CPS aggregate for 1983-84 and about 15 percent higher for calendar year 1984.

Comparisons with Independent estimates. This review of SIPP-CPS differences has shown consistently larger SIPP estimates for both recipients and aggregate pension income. To what extent do these differences contribute to a significant reduction in the extent of under reporting that exists in the CPS? This question may be answered, in part, by reference to independent estimates. Public employee pensions will be discussed first because relatively high quality

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[16]Beginning with income year 1988, the full detail in which CPS income data is collected will be accessible on the public use data files. This development will facilitate much more precise comparisons between the two surveys.

[17]The situation with regard to unclassified retirement and survivors' pensions is a good deal less clear. Although the 12-month recipients estimate for this source is substantial, in the 1979 Research file, this group added little to the net private pension estimate. Furthermore, to data available estimates from the SIPP do not distinguish these two sources from unclassified payments based on disability (again the microdata would support such a distinction). In any case, the 12-month recipient estimate for the three sources combined was 1.4 million for 1983-84.

[18]One source of noncomparability does remain, however, since unclassified payments based on disability should be excluded from the SIPP aggregation.

independent estimates may be constructed for public pensions. Then the findings for private pensions will be presented and contrasted with those for public pensions. The discussion will close with an overall assessment of the completeness of pension reporting.

Public pensions. The information concerning the three major types of public pensions (Federal civilian, U.S. military, and State and local) is given in table 11. Recipient estimates are presented for two time periods: late 1983 and late 1984. Statistics for aggregate income pertain to calendar year 1984 only. The information used to develop the independent estimates stems largely from operating statistics produced by the separate pension systems. Administrative data is sufficiently well-defined to permit construction of independent estimates that are conceptually appropriate for the survey measures. As a result, a good deal of confidence may be placed in the validity of the independent estimates as an indicator of the completeness of the survey estimates.

The comparisons present an encouraging picture. For public pensions as a whole, the SIPP estimates appear to be essentially unbiased with respect to both recipients and aggregate income. Furthermore, this lack of bias is clearly not attributable to offsetting biases among the subcomponents of the general public pension category. The survey estimates for each of the subcategories of public pensions appear to be similarly unbiased. It is interesting, however, that the survey estimates for military retirement nominally exceed the corresponding independent estimates to a slight degree. While the differences are not by any means large (3-4 percent), the pattern would be consistent with a finding that veterans' payments had been misreported as military retirement. Since this is a known problem with survey estimates of military retirement (Vaughan, Whiteman & Lininger 1984, pp. 113-114), a procedure for determining whether or not such misreporting affects the SIPP estimates is discussed later in this section.

Private pensions. Unfortunately, there are a number of questions about the appropriateness of the data underlying independent estimates for private pensions. To begin with, the data do not support development of independent estimates of the number of recipient individuals. Independent estimates have been developed for aggregate private pension income in the CPS context. As for other sources, they are based on data from the National Income Accounts (NIA). Possible alternatives to the NIA-based estimates include the Social Security Administration's (SSA's) recently released series for the years 1972-1985 (Glanz 1987) and data published by the Internal Revenue Service (IRS) as part of its Statistics of Income (SOI) program (IRS 1985, 1986). These three series are all interrelated and include components thought to be excluded from the survey estimates. In addition, the IRS information is limited to a subset of the survey population, i.e., the universe of Federal income tax filers. Furthermore, the NIA estimates and those produced by SSA rely on overlapping sources of information and employ a number of assumptions and extrapolations in order to overcome limitations inherent in the data used to construct the estimates. Thus despite the evident care taken in construction of the NIA and SSA series, they may not be accorded the same degree of confidence as the information underlying the independent estimates for public pensions.

Certainly, it is possible that the limitations of the NIA and SSA series would not affect the validity

of independent estimates of aggregate private pension income received by the survey population. However the two series are not consistent (the SSA series exceeds the NIA estimates by 14-23 percent over the period 1978-1984 (Glanz 1987, table 8)) and for present purposes there does not seem to be any solid basis for choosing one set of estimates over the other.

As noted, there are also questions about conceptual appropriateness of these sources as a guide to the completeness of SIPP and CPS survey aggregates. Both the SSA and NIA series expressly include withdrawals and lump sum payments in addition to regular monthly benefits. In the CPS context, money income from all sources is restricted conceptually to periodic payments, thus excluding both withdrawals and lump sums. Nominally, the SIPP obtains information about lump sum payments of all types, but when reported as such they are to be identified as a distinct income source, i.e., as a lump sum payment per se. In both cases, then, independent estimates including withdrawals and lump sums will tend to overstate the measure of pension income employed in the survey.

The author knows of no direct estimates of the share of aggregate private pension income as defined in the NIA and SSA series that is attributable to withdrawals and lump sum payments. However the possible dimensions of this problem are illustrated by the role played by withdrawals and lump sum payments in the NIA estimates of aggregate State and local government pension income. During fiscal years 1983-84, for example, periodic monthly benefits accounted for only 87 percent of total disbursements made to individuals. Withdrawals accounted for the bulk of the difference. Obviously, an overstatement of this relative magnitude would materially affect our sense of the completeness of the survey estimates.

These considerations are given more structured form in table 12, which compares SIPP and CPS aggregates to independent estimates derived from the NIA on the one hand (pension and profit-sharing benefits paid by private pension and welfare funds) and the SSA series on the other (total employment-related private pension payments). A plausible yet inherently arbitrary estimate net of withdrawals and lump sums is provided by simply assuming that they account for the same proportion of the total as observed for State and local pensions in 1983. The aggregates, net and gross of withdrawals and lump sums, are adjusted to the survey universe after Czajka et al. (1982). No special claim is advanced for the validity of these estimates; they range from a low of $43.5 billion for the NIA-based estimate net of withdrawals and lump sums to $58.7 billion for the SSA-based estimate gross of the nonperiodic components.

From the perspective of the NIA-based estimates, the SIPP would be seen as identifying about 80-90 percent of monthly private pension income. The CPS aggregate, at about 70-80 percent level, is nominally somewhat less complete. When evaluated using the SSA-based independent estimates, both surveys appear to be appreciably less complete. The SIPP accounts for approximately 70-80 percent of total private pension income; the CPS for only about 60-70 percent. Obviously, uncertainty about the proper independent estimate precludes a confident assessment of the estimates from either survey.

The perspective provided by the NIA-based independent estimates is more credible of the two. Were the perspective offered by the SSA series taken to be the more appropriate one, it would imply a gross measurement failure in both surveys. While such a possibility cannot be ruled out categorically, it is difficult to credit given both surveys' performance in the measurement of rather similar types of transfer income (public pensions and social security).

Comparison of the survey estimates of total private and public pension income in 1983 as given in table 13 (SIPP, $91.0 billion; CPS, $79.7 billion) to the aggregate reported to the IRS (IRS, 1985) by all individual tax payers ($81.5 billion total with perhaps only $76 billion received by members of the survey universe) would seem to reinforce this judgement. The SIPP estimate exceeds the IRS aggregate as is reasonable given that not all pension recipients belong to the tax-filer universe.[19] The share of pension income attributable to nonfilers and/or underreported by filers would have to be quite large for the SIPP and IRS aggregates to stand in this relationship to each other at the same time that the SIPP failed to identify a quarter to a third of private pension income.

The total public and private pension Income aggregate: an overview. A summary view of the SIPP and CPS estimates for all periodic pension income by source is given in table 13. Independent estimates are given in column 1 (the NIA-based independent estimate gross of withdrawals and lump sums is employed for private pensions; it falls in the middle of the range of independent estimates given in table 12). The corresponding survey estimates follow in columns 2 and 3. The CPS and SIPP shortfalls are shown in columns 4 and 5 together with the percent reduction in the CPS gap attributable to the SIPP in column 6. The survey estimates as a percentage of the independent estimates are shown in the last two columns on the far right of the table.[20]

We can place the most confidence on the findings for public pensions. Overall, the SIPP reduced the CPS shortfall by 88 percent, with the survey estimate rising from 86 percent of the independent estimate in the CPS context to 98 percent for the SIPP. The CPS shortfall for Federal govermment pensions is eliminated by the SIPP and particularly notable improvements relative to the CPS are indicated for State and local government pensions.

The rest of the findings of note are essentially a function of the particular independent estimate

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[19]This is not the case for 1984, however, when the SIPP aggregate for public and private pensions is $97.6 billion and the aggregate reported to the IRS (IRS, 1986) is $107.3 billion (and about $99 billion net of exclusions from the survey universe). However, it should be noted that the IRS aggregate may also include nonperiodic components which are not included in the SIPP estimates. Again the size of these components is unknown.

[20]Note that because hypothetical SIPP aggregates are employed, the major element of interest is the relative performance of the SIPP and CPS in relation to the independent estimates. The preferred comparison of SIPP estimates to independent estimates per se is given in table 11, where actual SIPP aggregates for 1984 are compared to 1984 independent estimates.

selected to represent private pensions. Having taken one from about the middle of the possible range, the SIPP is represented as having reduced the CPS shortfall by about one-third, with the survey estimate rising from 69 percent of the independent estimate in the CPS to 79 percent in the SIPP. Obviously, we would see results more comparable to those obtained for public pensions if an NIA-based independent estimate net of withdrawals and lump sums had been employed.

A considerably less favorable view would obtain if either of the two independent estimates derived from the SSA series were used. Finally, with regard to total pension income, the SIPP is shown to have reduced the CPS shortfall by 50 percent with the survey estimate rising from 78 percent of the total for the CPS to 89 percent in the SIPP. Again,.one's view of the SIPP's relative success in reducing the survey shortfall would be substantially modified if one of the alternative independent estimates for the private pension component is selected.

Improving SIPP pension estimates. There are four steps that might be taken to further improve the SIPP estimates of private and public pensions. They are:

- include a reference to profit-sharing plans in the response categories used to identify private pensions;

- assess whether veterans' compensation payments may have been misclassified as U.S. military retirement pensions;

- investigate the nature of unclassified retirement and survivors' p Tensions and disability payments; and

- determine whether the elimination of the item included in the SIPP pilot panels on retirement as a reason for not working reduced the recipiency estimates for private pensions.

Conceptually, periodic payments received by former employees or their survivors from profit-sharing plans are covered under both the SIPP and CPS private pension concept. The CPS March Supplement questionnaire makes specific reference to profit-sharing plans as did the questionnaires employed in the 1979 ISDP research panel; the current SIPP questionnaires do not. It would be relatively easy to add a similar reference to the SIPP questionnaires.

The possibility of confusion between payments made under the VA compensation program and regular military retirement pensions has long been recognized.[21] Such mis-classification, if it does exist, will artificially inflate estimates of military retirement and bias downwards veterans' benefits

[21]Indeed, some individuals may be eligible to elect either military retired pay or veterans' compensation payments. Depending on tax considerations (compensation payments are nontaxable), the individual may find it advantageous to elect compensation payments instead of a military retirement pension. Such a circumstances certainly does not set the stage for reliable discrimination between the two payments sources on the part of the respondent.

estimates. The SIPP includes items which permit independent identification of veterans compensation payments regardless of whether they are reported as compensation payments per se or military retirement. These items should be put to use. If mis-classification is detected, consideration should be given to appropriately editing reported recipiency.

It would be useful to determine the nature of pension payments that are not being properly classified by source. As noted, there were approximately 1.4 million individuals with pensions of unspecified type in the 12-month longitudinal file, a fairly substantial number. The questionnaires contain space for interviewers to enter an explanation concerning these kinds of payments when they are initially reported. This information might be profitably exploited to understand more about just what sorts of pension payments are involved.

The 1979 Research Panel used two items to direct respondents to the recipiency module for retirement pensions. The first item was based on reason for not working during the reference period. Individuals who reported retirement as the reason for not working were subsequently passed to the questionnaire section that established retirement pension receipt. In addition, all persons over the age of 40, regardless of work status during the reference period, were asked ff they had ever retired from a job. Those answering yes were also directed to the retirement pension module. Given the sequenced manner in which these questions were administered, it was not possible to determine their relative contribution to the pool of respondents directed to the retirement pension module, but the reliability of the earlier set had been established by an experiment included in the first national pilot panel carried out in 1978 (Vaughan 1978a).

When the Research Panel questionnaire was revised in preparation for the operational survey, the item on reason for not working was eliminated and so establishing eligibility for the retirement pension module was tied to the single item on retirement from a job. Since some types of pensions, most notably those based on multi-employer plans, are not tied to retirement from a particular job, elimination of this item raises the possibility that the pool of respondents exposed to the retirement pension module was reduced. If so, the subsequent recipiency estimates might well be lower than otherwise.

Private pension recipiency rates based on pensions reported in the retirement pension module have been developed for the 1979 Research Panel. Comparable estimates should be developed from the CPS for that time period and for the CPS and SIPP for the 1983-84 period. If the differential in favor of the SIPP is found to be significantly lower than was the case for the 1979 Research Panel, consideration should be given to reestablishing the deleted item on reason not working and incorporating it into the screen for the retirement pension receipt module.

Text table III-1. Supplemental Security Income and Aid to Families with Dependent Children: Recipients or cases and aggregate income

	Recipients or cases {a}	Aggregate income {a}

Type of Income	1983-84	1983-84	1984
Supplemental Security Income			
SIPP	3,941	$9,959	$9,276
CPS	3,510	8,073	8,444
Difference as a percent of CPS	12.3	9.7	9.9
Aid to Families with Dependent Children			
SIPP	3,997 {b}	11,891	11,679
CPS	3,518 {b}	10,747	10,940
Difference as a percent of CPS	13.3	10.6	6.8

{a} Recipients and cases in thousands, dollars in millions
{b} Cases.
Source: Coder, Burkhead, Feldman-Harkins & McNeil, 1987, table 15, table A-1, this paper

Text table III-2. Food stamp receipt & aggregate benefits

	Units	Recipients {a}	Aggregate Benefits {a}	
Element	1983-94	1983-94	1983-84	1984
SIPP	9,714	25,677	$9,267	$9,021
CPS	7,111 {b}	20,3751	7,516	7,556
Difference as a percent of CPS	36.6	26.0	18.9	19.4

{a} Units and recipients in thousands, dollars in millions.
{b} Households; a small percentage of households contain more than one food stamp unit.
Source: Coder, Burkhead, Feldman-Harkins & McNeil, 1987, table 14, Appendix C; U.S. Bureau of the Census 1985a, U.S. Bureau of the Census 1985c, table C-2.

Text table III-3. Unemployment Compensation Recipients and Aggregate Income

	Recipients {a}	Aggregate Benefits {a}	
Element	1983-84	1983-84	1984
SIPP	9,082-9,937	$14,912	$12,330
CPS	8,804	15,642	12,169
Difference as a percent of CPS	3.2-12.9	-4.7	1.3

{a} Recipients in thousands, dollars in millions.
Source: Coder, Burkhead, Feldman-Harkins & McNeil, 1987, table 15, unpublished Bureau of the Census tabulations, table A-1 this paper.

IV. Earnings

Overview.

Earnings is by far the dominant source of regular money income, accounting for nearly three-quarters of the total of sources for which independent estimates exist. As such, its proper measurement is critical in all surveys which aspire to measure income. There are two major types of earnings, i.e., cash compensation paid to employees as wages and salaries, and the earnings of persons who are self-employed in their own businesses or farms. The following discussion of earnings estimates in the SIPP will follow this conventional distinction.

Aggregate earnings for 1983-84 and calendar year 1984 from the SIPP are compared to those from the CPS in the text table IV-1. In the initial discussion of SIPP and CPS income aggregates for calendar year 1984, we noted that the overall CPS aggregate was slightly higher than the aggregate from the SIPP. We see now, however, that this is to some extent the result of relatively large compensating differences at the component level. While the SIPP estimate for total earnings in 1984 was just under 2 percent below that of the CPS, the SIPP wage and salary aggregate was nearly 6 percent below that of the CPS while the SIPP aggregate for earnings from self-employment was 45 percent larger than the corresponding CPS estimate. These results closely mirror those obtained for the 1983-84 period using the SIPP longitudinal file.

A somewhat lower SIPP aggregate for wage and salary earnings compared to the CPS is consistent with findings of the SIPP development program. (Estimates of aggregate wage and salary earnings from the 1979 Research Panel were 4 percent less than the CPS aggregate for that time period (Vaughan, Whiteman & Lininger 1984, p. 125)). To the extent that this difference represents bias in the micro-estimates of wage and salary earnings, it would be somewhat troublesome. On the other hand, the very large differences noted for self-employment earnings are most probably traceable to the differing income concepts underlying the principal measures of self-employment in the two surveys. Both these issues will be dealt with at greater length in the remainder of this section of the paper.

Wage and salary earnings

Overview. As noted, earnings is the dominant source of regular money income, and wage and salary earnings accounts for the lion's share of total earnings. About $2 of every $3 of regular money income received by the noninstitutional population stems from wages and salaries. The SIPP wage and salary aggregate appears to fall somewhat short of the CPS aggregate, and since a difference of approximately the same magnitude existed with respect to the 1979 Research Panel and the CPS of that period, it may be that a smaller SIPP aggregate is tied to some fairly basic aspects of the two survey designs.

Until the advent of the initial 1984 Panel Longitudinal Research file, annual (12-month) person-level wage and salary estimates had not been available for comparison with the CPS. The availability of estimates of the number of recipients over a 12-month period, together with 12-month means, medians, and size distributions in the context of annual work experience data permits a much more thorough evaluation of SIPP-CPS differences. As this information is fully exploited, the user community will learn a good deal more about the nature of earnings estimates offered by both surveys.

Initial comparisons of SIPP 12-month estimates with annual CPS data (Coder, Burkbead, Feldman-Harkins & McNeil, 1987) revealed lower means and medians in the SIPP in the context of a slightly higher incidence of receipt of wage and salary income and, therefore, a larger number of wage and salary workers. (SIPP and CPS wage and salary recipiency rates by work experience, race, and sex, with accompanying standard efforts, are given in appendix table A-3. Note that the SIPP/CPS differences are statistically significant for white males and blacks of both sexes.)[22] In and of themselves, these differences are not particularly controversial especially since it is likely, as will be seen from the following discussion, that the increase in the numbers of wage and salary workers in the SIPP is attributable to the identification of additional part-year, part-time workers who typically experience lower-than average earnings levels. Clearly, the addition of wage and salary workers with below-average annual wage and salary earnings could result in lower means and medians in the SIPP context, but as long as the subset of wage and salary workers common to both surveys reported equivalent annual wage and salary amounts, the SIPP aggregate would nonetheless be expected to exceed that of the CPS.

Consequently, the lower SIPP wage and salary aggregate poses a problem, and has led to questions about possible biases in the SIPP micro-level estimates relative to the CPS. Specifically, it has been suggested that given the monthly reference period used for measuring earnings in the SIPP, some respondents may have difficulty in accurately reporting earnings gross of deductions and substitute, instead, take-home pay (op. cit., p. 23). Limited evidence of the reporting of take-home pay from the SIPP pilot panels lends credence to this possibility (Coder, Feldman & Nelson, 1978).

At the present juncture no definitive answer to this set of very complex issues will even be attempted. However, evidence will be presented that should help to clarify the effect that the differing mix of work experience among wage and salary workers in the two surveys has on average levels of wage and salary income. Comparison of aggregate wage and salary income from the SIPP and CPS by annual work experience will also prove instructive.

While a complete treatment of wage and salary measurement issues should be based on consideration of a full set of distributional statistics, neither time nor resources have permitted that extensive an approach. Consequently, the discussion is cast in terms of means and focuses initially on a rather straightforward two-part question.

> To what extent do differences in the number of workers and their distribution by annual work experience, sex, and race account for:
>
> **!** differences in the grand mean and subgroup means, and

[22]These rates differ slightly from those presented in Coder, Burkhead, Feldman-Harkins & McNeil, 1987 (table 10) since both the numerators and denominators pertain to the population age 16 and older. See also note 23.

- differences in the wage and salary aggregate?

In approaching this question, it is necessary to compare estimates of the number of wage and salary workers in the two surveys and their distribution by the characteristics of interest. The analysis will be restricted to wage and salary workers age 16 or older rather than the customary universe of persons age 15 or older, because in the context of the initial SIPP longitudinal file,. 12 months of work experience and wage and salary information are not available for individuals who were not yet age 15 at the be of the SIPP interviewing cycle.[23]

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[23]SIPP wage and salary estimated provided in Coder, Burkhead, Feldman-Harkins and McNeil (1987) are labeled as pertainint to persons age 15 and older (see their Appendix D and various places in the body of the report). Based on conversations with Angela Feldman-Harkins and direct tabulations of the Bureau's restricted release longitudinal research file by the present author, it appears that the estimates actually refer to persons age 16 or older as of the last month covered by the file (month 12). Apparently the denominator in their table 10 is the population age 15 or older as of month 12. Thus the present discussion is carried out in terms of persons age 16 or older in both surveys.

A few further comments about the SIPP and CPS populations are in order. For this analysis of wage and salary reporting, the SIPP universe is defined as persons who belonged to the civilian noninstitutional population (or were Armed Forces members living off base or on base with their families) in the 50 States and the District of Columbia as of the initial interview, remained in that population as of reference month 12, and were at least age 16 at that time. Thus persons who died, moved overseas, into institutions or armed forces barracks during the eight reference months subsequent to initial interview are excluded (as are leavers during the four reference months subsequent to initial interview are excluded (as are leavers during the four reference months preceding initial interview). The CPS population is conceptually equivalent as far as leavers are concerned and excludes these same subgroups. However, the point of interview for the CPS falls approximately 2 ½ months after the end of its 12-month reference period. Consequently, exits from the CPS universe take place not only during the twelve months of its reference period, but also in the subsequent 2 ½ months prior to point of interview. More importantly, the CPS population also includes persons who moved into the civilian noninstitutional population from abroad, from institutions and Armed Forces Quarters between the initial SIPP interview and date of interview in the CPS and remained there through point of interview (a 10 ½ month period), as well as persons turning age 16 between the close of the CPS reference year and point of interview. All of these classes of individuals are excluded from the 12-month SIPP longitudinal universe. As a result, the total time-weighted CPS population age 16 or older for 1983-84 is slightly larger than the analogous SIPP population for 1983-84 (see table fn-1 at end of this section).

As shown in fn table 1, the SIPP estimate of the number of persons age 16 or older is 0.9 percent below the CPS estimate, with the difference apparently more pronounced for males (-1.3 percent) than femilaes (-0.5 percent). These differences in the size of the total population, reflecting, as they do, the presence of individuals not included in the SIPP population, are likely to have some effect on the present analysis of differences between the SIPP and CPS wage and salary estimates, particularly in terms of numbers of recipients. Tabulations for individuals who left the SIPP population between the initial interview and reference month 12 indicate that 45 percent had wage and salary earnings with a mean wage and salary amount for recipients during the period that they were observed of approximately $5,700. Were the entrants to CPS population to have similar characteristics, and if they could be identified and removed from the CPS estimates to enhance comparability with the SIPP, the CPS count of wage and salary workers would decrease by about 700 thousand (it would not be at all surprising if these individuals tended to be other than year-round, full-time workers) and CPS aggregate wage and salary income would decline by about $6.4 billion. As a given SIPP panel ages, the size of the SIPP population will continue to decline while that of the CPS will tend to increase. By relatively late in the 1984 panel, for example, it is possible that SIPP/CPS comparisons could be materially affected by the phenomenon. For example, if the differences noted here for the

Number of wage and salary workers by year-round, full-time status. Comparisons of SIPP and CPS extimates of the number of wage and salary workers by annual work experience, sex, and race are provided in the top half of table 14. Commensurate with a higher overall wage and salary recipiency rate, the SIPP identifies a larger number of wage and salary workers than the CPS, with differences between the surveys varying somewhat by sex and race. More importantly, however, we see lower estimates of year-round, full-time workers and higher estimates of other than year-round, full-time wage and salary workers in the SIPP. Among males, the overall SIPP estimates of the number of wage and salary workers are 2 percent above those for the CPS (1.5 percent for whites and 4.1 percent for blacks). Estimates of the number of male year-round, full-time wage and salary workers are lower in the SIPP than in the CPS (by 5 percent for whites and 7 percent for blacks), while the estimate of the number of male workers other than year-round, full-time exceeds the CPS estimate by 15 percent. Again the differences are nominally more accentuated for blacks (20 percent higher in the SIPP) than for whites (only 14 percent higher). Among females of all races, SIPP and CPS estimates of the number of wage and salary workers are little different, reflecting the virtually identical estimates for the number of white females with wage and salary income. For black females, the SIPP estimate exceeds the CPS by about 5 percent. Ile SIPP estimate of the number of females working year-round, full-time in wage and salary employment is moderately lower than the CPS (by about 11 percent), with the difference for black females (at 13 percent below that of the CPS) nominally somewhat larger than for whites (10 percent lower). As among males, SIPP estimates of the number of other than year-round, full-time workers exceed those of the CPS (by 1 1 percent), and again the difference is nominally more pronounced for blacks than whites (26 and 9 percent higher, respectively, in the SIPP). Given the relatively imprecise identification of year-round, full-time workers in the CPS context, the lower SIPP estimates most likely reflect a more valid representation of annual work experience on the part of the SIPP (Coder, Burkhead, Feldman-Harkins & McNeil 1987, p. 23).

It appears likely, then, that the larger SIPP estimates of other than year-round, full-time workers are attributable to two factors: the identification of part-year and/or part-time workers not picked up in the CPS, and the classification of some workers who are observed as year-round, full-time in the CPS context as part-year and/or part-time in the SIPP. Given certain assumptions, the relative importance of these two factors may be estimated indirectly.[24] These indirect estimates,

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1983-84 period are extrapolated through calendar year 1985, the SIPP population age 16 or older would be about 5 million below that of the corresponding CPS population (as of March 1986). This may in part explain why Ryscavage and Coder find no differences in the SIPP and CPS estimates of the number of workers in calendar year 1985 (see Ryscavage and Coder, 1989).

[24]The pattern of the differences between the two surveys makes it possible to plausibly apportion the SIPP gains between these two factors. Since the SIPP estimates of total wage and salary workers nominally exceed the corresponding CPS estimates for each se-race subgroup while the SIPP estimate of year-round, full-time workers fall below those from the CPS for each of these subgroups, it is probably not far from the mark to assume that the net increase in the SIPP by age and sex represent the presence of other than year-round, full-time workers not identified in the CPS. On the other hand, the consistently smaller SIPP estimates of year-round, full-time workers may be taken to represent the reclassification of persons observed as year-round, full-time in the CPS to other than year-round, full-time in the SIPP.

given in text table IV-2, suggest that about one-quarter (24 percent) of the difference between the two surveys' estimates of other than year-round, full-time workers stems from wage and salary recipients who are identified in the SIPP but not in the CPS. The balance is attributable to reclassification of workers appearing as year-round, full-time in the CPS to other than year-round, full-time in the SIPP. However, the importance of the two factors varies by race and sex. Among blacks, more than two-fifths (44 percent) of the difference is attributable to newly identified workers, with the impact of newly identified workers about the same for black males (49 percent) and black females (41 percent). Newly identified workers are nominally a less important source of the SIPP-CPS difference among whites, accounting for only 17 percent of the larger number of other than, year-round, full-time workers. However, this difference by race stems from the dominance of reclassification among white females. For white males, 31 percent of the SIPP-CPS difference is attributable to newly identified workers.

In summary, the larger number of other than year-round, full-time workers in the SIPP context is consistent with the contrasting design features of the two surveys. Since about 80 percent of the other than year-round, full-time workers worked less than full-year (Coder, Burkhead, Feldman-Harkins & McNeil 1987, table 17),[25] given the SIPP's shorter reference period, the survey would be expected to identify more part-year wage and salary recipients than the CPS. Thus the pattern of SIPP-CPS differences in the number of wage and salary workers is reminiscent of that observed for food stamps, although less pronounced. However, it is strongly accentuated by a tendency to classify significant numbers of persons identified as year-round, full-time workers in the CPS context as other than year-round, full-time workers in the SIPP.

Mean wage and salary amounts. As noted, Bureau of the Census analysts have commented that SIPP mean and median wage and salary amounts tend to be lower than corresponding CPS means and medians (Coder, Burkhead, Feldman-Harkins & McNeil, 1987, p. 27). However, their initial comparisons of means were not disaggregated by the extent of work experience in the prior 12 months. The bottom panel of table 14 provides a crude disaggregation of means by work experience, sex, and race. As noted by Bureau researchers, comparison of the mean for all wage and salary workers does reveal moderately lower values in the SIPP (about 6 percent below the CPS mean for all wage and salary workers), with nominally larger differences for females and

[25]It is likely that SIPP estimates of the number of other than year-round, full-time workers will increase further in relation to the CPS in subsequent SIPP panels because of the reintroduction of a special probe to uncover earnings activity that is not necessarily associated in the mind of the respondent with a particular job. Employed in SIPP developmental panels, the probe identified 1-2 million earners per wave that were being missed by the standard questions. It was dropped from the initial operational panel as part of a general streamlining of the questionnaire. Even without the probe, 1.8 million persons reported receipt of incidental earnings in the SIPP in the 1983-84 period. Incidental earnings are not included in the present discussion of SIPP wage and salary estimates because work experience associated with incidental earnings activity is not collected. However, if these individuals were to have no other wage and salary activity, they would undoubtedly make a significant contribution to the lower tail of the SIPP work experience distribution.

blacks than males and whites.[26] However, disaggregation by work experience, sex, and race reduces the SIPP-CPS differences to a substantial degree. Perhaps most interestingly, differences among year-round, full-time workers are rather small for all four sex by race subgroups. Except for black males, the SIPP means remain nominally lower than those from the CPS, but only slightly so (about 1-2 percent). For black males the SIPP and CPS means are essentially equivalent.[27]

Among workers other than year-round, full-time, the picture is mixed. For white males, the SIPP mean is nominally lower than the CPS mean (by about 3 percent). For white females mean amounts are essentially the same in both surveys. For black-,; by sex, the SIPP means are nominally 6-9 percent lower than the CPS means. As seen earlier, however, the SIPP estimate of the number of black males working other than year-round, full-time was 20 percent above the corresponding CPS estimate, and for black females, the SIPP estimate was 26 percent higher than in the CPS, and it is also likely that 40-50 percent of these differences is attributable to the identification of new workers. Given the shorter SIPP reference period, it is certainly plausible that these new workers would have work experience and wage and salary earnings below the average of other than year-round, full-time workers identified in the CPS context. Their presence, in turn, would contribute to lower overall SIPP means for other than year-round, full-time workers. Thus some of the remaining differences in means for the part-year, part-time workers may be attributable to further compositional differences related to weeks and hours worked. Of

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[26]The CPS values shown in table 14 were derived from public use files which carry only topcoded earnings amounts. The tabulations produced by Bureau analysts were based on untopcoded internal files. Thus the CPS means shown here are slightly lower than those given in Coder, Burkhead, Feldman-Harkins & McNeil (1987). However, the topcoding effects are not large enough to alter the conclusions presented here.

[27]It may be that we should actually expect the SIPP means for full-time, year-round workers to be higher than those in the CPS. This might also be the reasonable expectation for those with other than year-round, full-time work experience. Why might this be so? As noted, it seems likely that the reason for fewer year-round, full time workers in the SIPP is the proper classification of a significant number of persons (about 4 million) who appear as year-round, full-time workers in the CPS context as less than year-round, full-time. If the CPS estimates of annual wage and salary income for such individuals are taken to be relatively unbiased, it is likely that their mean wage and salary incomes are lower than "true" year-round, full time workers. Other things being equal, then, removing them from the pool of year-round, full-time workers would produce a higher mean for those remaining. On the other hand, it would not be surprising if the group being reclassified in the SIPP were to have had average wage and salary amounts that were higher than those observed in the CPS as other than year-round, full-time. Since the number of workers being reclassified to other than year-round, full-time status is rather larger than the number of newly identified workers in this category in the SIPP (about 4.0 vs. 2.5 million) it might well be that the SIPP mean for this group as a whole ought to be higher than in the CPS. If this scenario roughly approximates what lies behind the SIPP-CPS differences, then the lower SIPP component means might reflect the presence of some degree of underreporting relative to the CPS.

There is, however, a counter argument concerning the relationship between the SIPP and CPS means for year-round, full-time workers. Since the CPS portrayal of the annual work effort of the "false" year-round, full-time workers is biased upwards, were it to enter into the CPS respondents' estimates of annual wage and salary earnings amounts, the observed CPS annual wage and salary income for this group would likewise be biased upwards. Were this to be the case, then the true mean for this group would be lower than the observed mean.

course, this possibility could be directly assessed by a more detailed comparison of mean wage and salary in the two surveys by work experience.

Even though the comparisons given in table 14 do not fully control for compositional differences between the two surveys by work experience, they do provide evidence of significant compositional effects on differences between the grand and subgroup means and provide the basis for estimating a lower bound for the compositional effect. In essence, this boils down to determining just how much of the crude difference in the grand means and the sex-race subgroup means would remain ff the SIPP component means by race, sex, and work experience were the same as those observed for the CPS given the observed SIPP distribution of work experience. If under these hypothetical conditions the SIPP grand and subgroup means were quite close to the observed SIPP means, then most of the difference between the observed means in the two surveys might plausibly be attributed to compositional differences between the surveys rather than to higher CPS component means. If the hypothetical SIPP means were to be closer to the observed CPS means, we would conclude that most of the difference was due to higher component means in the CPS.

This question may be answered by substituting the CPS sex-race-work experience component means for the observed SIPP component means and recalculating the grand mean and the subgroup means by sex and race on the basis of the SIPP estimates of the number of wage and salary workers by work experience, sex, and race. The results of this exercise are shown in table 15.

Comparison of the hypothetical SIPP means with the means as observed in the SIPP and CPS demonstrates that most of the difference in the grand and subgroup means is due to compositional effects. For example, the difference between the grand means in the two surveys is $878. Had the SIPP component means been the same as those in the CPS, the SIPP grand mean would have been only $236 above the observed SIPP grand mean. Thus only (236/878* 100) or about 27 percent of the difference between the observed grand means can be attributed to higher CPS component means. The complement, about 73 percent, is attributable to compositional effects. For black males and white females, the compositional effects are nominally somewhat more pronounced, accounting for slightly more than 80 percent of the SIPP/CPS difference and the impact of higher component means in the CPS is correspondingly reduced (accounting for only 18-19 percent of the difference in means). For white males and black females, on the other hand, the impact of compositional differences in nominally somewhat less pronounced, accounting for only 70-75 percent of the difference in the overall means by sex.

Comparison of the SIPP and CPS wage and salary aggregates. A comparison of the wage and salary aggregates from the two surveys is presented in the accompanying text table IV-3. The first CPS aggregate shown ($1,699.7 billion) is the same given earlier and represents the weighted average for income years 1983 and 1984 for wage and salary recipients age 15 or older. The second ($1,694.2) represents the aggregate after top-coding as estimated from Census Bureau

public use files and also pertains to persons age 15 or older.[28] The third CPS aggregate is restricted to persons age 16 or older. Both the second and third aggregates are distributed by work experience.

Comparing the aggregates based on topcoded data for persons age 16 or older indicates that the SIPP estimate falls $77 billion short of the overall CPS estimate. However, refining the comparison by work experience shows that the SIPP shortfall relative to the CPS is associated solely with the year-round, full-time work experience category. The SIPP aggregate is about $110 billion below the corresponding CPS figure. In part this difference must be due to the workers classified as year-round, full-time in the CPS who appear as other than year-round, full-time in the SIPP. However, it is difficult to believe that the observed difference is solely attributable to this factor. Even if the workers observed as year-round, full-time in the CPS who are thought to be reclassified as other than year-round, full-time workers in the SIPP had a mean wage and salary amount of twice that of all CPS other than year-round, full-time workers, they would account for only about $58 billion, or 53 percent, of the gap between the SIPP and CPS aggregates for the year-round, full-time group. This suggests that there is some moderately small degree of bias in the SIPP estimates of wage and salary amounts for year-round, full-time workers relative to those of the CPS.[29]

On the other hand, the SIPP aggregate for those with other than year-round, fun-time work experience actually exceeds the CPS aggregate by about $32 billion. For this group, the larger number of wage and salary recipients, stemming from those appearing as year-round, full-time workers in the CPS context and from workers newly identified in the SIPP more than compensates for the nominally lower SIPP means.

Comparison with Independent estimates. The final aspect of the discussion of the SIPP wage

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[28]The $5.5 billion difference may be thought of as a part of the overall difference between the SIPP and CPS aggregates which arises from higher CPS means and that is obscured by topcoding when the SIPP is compared to the CPS using CPS public use files.

[29]Of course whether this bias is attributable to the reporting of take-home pay by some significant subset of workers or is due to other factors, such as failure to identify lump sum components of wage and salary compensation, or to some combination of effects, awaits clarification by further research. Work by Coder (1988) that was completed after the conference makes an important start in this regard. He found that calendar year estimates of wage and salary income that are estimated from the SIPP subannual wage and salary reports are on average 7 percent below those reported for the same persons in the annual roundup interview.

Coder's preliminary findings pertain only to fully interviewed persons with just one employer during the year. However, if the difference were generalizable to all wage and salary workers, it would imply SIPP means which exceed those of the CPS by as much as 6 percent for year-round, full-time workers and by a somewhat lesser amount for those with other than year-round, full-time work experience. Furthermore the SIPP wage and salary aggregate would then slightly exceed the CPS aggregate (see table fn-2), and incidentally, the independent estimate of $1,726.6 billion, as well.

and salary estimates deals with comparisons to independent estimates. The independent estimate of aggregate wage and salary income for the 1983-84 period, together with the corresponding SIPP and CPS aggregates are given in the text table IV-4. Estimates from both surveys are quite close to the independent estimate. The CPS estimate amounts to 98 percent of the independent estimate in both time periods, while the SIPP aggregate is somewhat less complete (93-94 percent). These findings are about what would be expected given the foregoing discussion of the SIPP and CPS wage and salary aggregates.

Summary. Review of the SIPP wage and salary estimates based on the initial longitudinal research file shows that the SIPP identified more wage and salary workers than the CPS in the 1983-1984 period and that basically the additional workers were part-year and/or part-time employees. The identification of a larger number of such workers in the SIPP may plausibly be attributed to the SIPP design, specifically its relatively short reference periods. Review of the differences between SIPP and CPS wage and salary means indicates that the SIPP grand mean is about 5 percent below the CPS grand mean but that about three-fourths of the difference could be attributable to the presence of more part-year, part-time wage and salary workers in the SIPP. Review of the SIPP aggregates relative to those from the CPS and to independent estimates indicates, however, that there is likely to be some moderately small but significant degree of bias in the SIPP wage and salary estimates relative to those of the CPS and the independent estimates.

This discussion of SIPP annual wage and salary estimates and their relationship to similar estimates from the CPS obviously only scratches the surface of a complex, difficult, and yet very important topic. It should be extended to include a full range of distributional measures because important parts of the story are missed when focusing only on means and aggregates. More disaggregation by work experience is also highly desirable. At some point, hopefully in the relatively near future, the Bureau will consider the use of matched administrative data as part of a broad-based evaluation of the SIPP wage and salary estimates. Fortunately, development of the matched data sets that would support such an analysis is already under way at the Bureau. Other important uses of matched administrative data will be suggested in the discussion of SIPP property income estimates.

Self-employment Income

Overview. As noted in the introductory discussion of SIPP earnings estimates, the SIPP aggregate for nonfarm and farm self-employment income is a great deal larger than in the CPS. This difference largely stems from the different concepts employed for the principal measures of self-employment income in the two surveys.

The CPS concept. The conventional definition of self-employment income focuses on the income of the business enterprise or professional practice per se. In simplest terms, it is defined as the difference between gross revenues and expenses. Conceptually, the object of measurement is entrepreneurial income defined in economic terms, that is, net profit or loss from the business activity. However, it is widely believed that profit and loss as defined by Federal tax law actually

forms the basis of a significant fraction of the reports of net business income in the CPS. Indeed, CPS documentation expressly acknowledges that expense components which are substantially a function of tax law (changes in inventory valuation and certain forms of depreciation) are to some unknown degree represented in the CPS estimates. Since the tax definition of expenses will generally overstate expenses from an economic perspective, it necessarily works to produce an estimate of net income that is biased downward with respect to economic income. That the CPS aggregate for farm and nonfarm self-employment income has exceeded IRS aggregates for a number of years indicates that the survey estimates are neither fish nor fowl-that is, they are lower than would be the case if all respondents based their answers on an economic definition of net income but higher than if all respondents answered in terms of the tax system's concepts of profit and loss.[30]

The SIPP measures. The issue of how to measure self-employment income had to be confronted early in the SIPP development program, largely because the sub-annual income reference period, a key given in the overall survey design, was not suited to the usual way in which self-employment income is measured. Irrespective of whether an economic or tax perspective is to be employed, tracking receipts and expenses on a sub-annual basis is difficult operationally. Expenses and receipts do not typically flow smoothly and in tandem on a month-to-month basis and proprietors may not even have a clear understanding of the profit/loss picture for their business until a final accounting is made at year's end for tax purposes.

Furthermore, while measurement of revenues and expenses on a monthly basis might be feasible in principle,[31] it seems unlikely that monthly revenues net of expenses would be a very meaningful indicator of the livelihood that the self-employed were gaining from their businesses. Even on an annual basis, it has long been recognized that net self-employment income is a much poorer proxy of the economic circumstances of the self-employed than is wage and salary income for wage and salary workers. It has even been asserted with some justification that the size of the poverty population has been spuriously inflated because of such defects in the traditional measure of self-employment income (see for example, Paglin 1980, p. 19).

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[30]Just how much higher, however, is unclear, at least to the author. Consider that the 1983 Survey of Consumer Finances (SCF) yields an aggregate of $296 billion for business or farm income, while the aggregate reported to IRS in 1982 was only $54 billion, the CPS aggregate was $110 billion. Avery, Elliehausen and Kennickell (1987, p. 4) report that the SCF aggregate likely represents something much closer to a cash flow concept rather than income netted of expenses and depreciation. If this means that the SCF picked up gross receipts but not expenses, then the aggregate would represent neither an economic nor a tax concept of self-employment earnings. For an excellent discussion of the problems of reconciling CPS and IRS measures of farm self-employment income see Budd and Yuskavage (1981).

[31]In fact a good deal of time and energy went into attempting to measure net quarterly self-employment income. While the results were disappointing, the operational survey still collects information on gross receipts and expenses on a subannual basis. Annual net income from self-employment is also collected. If these alternative data are of acceptable quality, comparison of the different measures could well provide useful new insights into the economic circumstances of the self-employed.

Some particularly powerful evidence bearing on these issues came to light just at the point that the SIPP technical staff was struggling with what to do about self-employment income. Using data from the Michigan Panel Study of Income Dynamics (PSID) to assess the impact of accounting period on the portrayal of the size of the low income population, Steuerle and McClung (1977, pp. 7,10) noted that:

> the length of the accounting period significantly affects the distribution of poverty families across socioeconomic groups. While all groups show an increase in the number of poor families as the at accounting period is shortened, that increase is smallest for those groups whose members have steady, yet low incomes. On the other hand, socioeconomic groups with larger income variance over time will demonstrate the largest increases in the percentage of its members counted as poor. The most striking example of such a large increase in number of poor occurs as the accounting period is shortened for the self-employed.

Indeed, they found that the number of poor self-employed in a single year was 156 percent above the number poor on the basis of a 5-year accounting period. On the other hand, for persons in the labor force but not self-employed, the single year number poor was only 38 percent higher than when income and needs were measured over a 5-year span.

While Steuerle and McClung appear to interpret this finding merely as evidence of the greater variance in self-employment income, their evidence contributed strongly to the view among the individuals working on the SIPP that the traditional notion of net self-employment income likely left a great deal to be desired as a measure of the money that self-employed persons as individuals obtain from their businesses on a month-to-month or even annual basis.

It was these sorts of perspectives that gave rise to the current sub-annual measure of self-employment income employed in the SIPP. The earliest field work focused on draw, or the income the individual took out of the business to meet his personal and family expenses. Over time the approach became more formalize, and currently individuals who are self-employed are typically asked to report withdraws from the business, e.g. amounts of regular salary or any other income received from the business during the 4-month period preceding interviews.[32] The same approach is used for those self-employed in farm and nonfarm businesses.

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[32]Specifically, at each interview business owners are asked two questions about the income they personally obtain from the business:

- Was...paid a regular salary from this business during this 4-month period?
- Did...receive any (other) income from the business during this 4-month period?

Self-employed who expect gross earnings from their business to be under $1,000 for the year are asked to estimate what they earned after expenses during the reference period. Only about 12 percent of the self-employed with unincorporated businesses fall into this category (see Haber, Lamas & Lichtenstein 1987, table 1).

A short discussion of the nature of the resulting estimates of self-employment income. follows. It is restricted to the universe of self-employed who reported a dollar or more of self-employment income from an unincorporated farm or nonfarm business during the 12-month reference period covered by the longitudinal research file or in calendar year 1984.[33]

The SIPP estimates. The most basic facts about the SIPP information on self-employment income are highlighted by the comparisons with CPS estimates given in the text table IV-4. The number of persons with income from self-employment for the 1983-84 period in the SIPP is about 10 percent higher than estimated from the CPS. However, the most significant differences are registered in aggregate income. The SIPP aggregate is 42 percent larger t the CPS aggregate for 1983-84 and 45 percent above the CPS estimate for calendar year 1984. The calendar year aggregates are separated into income from nonfarm and farm businesses and indicate that the SIPP estimate of farm self-employment income exceeds the CPS aggregate by a factor approaching two.

Interestingly, the impact of item nonresponse on the aggregate is actually less in the SIPP context than in the CPS. Monthly item nonresponse rates averaged 16 and 17 percent respectively in the, SIPP for nonfarm and farm self-employment during calendar year 1984, and about 20 percent of the calendar year aggregate for each is attributable to imputation. In the CPS the item nonresponse rate for calendar year 1984 was about 27 percent for both farm and nonfarm self-employment income amounts, and 30 percent of the nonfarm aggregate and 20 percent of the farm self-employment aggregate is attributable to imputation. Thus there is no reason to suspect that the substantially greater SIPP aggregates are the spurious product of imputation. Furthermore, the item nonresponse rates lend no support to the notion that respondents found the SIPP concept of self-employed salary especially difficult to deal with.

Not surprisingly, the very substantial differences in aggregates coupled with only moderate differences in the recipient estimates translate into sizable differences in means overall and for men. Means for women, however, are virtually identical in both surveys. Medians present a rather different picture. The overall medians are quite similar (2 percent higher in the CPS), as are those for women (3 percent higher in the CPS). The median for men is lower in the CPS (by about 9 percent), but nowhere near as low relative to the SIPP estimate as was the case for the mean. See text table IV-5.

For the most part, this seemingly peculiar behavior of the means and medians is a function of the presence of losses in the CPS context.[34] Overall, 12 percent of the CPS recipients have losses,

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[33]Although readily indentifiable in the SIPP, self-employment earnings stemming from incorporated business is treated in both the SIPP and CPS as wage and salary income.

[34]As is always the case when working with highgly skewed distributions based on survey data, one must be concerned about the impact that outliers might have on estimates of means. While the Bureau of the Census routinely checks the upper tail of its income variables for outliers, the author has not personally reviewed the upper portion of the self-employment distributions.

with the proportions just about the same for men and women (table 16).

A full size distribution by sex from both surveys is also given in table 16, but because of the differing income concepts involved, it is not clear how one might characterize the differences. Among men, 57-58 percent have self-employment income below $10,000 in both surveys, about one-quarter have amounts ranging between $10,000 and below $30,000 and about 15 percent have $30,000 or more. In the SIPP, however, the percentage with self-employment income of $60,000 or more is nominally a good deal larger than in the CPS (7 vs. 4 percent). Among men, the larger percentage in the $60,000 and over group must also play a part in accounting for the large difference between the SIPP and CPS means.[35]

The SIPP and CPS size distributions for women are also broadly similar. A somewhat larger share of women in the SIPP have amounts below $10,000 (88 as opposed to 82 percent, but then about one-eighth of the women in this portion of the distribution in the CPS experienced losses). Nominally, a somewhat larger share of women in the CPS have amounts of $10,000 to less than $30,000 (15 vs. 10 percent) while only 2 percent of women in the SIPP and 3 percent in the CPS have amounts of $30,000 or more. The effect of the upper tail on means in the two surveys is markedly less than among men.

Still the most interesting question concerns where those with losses, using the concept of net self-employment income, would fall in the distribution of business withdrawals. At present, this question obviously cannot be answered. However, once the data collected in the SIPP annual roundup interview on net self-employment income for calendar year 1984 become available in a fully processed form, it may be possible to relate the two concepts in a wholly SIPP context. ff the roundup data are of sufficient quality, relating the two measures of self-employment income ought to be a very instructive exercise.

The last facet of this discussion of the SIPP data on self-employment income returns to the question of self-employment and poverty. As noted earlier, it has been asserted that the use of net self-employment income, with its concomitant losses, presents a flawed view of the economic circumstances of a significant fraction of the families whose livelihood stems from their own businesses. As a result, they are said to be spuriously counted among the poor when by other criteria, such as consumption or wealth, they would not be. How does the SIPP measure of business withdrawals perform in this regard?

The data in table 17 provide a useful, if tentative, answer. First, the expected pattern is noted

[35]Also public use versions of the CPS data files were used to obtain the CPS estimates. Since the self-employment fields in thise files are topcoded at $75,000 for calendar year 1983 and $99,999 for 1984, this would also serve to depress the CPS means. However, even if internal Bureau files were used, the upper tail of the CPS-based distributions would be truncated at $99,999 because of processing constraints. Beginning with income year 1985, the maximum earnings amount represented on internal CPS files at the Bureau was increased to $299,999. In that year the self-employment income amounts for 70 sample persons were topcoded at $99,999, i.e., persons with amounts of between $100,000-$299,999 were recoded to $99,000 to preserve confidentialiaty (Pattison 1987).

with regard to the CPS. The poverty rate for wage and salary workers during 1983-84 was 6.8 percent; that for the self-employed was 12.3 percent or about 1.8 times higher.[36] As shall be shown, this contrasts sharply with the picture given by the SIPP, where it appears that the poverty rate for the self-employed is not much higher than that for all workers. However, the nature of readily available SIPP estimates somewhat complicates matters, and so some explanation is required.

For persons age 16-64 who worked at a job or business any time during the 12 months in 1983-84 covered by the longitudinal research file, the annual poverty rate was 6.8[37] The poverty rate for persons receiving income from their own business in the prior 12 months was only marginally higher (7.1 percent). Unfortunately, the definition of self-employed used to construct this statistic includes self-employed with incorporated businesses. Since such individuals tend to be considerably better off financially than the typical self- employed person (see Haber, Lamas, & Lichtenstein 1987, p. 20), their inclusion in the self-employed group will result in a lower poverty rate than would otherwise be the case. Thus we know that the poverty rate of 7.1 is too low when compared to the CPS rate which excludes those with incorporated businesses. If we assume, implausibly, that none of the incorporated self-employed are poor, the poverty rate for those with unincorporated businesses could be no more than 8.5 percent (the observed numerator including the incorporated self-employed divided by the number of unincorporated self-employed). Using conservative assumptions about the incidence of poverty among the incorporated self-employed indicates that the actual poverty rate of the unincorporated self-employed is likely to be below 8 percent, but not lower than 7 percent.[38] This level is quite close

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[36]This sort of differential has also been found in the Panel Survey of Income Dynamics (PSID). See for example Steuerle and McClung (1977, table 2).

[37]To my knowledge, the poverty rate for all persons with a job or business, including those age 65 or older, has not been published from the SIPP longitudinal research file. (There are about 4.3 million workers age 65 or older represented on the longitudinal research file (Coder, Burkhead, Feldman-Harkins & McNeil 1987, Appendix G.)). Neither has the rate for wage and salary workers. However, we may expect that the rate for all workers would be slightly lower than for workers age 16-64. For example, for calendar year 1984, the CPS estimate for the poverty rate of all wage and salary workers age 15 or older was 6.6 percent compared to 6.8 percent for wage and salary workers age 15-64 (BOC 1985a, table 4).

[38]The denominators for constructing a rate according to either definition of the self-employed in the SIPP context are available (16.2 million for the broader concept and 13.5 million for the more narrow one usually employed in the CPS context, see table 17). The numerator for the broader definition (1.2 million) may also be obtained from published sources. Working with unrounded numbers, this yields a poverty rate of 7.1 percent for the self-employed including those with incorporated businesses. If none of the self-employed with incorporated businesses were classified as poor then the poverty rate for the remaining self-employed would be 8.5 percent (Estimate I in table 17). Of course this rate is likely to be too high since at least some of the incorporated self-employed will be poor.

A serviceable approximation of the poverty rate plausibly experienced by the incorporated self-employed may be obtained from CPS tabulations which give poverty rates together with median wage and salary income by occupation and sex (BOC 1985a, table 17). Using the median earnings of full-time, full-reference period persons

to that for all workers and not what would be expected in the CPS context. In short, it would seem that the measurement of business withdrawals in the SIPP has materially affected the portrayal of poverty among the self-employed.

This review of the empirical side of the SIPP measure of business withdrawals has demonstrated some interesting and positive aspects of the SIPP estimates. However, it is also more than fair to point out that the theoretical basis of the SIPP measure is unclear. While no adequate response to this criticism is at hand, it may well be that the relative ease with which respondents provide answers to the question about withdrawals from their businesses, phrased as it is in terms of a salary, provides a useful hint. After all if their responses were to be taken literally, they were reporting a return to labor. Could there be some theoretical merit to this notion? While the author has noted a definite reluctance on the part of a number of colleagues to entertain this possibility, perhaps some forebearance is in order. Budd (1966, pp. 1-8), for example, made an interesting case for decomposing self-employment income among its labor and property components. Since Budd's interest lay not with estimating the return to labor for individual owners, but with arriving at a more valid classification of income in the National Income Accounts (NIA), the procedures he proposed for implementing the decomposition are divorced from the circumstances of the particular firm and the characteristics of the individual owner.[39] Economists with these particular interests in mind might be inclined to operationalize the self-

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with incorporated businesses by sex given by Haber, Lamas and Lichtenstein (1987, p. 20), CPS tabulations were scanned for occupational groups with similar medians. Their poverty rates by sex were then taken as an estimate of the poverty rates by sex experienced by the incorporated self-employed in the SIPP context. (If anything, these rates are likely to serve as conservative proxies for the actual rates since the median earnings of full-time, full-reference period incorporated self-employed are likely to be a good deal higher than for all incorporated self-employed). The proxy rates were then used to adjust the SIPP number of self-employed poor to exclude the incorporated self-employed. The adjusted number poor was then used as the numberator to derive an adjusted poverty rate for the unincorporated self-employed, yielding a conservative upper bound of 7.9 percent for their poverty rate in the SIPP (Estimate II in table 17).

Estimate II implies a poverty rate of 3.5 percent for the incorporated self-employed. For the reasons cited above, this is probably too low. As a final alternative, the CPS rate for all wage and salary workers during 1983-84 (6.8 percent) was taken as a proxy for the rate of the incorporated self-employed in the SIPP. This yielded an estimate of 7.2 percent for the poverty rate of the SIPP self-employed with unincorporated businesses. Thus it does seem likely that the true SIPP rate for this group is less than 8 percent, but not less than 7 percent. Obviously a much more satisfactory approach to this whole question would have been to obtain the appropriate rate directly from the microdata. Resource constraints did not permit the author to exercise this option.

[39]He reviews the approaches of previous researchers in their attempts to decompose business income into returns to labor and capital. In general, he finds two approaches have been taken, the property method, and the labor method. The first imputes the property earnings of self-employed individuals on the basis of market rental rates and treats their labor earnings as a residual. The second imputes labor earnings on the basis of the earnings of all employees, with property income as the residual. Budd prefers the latter, but with the proviso that since the self-employed are concentrated in sectors in which average annual earnings are less than the economy-wide average, the imputation ought to be done on a sector by sector basis to avoid the overstatement that would rise if economy-wide labor earnings were used (Budd 1966, p. 8). Cameron Whiteman first brought Budd's views to the author's attention (Whiteman 1981).

employed's wage as an estimate of the earnings the individual could command in a wage and salary context, given similar conditions (the same amount of human capital hours of work, occupation, industry, and so forth), e.g., as a shadow wage. Comparison of the SIPP measures to such estimates would undoubtedly be instructive. Were the owners' regular business withdrawals shown to be systematically related to estimated shadow wages, the conceptual basis of the SIPP measure would be placed on a sounder footing.

Text Table IV-1. Aggregate earnings by source (Dollars In Billions)

Element	1983-84 Total	1983-84 Wages & Salaries	1983-84 Self-employment	1984 Total	1984 Wages & Salaries	1984 Self-employment
SIPP	$1,805.8	$1,616.6	$189.2	$1,869.6	$1,673.6	$196.0
CPS	1,832.6	1,699.7	132.9	1,906.0	1,770.7	135.3
Difference	-26.8	-83.1	56.3	-36.4	-97.1	60.7
As % of CPS	-1.5	-4.9	42.4	-1.9	-5.5	44.9

NOTE: The SIPP wage and salary aggregate excludes incidental earnings and national guard pay amount to $2.3 billion respectively in 1983-84 and 1984.

Source: Coder, Burkbead, Feldman-Harkins & McNeil. 1987, table 12; unpublished data, Bureau of the Census.

Text Table IV-2. Attribution of the difference in the SIPP and CPS estimates of the number of other than year-round, full-time workers to the identification of new workers and the reclassification of year-round, full time workers {a}

Sex and race	Total Number in 1000's	Total Percent	Percent distribution: Newly identified workers	Percent distribution: Reclassified from year-round to full-time
Total {b}	6,096	100.0	24.4	75.6
White	4,724	100.0	17.1	92.9
Black	1,179	100.0	44.1	55.9
Males {b}	3,179	100.0	38.8	61.2
White	2,546	100.0	30.9	69.1
Black	474	100.0	49.1	50.9
Females {b}	2,917	100.0	9.9	91.2
White	2,179	100.0	1.0	99.0
Black	705	100.0	40.7	59.3

{a} Under the assumption that the larger number of wage and salary workers by sex and race in the SIPP is attributable solely to fuller identification of other than year-round, full-time workers.

{b} Includes persons of other races.

Source: See table A-4.

Text Table IV-3. Comparison of SIPP and CPS annual wage and salary aggregates by annual work experience

Element	Total	Year-round full-time	Other
CPS			
Untopcoded, age 15 or older	1,699.7	-----	-----
After topcoding			
Age 15 or older	1,694.2	1,392.4	301.8
Age 16 or older	1,693.7	1,392.4	301.3
SIPP			
Age 16 or older			
SIPP as observed	1,616.6	1,282.9	333.7
Difference {a}	77.1	109.5	-32.4
As a % of CPS {a}	4.6	7.9	-10.7

{a} Age 16 or older.

Text Table IV-4. Comparison of SIPP and CPS annual wage and salary aggregates to independent estimates

	1983-84		1984	
Source	Aggregate amount in billions	Survey as % of the independent estimate	Aggregate amount in billions	Survey as % of the independent estimate
Independent estimate	$1,726.6	-------	$1,807.0	------
CPS (a)	1,699.7	99.4	1,770.7	98.0
SIPP	1,616.6 {b}	93.6	1,673.6	92.6

{a} Age 15 or over, untopcoded.

{b) Excludes incidental earnings and national guard pay amounting to $2.3 and $2.9 billion respectively in 1983-84 and 1984.

Text Table IV-5. Mean and median self-employment income amounts in the SIPP and CPS

Statistics	Self-employment income, 1983-84 Total	Men	Women	
Mean				
SIPP	$14,010	$18,467	$59150	
CPS	10,711	12,997		5,170
Difference as a percent of CPS	+30.8	+42.1	-0.4	
Median				
SIPP	$4,577	$7,233		$1,759
CPS	4,662	6,632	1,815	
Difference as a percent of CPS	-1.8	+9.1	-3.1	

Source: Coder, Burkhead, Feldman-Harkins & McNeil, 1987, Appendix D; table 16, this page

Text Table IV-6. Self-employment income: Recipients and aggregate amounts in the SIPP and CPS

	Recipients {a}		Aggregate amount {a}		
	1983-84	1983-84	1984		
Element		Total	Total	Nonfarm	Farm
SIPP	13,505	$186.4		$196.0	$171.7
					$24.4
CPS {b}	12,252	131.2	135.3	126.6	8.6
Difference as a % of CPS	10.2	42.0	44.9	34.8	182.5

{a} Recipients in thousands, dollars in billions.

{b} Persons with a loss of $1 or more of farm or nonfarm self-employment income.

Source: Coder, Burkhead, Feldman-Harkins & McNeil, 1987, Appendix D; unpublished Bureau of the Census tabulations, table A-1 this paper.

V. Property Income

Overview.

Of the three basic components of regular money income (earnings, transfers and property income) there is general agreement that property income is the least well measured in household surveys. In the CPS context, for example, in 1983 the survey estimate amounted to 99 percent of the independent estimate for wage and salary income, and about 80 percent for transfer income, but only 45 percent for interest, dividends, net rent, and royalties (BOC 1985e, table A-2). The reasons for this particularly poor showing are not really well understood. Some would probably argue that property income is the most sensitive of the three in the minds of respondents and so they are less likely to provide a complete accounting of it in the survey interview. However, there are also more concrete reasons why property income estimates are deficient. For example, property income has low salience for many people. Its major component, interest income, is generally received in accrued form, that is, it is deposited in the individual's account, rather than paid directly to the recipient on a periodic basis. Furthermore, unlike earnings or a transfer such as social security, it is not the major source of income for most people who receive it. Even when the receipt of property income is reported, obtaining accurate reports of amounts proves difficult. It is received at a relatively disaggregated level, i.e., from multiple interest bearing accounts, various blocks of stock and so forth. This often requires respondents to sum receipts from a variety of individual sources to answer the question put by the survey. Item nonresponse also tends to be quite high, and at least until recently, procedures used to correct for item nonresponse have contributed substantially to the bias observed in the survey aggregates (Oh, Scheuren and Nisselson 1980, Nelson and Welniak 1984, Nelson 1985). Finally, a relatively large share of property income is received by a small percentage of recipients. Without using special procedures, those receiving really large amounts of property income will be under-represented in the survey sample, biasing downwards both the survey means and aggregates. However, it is also possible that defects in the independent estimates themselves overstate the extent of survey bias. Unlike earnings and most transfers, direct sources of information on the amount of property income received by private individuals do not exist. The validity of available independent estimates depends on the correct division of property income flows between private individuals on the one hand and business and the nonprofit sector on the other. Since the share attributed to private individuals is estimated as a residual, it is quite possible that the independent estimates themselves may be flawed. Thus some of the shortfall conventionally attributed to survey estimates may actually be due to flaws in the independent estimates.

SIPP-CPS comparisons.

With these general considerations in mind, we now turn our attention to the survey estimates themselves. In previous sections we have begun with a comparison of SIPP and CPS aggregates and then moved on to recipiency comparisons. The order of presentation will be reversed for property income because of some complications involving the aggregates.

Recipiency estimates. A summary comparison of SIPP and CPS recipiency estimates for interest, dividends, net rent and royalties, and estates and trusts is given in table 18. For all but estates and trusts, the SIPP estimates exceed those from the CPS to a substantial degree (25 percent for interest, 39 percent for dividends and 17 percent for net rent and royalties.)[40] These differences are consistent with those observed between the 1979 Research Panel and the CPS of that period (Vaughan, Whiteman & Lininger 1984, table 1), and so are likely a function of the design and overall context of the SIPP survey. On the other hand, the SIPP estimate of the number of recipients of estate and trust income presents a curious picture, reaching only 40 percent of the number given by the CPS. Although estates and trusts represent a relatively minor source of property income, the much higher CPS recipient estimate clearly indicates a shortcoming in the SIPP measurement procedure. More win be said about this problem later in this section.

Aggregates. Comparison of SIPP and CPS property income aggregates is complicated by four factors.

- **!** A revised imputation procedure was introduced for CPS interest income for calendar year 1984 which substantially increased the CPS interest aggregate. Similar procedures are not currently employed in the SIPP.

- **!** A significant share of the SIPP property income aggregate is accounted for by financial assets of unspecified type. There is no analogous category in the CPS context.

- **!** The SIPP aggregate for royalties is available for calendar year 1984 based on the cross-sectional files, but has not been estimated from the longitudinal research file for the 1983-84 period.

- **!** SIPP estimates exclude property income flows stemming from IRA accounts and Keogh plans. Conceptually, income amounts accruing from these sources are included in the CPS estimates. Assets invested under these arrangements are identified in the SIPP, and associated income is obtained in the annual roundup interview. However, this information has not yet been integrated with the components of property income measured on a sub-annual basis.

In order to address these problems, four sets of comparisons were constructed that permit the effects of these factors to be at least partially isolated (table 19). As in earlier sections, separate panels are given for the period covered by the 1983-84 longitudinal research file and calendar year

[40]The comparison for net rent and royalties is biased in favor of the CPS because the estimate for the SIPP excludes persons who received royalties but no net rental income. While the number of such individuals could be estimated from the SIPP files, it has not, to my knowledge, been produced to date.

1984. These two sets of time period estimates are then differentiated by the type of interest imputation procedure employed in the CPS.

The outcome of the comparison of the total property income aggregates from the two surveys is materially affected by the interest imputation procedure associated with the CPS estimates. When the SIPP is compared to the CPS without the imputation revision, the SIPP property income aggregate exceeds that of the CPS by at least 20 percent.[41] For calendar year 1984, 16 percent of the gross difference in favor of the SIPP is attributable to interest, 25 percent to dividends and 20 percent to net rent and royalties. Nearly 40 percent of the difference is attributable to income received from financial assets of unspecified type. However, when the CPS estimates that include the effect of the revised interest imputation procedure are considered, we see that the moderate SIPP advantage in total property income is largely eliminated, with the SIPP aggregates nominally exceeding those from the CPS by only 3-5 percent. Thus differences favoring the SIPP for other property income components are offset by the effect of the new CPS imputation procedure.

The two individual sources of property income that permit straightforward comparisons are dividends and income from estates and trusts. The patterns of SIPP-CPS differences in aggregates are what would be expected based on the differences seen earlier for the recipient estimates. For both time periods, the SIPP dividend aggregate exceeds the CPS aggregate by a little more than 30 percent. For estate and trust income, the SIPP aggregates amount to only about 60-70 percent of the corresponding CPS aggregates, again indicating a weakness in the former.

The SIPP longitudinal file estimate for net rent and royalties, despite the fact that it excludes amounts for royalties, is essentially equivalent to the CPS estimate pertaining to both categories. Looking at the comparison for calendar year 1984, where both sources are accounted for in each survey, we see that the SIPP aggregate exceeds the CPS estimate by 44 percent. This contrast with the comparison based on the longitudinal file is almost entirely due to the $8.9 billion in SIPP royalty income included in the calendar year 1984 estimate.

The interest aggregate comparison is clearly affected by CPS imputation procedures. When comparing SIPP aggregates to CPS aggregates stemming from the imputation procedure in place prior to 1984, the SIPP aggregate exceeds that of the CPS to a modest degree (roughly 5-10 percent). nus even after taking into account the effects of changes in CPS imputation procedures, the SIPP gains in numbers of interest recipients were not translated into commensurate gains in aggregate income. However, the nominal improvement in the SIPP aggregate is dwarfed by the effects of the improved CPS interest imputation procedures. ne new imputation technique increased the CPS aggregate by more than 20 percent, to the point that it exceeds the SIPP estimate by 10-15 percent.

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[41]If the SIPP estimate for aggregate royalities were available from the longitudinal file, in all probability the total SIPP property income aggregate would exceed that of the CPS by a little more than 25 percent for 1983-84.

The final element in the comparison of SIPP and CPS property income aggregates concerns the relatively large ($15-$16 billion) sum attributable in the SIPP to income from unspecified financial assets. Obviously, the precise nature of this income flow is uncertain, since the underlying asset was identified in the interview only as some form of financial asset other than those specifically listed on the questionnaire. It has no direct counterpart in the CPS context, and is included in the table under a subtotal for income from financial assets for lack of a better alternative. Its significance is illustrated by the fact that in aggregate terms it amounts to roughly half of total dividend income in the CPS for both 1983-84 and calendar year 1984. Obviously, a better understanding of the nature of this income flow is desirable.

Comparison with independent estimates

Overview. Comparison of SIPP and CPS property income estimates has shown notably larger aggregates for dividends and net rent and royalties in the SIPP and, with respect to interest income, has underscored the importance of the new imputation approaches recently implemented in the CPS. Just how significant are these findings in terms of reducing the biases in property income estimates?

The comparison of the survey estimates to independent estimates would seem to offer a ready answer to these questions. Indeed, this comparison will provide a context for assessing the practical significance of the observed SIPP-M differences. However, it is also important to realize that there is a fair amount of uncertainty about the appropriateness of the independent estimates as a guide to assessing the completeness of the survey estimates..

Personal income aggregates for various components of property income, as they appear in the NIA are generally used as the starting point for developing independent estimates applicable to the typical household survey universe, i.e, money income received by the civilian noninstitutional population. When dealing with property income, the major adjustment required to reconcile the concept of personal income (PI) to the survey population involves estimation of the amount of aggregate property income received by the nonprofit sector. On the other hand, the most directly observable property income flows to private individuals that are aggregated to the national level are those captured in the Federal income tax system. While income reported for tax purposes is obviously subject to under-reporting, given the new reporting requirements imposed on financial institutions in recent years it will become more and more difficult for a substantial share of taxable property income of the bulk of individuals to escape the notice of the tax system. For calendar year 1984, there was a discrepancy of about $45 billion between aggregate interest income reported to the IRS and the NIA estimate after an informal adjustment to the survey universe. The discrepancy for dividends, at about $16 billion, was also quite large. These differences represent about 30 and 24 percent, respectively, of the independent estimates derived from NIA aggregates. Certainly some of the gap is attributable to limitations of the IRS information, e.g, interest and dividend income received by legitimate nonfilers, to nontaxable forms of interest and

dividends, and to under-reporting.[42] However, it is also likely that some portion of the gap is due to shortcomings of the accepted independent estimates.[43] From this author's perspective, the truth must lie somewhere within the range set by the IRS-and NIA-based estimates, but just where within that range is less than certain. Based on precedent and conceptual appropriateness, the nod must still be given to the independent estimates derived from the NIA. Nonetheless, comparison of the survey estimates to IRS aggregates provides a useful alternative perspective. With these caveats in mind, we tam to the comparisons of the SIPP and CPS estimates to the independent estimates. The discussion focuses on the three types of income: interest, dividends, and net rent and royalties.

Not rent and royalties. Beginning with net rent and royalties (text table V-1) we see that the CPS estimate of $16.5 billion for calendar year 1983 amounted to only 48 percent of the independent estimate. On the other hand, the SIPP aggregate amounts to about 70 percent of the independent estimate.[44] This represents a considerable improvement, but despite significant SIPP gains in both the number of recipients and aggregate income over the CPS, the SIPP estimate is still a good deal lower than the independent estimate.

Dividends. A broader set of comparisons available for dividend income is given in table 20. Published independent estimates based on NIA personal income aggregates are available for calendar year 1983 (BOC 1985f) and could be readily constructed for calendar year 1984. Thus we can evaluate survey estimates. for 1983-94 and calendar year 1984. ne IRS aggregate for 1984 is included as well.

For the 1983-84 period we see that the SIPP aggregate amounted to 60 percent of the independent estimates derived from the NIA significantly more than the CPS (46 percent of the independent estimate). V the same result obtains for calendar year 1984. However, the SIPP estimate is still rather incomplete when judged by this standard. When compared to the IRS aggregate for 1984, the SIPP estimate appears a good deal more complete, amounting to 80 percent of the $51 billion reported to the IRS compared to 61 percent for the CPS. Obviously, it would be helpful to know which of these two pe es is more nearly correct.

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[42]For a discussion of the relationship between NIA measures of personal income and the IRS measure of adjusted gross income (AGI) see park (1986).

[43]For example, Blume, Crockett and Friend (1974) undertook an extensive study of stock ownership in the early 1970's which included the development of an estimate of dividends payable to individuals. Their estimate for aggregate dividends in calendar year 1971 exceeded the aggregate reported on individual income tax returns by only 6 percent (Ibid, p. 20). On the other hand, an estimate of the amount of personal dividend income received by the CPS population derived from NIA aggregates exceeded the amount reported on individual income tax returns for that year by 19 percent (computations by author).

[44]As in a number of other instances, an independent estimate of aggregate net rent and royalty income is available for 1983 but not 1984. A hypothetical 1983 SIPP aggregate was constructed by multiplying the CPS aggregate for 1983 times the ratio of the CPS and SIPP aggregates for 1984.

There are two additional issues concerning income from dividends that deserve comment. The first has to do with the treatment of dividends stemming from estates and trusts and the second has to do with the impact of the highly skewed distribution of dividend income on the completeness of the survey aggregates.

Income paid to individuals from an estate or trust accrues to the estate or trust itself in the form of dividends, interest, rent, or proprietors income. At the end of each year the recipient of income from an estate or trust obtains a statement apportioning the total for the year among these sources. The amount received as dividends is then reported as dividend income on the individual's tax return. The balance is reported as income from an estate or trust per se and is not distributed by source. The dividend component may also be included in the independent estimates derived from NIA aggregates to represent the survey universe. A difficulty arises in that both the SIPP and CPS ask respondents to report income from an estate or trust making no distinction among the different underlying sources. This is not unreasonable since without consulting tax records, the individual would very probably have great difficulty in apportioning the income among the sources. In the SIPP context this is doubly the case since the information is collected on a sub-annual basis and for time periods for which no accounting has yet been made for tax purposes. Thus it is quite possible that some significant portion of dividend income paid through estates and trusts, indeed perhaps nearly all such income, is identified m the survey as estate and trust income and not dividends. Based on relationships observed in earlier years,[45] as much as a quarter of the gap between the SIPP aggregate and the NIA-based independent estimates could be attributable to dividends included in income from estates and trusts. Were the treatment of estate and trust income to account for a quarter of the gap between the SIPP-and the NIA-based independent estimates, it would necessarily account for a significantly larger share of the SIPP-IRS difference.

Household surveys such as the SIPP and the CPS make use of area probability samples. This is a common practice. Such sample designs generally do not support unbiased estimates of population attributes with highly skewed distributions. Aggregate dividend income is just such an attribute. In 1984, for example, about 33 percent of domestic and foreign dividends reported to the IRS by individual taxpayers were included on the I percent of tax returns with adjusted gross incomes of $100,000 or more. This contrasts sharply with the pattern for other types of income. For example, the top 1 percent of returns accounted for only 7 percent of salaries and wages and 13 percent of interest income (see table 21). Without using special procedures to insure adequate representation of the upper tail of the dividend distribution the survey estimates for mean and aggregate dividend income will be biased. Since such procedures are not employed in either the SIPP or the CPS, such bias may be presumed to exist. Ile degree of the resulting bias is not

[45]According to unpublished worksheets developed by Edward Budd in conjunction with the creation of the 1972 Statistical Match File, dividends distributed to individuals from estates and trusts amounted to about 15 percent of aggregate dividend income receive by the CPS population. In the SIPP context, of course, the impact of decomposing estate and trust income on aggregate dividend income would be enhanced if the difficulty with the basic estate and trust estimate were to be addressed first.

known, but may well be substantial.[46] Importantly, this source of error affects the portrayal of only a very small group in the population and the bias it introduces in estimates of aggregate and mean dividend income is not present in the estimates of dividend income received by the bulk of the population.

Interest. The final set of comparisons to independent estimates concerns interest income. Returning again to table 20, we see that aggregates from both the SIPP and CPS are seriously deficient when judged by the NIA-based independent estimates. When the o CPS hot deck imputation procedures are employed, the CPS aggregates for 1983-84 and calendar year 1984 amount to just 43-44 percent of the independent estimates. The SIPP aggregates, at 45-48 percent of the independent estimates, are only marginally more complete. While the revised hot deck procedure boosted the CPS aggregates by about 25 percent and raised them above those of the SIPP, from the perspective of the NIA-based independent estimates, more than two-fifths of the interest income received by the survey population remains unaccounted for. Comparison of the survey results to the IRS aggregate puts the survey estimates in a somewhat more favorable light. The CPS aggregate bolstered by the revised hot deck procedure amounts to 79 percent of the IRS aggregate for 1984; the SIPP to 65 percent of the IRS figure; the CPS employing the o hot deck procedure to only 62 percent. Clearly the SIPP estimates are deficient regardless of whether the perspective is that of an NIA-based independent estimate or what is reported to the IRS. The same may be said of the CPS estimates, with the exception that when the revised hot deck imputation procedure is employed, the CPS estimate does reach nearly 80 percent of the amount of interest reported to the IRS. This only serves to underscore the importance of the innovations in the CPS interest imputation procedures.

Improving the SIPP property Income estimates. There are a number of prospects for significantly improving both our understanding of SIPP estimates of property income and their completeness. To some limited degree, modifications in the data collection procedures themselves are likely to lead to the clarification and improvement of existing estimates. However, apart from probable gains in the measurement of income from estates and trusts that will be discussed later in this section, it seems unlikely that substantial reductions in the bias affecting other sources of property income are attainable through modifications in the questionnaires or other aspects of the data collection procedure.

Interest, dividends and corresponding asset values. Opportunities do exist for markedly improving SIPP estimates of income received from financial assets, principally interest and dividends. Having substantially reduced the bias m the survey estimates for these two sources of property income, the Bureau could then proceed to construct much more complete estimates of

[46]However, the recent experience of the 1983 Survey of Consumer Finances is suggestive. Avery and his colleagues (Avery, Elliehausen and Kennickell 1987) find that inclusion of a high income frame increased the estimate of aggregate stock and mutual fund value by 160 percent. Were the SIPP dividend estimate to be biased to a similar degree by the frame problem, its correction would raise the dividend aggregate to 128 percent of the amount reported to the IRS and to 97 percent of the NIA-based independent estimate. However, a frame effect of this magnitude seems unlikely in the SIPP context.

financial assets as well. Thus an improvement m SIPPs basic income estimates would yield important returns for SIPP wealth measures, especially for the vast majority of consumer units falling below the upper tail of the wealth distribution. All the elements necessary to supplement these improvements have already been undertaken at one time or another at the Bureau of the Census or elsewhere in other contextx, and the necessary data base development work required to support these improvements in the SIPP context is well under way.

Fundamentally, the basic notion for improving the SIPP estimates for interest and dividend income is deceptively simple . . . merely introduce matched IRS microdata into the post-collection estimation process. The Bureau has taken this approach in its -revision of the CPS hot deck imputation procedure for interest income. Given that files with calendar year reference periods have been developed for the SIPP and the SIPP has been matched to the IRS Individual Master File (IMF), replicating and wending this work in the SIPP context is now possible.

In the CPS context, the Bureau used data from the IMF to eliminate the bias (with respect to the IMF interest amounts) in the CPS interest imputation procedure (Nelson & Welniak 1984, Nelson 1985). We saw earlier the results of this innovation. Simply by eliminating the bias in the imputation procedure, the CPS interest aggregate increased from 62 to 79 percent of the IRS aggregate. What was not shown is that the imputed aggregate itself increased by 157 percent. Still the remaining bias in both the reported and imputed amounts was left standing so that in the final analysis, the CPS aggregate still fell considerably short of what was reported to the IRS. What might have been undertaken, but was not (reflecting perhaps a sensible conservatism on the part of Bureau staff), was an adjustment of the CPS interest microdata that fully reflected the available IRS information. Such an extended adjustment would correct not only for bias in the item non-response procedures but also for non-reporting and under-reporting by those reporting amounts. Such a full adjustment should be undertaken in the SIPP context and be extended to dividends as well as interest income. The effects of nonsampling error with respect to reports to the IRS could be eliminated, and the impacts of frame effects on aggregate and mean dividend income could be estimated directly.

The SIPP environment offers important advantages over the CPS for implementing such an approach. One important consideration is the quality of the linkage between the survey and IRS data. Compared with the CPS, a SIPP/IRS linkage will prove to be both more valid and more complete. This stems directly from the attention given to the collection and validation of social security numbers (SSN's) in the SIPP (Kasprzyk 1983, Bowie 1986).[47] Typically, only 80 percent of sample adults report SSN's in the CPS context, and past research has shown that an additional 5-6 percent of reported SSN's are invalid (Scheuren, Vaughan & Alvey 1975, pp. 91-92). It is the rare exception that SSN's collected in the CPS are validated by cross-checking with information contained in Social Security Administration program files. This situation contrasts sharply with

[47]The improvements in the quality of SSN information in the SIPP stem directly from research into the weaknesses in the SSN collection process in the CPS context (Vogel & Vaughan 1975). SIPP procedures were expressly designed to avoid problems identified in the CPS.

circumstances in the SIPP. In the 1984 panel for example, validated SSN's are available for at least 95 percent of o sample adults (Bowie 1986).

A second advantage of implementing this approach in the SIPP is the survey's demonstrated advantage in the measurement of transfer income. At this early stage in the SIPP program important gains in the measurement of transfer income are clearly evident relative to the CPS. The greater flexibility of the SIPP environment suggests that it is not unreasonable to expect additional improvements in the future. The CPS, on the other hand, presents few prospects for obtaining analogous improvement in the measurement of transfer income. In the SIPP context, improved estimates of Property income would be accompanied by better estimates of transfer income as well.

The third, and perhaps most important advantage, is the payoff for improved wealth measurement An important dimension of SIPP analytic potential is its measurement of net worth, an aspect of economic resources left untouched by the CPS. It will come as no surprise that the SIPP wealth measures are subject to significant biases, just as we have seen its property income measures to be, and as is the case in all household surveys which attempt to measure wealth. Introduction of IRS microdata in the SIPP will provide significant leverage for the reduction of these biases. By capitalizing property income flows which have been adjusted to reflect IRS values at the microlevel, it would be possible to move from improved estimates of income to similarly improved estimates of the associated asset values. This sort of an approach has been undertaken for a range of asset types in other contexts (Greenwood 1983; 1987) and has been the subject of fairly exhaustive treatment in the estimation of stock and mutual fund value (Blume, Crockett & Friend 1974). Obviously, the trick is to select appropriate rates of return at the micro-level. The joint collection of property income and asset values in the SIPP should make this somewhat easier than is the case in other contexts. This is especially true in regard to interest bearing assets because the SIPP has a rich set of information defining individuals' interest bearing portfolios; varying portfolio structure is clearly related to rates of return (see table 22).[48]

Having employed the matched IRS microdata to substantially reduce bias in reported income amounts, differential rates of return tied to portfolio structure and other relevant factors would then be applied to obtain similarly improved estimates of the value of interest bearing assets. Selecting appropriate rates of return to apply to dividends would be more difficult, since, at least initially, an approach as thorough as that undertaken by Blume and his colleagues would not be feasible. Still careful is of observed rates of return in the uncorrected survey data may yield useful insights into systematic variations in rates of return across population subgroups of interest.

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[48]The Bureau's current edit and imputation procedures make use of rates of return to deal with both missing interest income amounts and missing values for interest bearing assets. Since current procedures were necessarily designed and implemented before extensive analyses of the SIPP data were feasible, they have yet to be optimized. Review of the variation in implied rates of return across portfolio structure indicates that use of portfolio specific rates of return would increase aggregate interest income by about 8 percent. Conversely, the aggregate value of interest bearing assets would decline somewhat.

In the final analysis, one could look forward to estimates of financial assets that are unbiased with respect to corresponding property income flows reported to the IRS. Importantly, the measurement gains would accrue across most of the distribution; they would not merely be reflected in less biased means and aggregates. To the extent that property income amounts reported to the IRS by the bulk of the population are, or may be expected to become, relatively complete, the SIPP would end up with similarly complete estimates of financial assets below the upper tail of the wealth distribution. This would represent a major advance in the development of wealth estimation in the United States.

Every effort should be made by the Bureau to extend the reach of these procedures to the nonfiler population. While this would require the use of information not employed by the Bureau to date in its work with the CPS (primarily data from various 1099 reports), given SIPP's emphasis on program participation and low income, it is quite important to reduce the extent of uncertainty surrounding estimates of property income and financial assets in the lower portion of the income distribution. In particular, confidence in the simulation of the effects of asset tests on participation in means-tested transfer programs could be significantly enhanced.

As the Bureau of the Census moves to take advantage of these opportunities, care should be given to preserving and enhancing the ability to construct person-based wealth distributions. A unique feature of the SIPP wealth the support of person as well as and household as a basic unit of analysis, will allow better integration of the survey estimates with those given by the estate multiplier technique. While the ability to more clearly relate these ,two classes of wealth estimates is of considerable interest in its own right, given that SIPP sample design limitations rule out adequate representation of the upper tail the integration of the basic survey estimates with those based on estate multiplier techniques is all the more important.

Estates and trusts. As we seen, SIPP estimates for estate and trust income are dearly deficient in comparison with those from the CPS. Some evidence of a weakness in the estate and trust estimates was noted for the 1979 Research Panel as well (Vaughan 1984, p. 110). It was the only type of asset income for which Research Panel recipient estimates did not substantially exceed those from the CPS of that period. The recurrence of this finding in even stronger form suggests that there might be some basic weakness in the SIPP measurement procedure.

A review of the SIPP and CPS questionnaires uncovered a major difference in the way that estate and trust recipiency is established in the two surveys that quite probably accounts for the problems with the SIPP estimate. The SIPP employs various recipiency modules that focus recipiency questioning according to events, statuses, or attributes which are closely related to the receipt of one or another general category of income (work at a job, disability, retirement widowhood, asset ownership and so forth). Since 1979-80 the CPS has also employed a recipiency module approach. In the CPS, estates and trusts are included in two CPS recipiency modules, survivor's income and assets. In the SIPP, on the other hand, recipiency of estate and trust income is established solely in the survivor's income module. Thus it is very likely that estate or trust income (presumably trust income for the most part) which is not received as a

survivor will be missed in the SIPP but identified in the CPS. If this is so, a simple tabulation of CPS and SIPP recipients by marital status should indicate that nearly all estate and trust recipients in the SIPP are widows while in the CPS the majority are not widows.

If such a pattern were to be confirmed, the addition of an item on estates and trusts in the asset portion of the recipiency section of the initial interview questionnaire would probably eliminate the weakness in the SIPP estimate. An additional item should also be introduced in the tax module of the annual roundup interview to determine the disposition of estate and trust income between dividends and other sources.

Text table V-1. Net Rent and Royalties

Aggregate income in billions			Survey as % of the independent estimates	
Independent estimate	SIPP	CPS	SIPP	CPS
$34.4	$23.8	$16.5	69.4	48.1

VI. The Analytical Potential of SIPP Income Data

Overview.

In large measure the perspective taken so far in this paper is much akin to that of an accountant. The question asked and answered (at least partially) over and over has been, “How much income of a particular type is there and of that income, how much was identified in the survey?" This is not, of course, an unimportant question. Household surveys are notorious for yielding seriously biased measures of income.

It is more true, however, that a survey that completely enumerated income, yet did nothing else, would be supremely uninteresting as an information resource for social scientists and public policy researchers. Thus, what is fundamentally of interest with regard to the SIPP ill-defined level of quality, is the income data, presuming that they meet some company they keep-

The context of Income measurement

In the simplest of terms, this context is summed up by the statement read to respondents at their very first introduction to the SIPP, "This survey is about the economic situation of people living in the United States." For a general population survey, the SIPP takes an unprecedentedly broad, if not fully comprehensive, view of the elements defining people's economic situation. It is this perspective which in large measure makes the SIPP income information stand out in comparison with most other survey data sets which touch on the economic circumstances of the population. This is most particularly so with regard to the income information available from the CPS. Consider, for a moment, some of the dimensions other than income and the standard set of sociodemographic variables which are dealt with by the survey:

- labor force activity,
- assets and wealth,
- pension coverage,
- health insurance coverage,
- disability and health status,
- work history,
- marital and family history,
- educational costs and financing,

- shelter costs and work expenses,
- child care arrangements and costs, and
- inter-household transfers of income and support services.

Clearly, the survey makes a substantial attempt to define both the resources and the needs which intersect to determine the economic circumstances of the individual and his immediate family. Still this is a fairly pedestrian collection of domains. What makes them of more-than-common interest is that they are observed simultaneously (or approximately so) for one sample of individuals.

Longitudinality.

The SIPP adds two further dimensions, both very powerful and one wholly unique, or nearly so. The first is the SIPP's longitudinality, that is, a substantial subset of SIPP domains are observed dynamically so that the relationship between changes in one domain and changes in another can be observed (but naturally not without some significant component of error). It is, however, a critical element adding to the interest in the SIPP income data.

Program structure.

The final and the essentially new element in the SIPP, is its emphasis on the detailed representation of the structure of public and private transfers and the Federal income tax system. No other survey goes to such lengths to lay out the intersection of program structure with the population of current participants, eligibles, and taxpayers and does so in such a way that this structure may be meaningfully related to their current and future economic circumstances, broadly defined. Consider, for a moment, some of the more important elements of program structure represented in the survey data set.

Units. In addition to the traditional economic units of persons, families and households, the SIPP adds new and interpenetrating aggregations of individuals related in cash public assistance units, Food Stamp units, Medicaid and private health insurance units, Social Security units, and Federal tax an units.[49] These aggregations and their intersections with each other and traditional economic units may be used either directly for analytical purposes or to enhance the validity of statistically matched program characteristics that are too detailed to be obtained via the interview process but which are important for finer grained policy analyses.

Unit of account. The SIPP offers the two basic accounting units of the tax (calendar year) and transfer system (month) required both to simulate program participation and tax paying on the

[49]The survey even identifies tax dependents who are not members of the dwelling unit, a seemingly small detail of considerable interest to tax modelers (McClung 1986, p. 107).

one hand and properly understand the incidence of benefits within the overall income distribution on the other. The month is, of course, the innovative unit of time added by the SIPP and it forms the most pervasive unit of time measurement in the survey. As such, it also defines the basic subunit of change. This is wholly appropriate since the basic unit of account in the transfer system is also typically its fundamental unit of change.

The categorical basis of transfers. Central to the whole system of transfers in the United States is the notion of earnings replacement. It is presumed that individuals will provide for themselves and their dependents through exchange of their labor for earnings. In a limited number of exceptional circumstances, the individual is also presumed to have claim on the broader community for at least some minimal level of financial support In technical jargon, these circumstances are known as categorical eligibility criteria, the main ones being retirement, disability, survivorship, unemployment, and, in the case of minor children, the absence or incapacitation of a parent. In some instances, such as unemployment or the absence or incapacitation of a parent, the identification of the applicable transfer (e.g., unemployment compensation and AFDC) is tantamount, or nearly so, to the identification of the categorical basis of eligibility. But this is not always the case. Thus for transfers stemming from employee pensions, Social Security, and the Food Stamp program, the ,.beneficiary population is significantly differentiated both in basic life circumstance and in articulation with program structure on the basis of some or all of these criteria.[50] In the usual household survey, these distinctions are not observable. In the SIPP they are well delineated.

The treatment of the Federal Income tax system as a program. Few, if any, household surveys other than SIPP attempt to collect significant amounts of information defining the articulation between the individual and the tax system on a recurring basis. While the CPS has been used extensively to model the tax system, often through augmentation via statistical matching, many important issues cannot be addressed since it is the variation among variables whose covariance is rarely directly observed that is at issue and that must be assumed to add a reasonably full set of tax variables to the CPS.

Triest (1988) provides a suggestive example of the type of problem that can be addressed by data sets in which the relevant variables are observed simultaneously. He notes that the recent U.S. income tax reform combines marginal tax rate reductions with restrictions on the extent of deductions, and argues that despite the importance of this subject, we know very little about the effect of itemized deductions and other tax preferences on the response of labor supply to income taxation. Using data from the 1979 SIPP pilot panel Triest attempts to model the relative effect of marginal tax rates and itemized deductions on labor supply. Although cautious in his interpretation, he feels his empirical results are consistent with the view that the tax system's effect on the relative price of deductible expenditure s has a much stronger impact on labor supply than through its effect on net wage. Without direct measurement of how key structural features

[50]For an example of the exploitation of this capability within the SIPP for the OASDI program see Vaughan (1989).

of the tax system, most critically the itemization status of the tax payer, impinge on individual tax-paying families, this sort of analysis would not be possible. It is certainly noteworthy that the SIPP program has collected a similar set of data for each calendar year since 1984 throughout the whole period of rapidly failing marginal rates. Presumably it was the desire to exploit research opportunities such as the one taken by Triest that led McClung (1986) to stress the critical need for more "actual' data as the proper foundation for the growth in our understanding of the operations of the tax and transfer system.[51]

Matching to administrative records. Finally, the SIPP has removed the technical barriers to the routine matching of survey and administrative data. While the survey contains a great deal of valuable programmatic information in its native data set, some important dimensions of program structure and the individual's history of program interaction simply lie beyond the grasp of household interview technique. A prime example relating to the interests of my own agency, the Social Security Administration, is the earnings records of current and future beneficiaries. Accurate assessment of many sorts of policy alternatives requires the simulation of benefit streams tied to the individual's earnings contributions. These are only accessible with sufficient precision via an exact match between the household survey and SSA's administrative records.

Major institutional and legal barriers combine to inhibit the full and expeditious exploitation of the potential offered by exact-matching at the present time. Creative and vigorous leadership will be required to find a way to balance the legitimate claims of privacy and confidentiality on the one hand with our society's need for increased self-knowledge on the other.

VII. Summary and Conclusions

Summary of Findings.

This review of the quality of SIPP cross-sectional income estimates has yielded a number of findings. There are four principal conclusions to be entered on the positive side of the ledger.

- The SIPP has obtained substantial gains over the CPS in the measurement of public and private transfers.

[51]Specialists at a recent conference on the effect of taxation on labor supply sustain this view. In reviewing the results of empirical work, the participants concluded that economists may have mismeasured the incentive structure which the tax system presents to families because of lack of adequate data. It was noted that:

> In most data sets, ... no information is available on the family's filing status, itemization status, number of exemptions, types and amounts of deductions, and so on. Instead, a standard tax rate schedule must be imputed to each family using simple socio-demographic characteristics such as family size and marital status. There is unquestionably significant error in this procedure, as it is well known that the situations of demographically identical families can be very different (Moffit, 1989, p. 7).

- The SIPP measures of wage and salary earnings are broadly similar to those available from the CPS, but there is evidence that the SIPP identifies more recipients who do not work year-round, full-time at their jobs and, in addition, provides a more valid representation of the population of year-round, full-time wage and salary recipients. Among other things, this means that the SIPP offers an improved representation of the relationship between annual work experience and annual wage and salary earnings.

- There is clear evidence that the SIPP estimates of property income receipt are substantially more complete for the principal sources of property income (interest, dividends, and net rent and royalties) than those from the CPS. More complete recipiency estimates are reflected in markedly larger aggregates for dividend income and net rent and royalties.

- The impact of item nonresponse has been materially leaned in the SIPP. In contrast to the CPS, failures to answer questions on receipt of income are relatively rare, and nonresponse on income amounts per se is also a good deal lower. As a result the percentage of aggregate income attributable to imputation is approximately half that of the CPS.

Not all the news is good news however. Despite notable accomplishments some problem areas remain. SIPP sub-annual wage and salary amounts, for example, appear to be slightly biased relative to CPS estimates. While not of major concern, it does deserve attention. in regard to transfer income, it is particularly noteworthy that SIPP estimates of unemployment compensation show little ff any improvement in completeness over CPS estimates, and while public assistance income is more hilly reported than m the CPS, AFDC estimates per se still appear to be subject to problems of mis-classification. Income from workers compensation and associated sources remains seriously under reported. Finally, property income aggregates, while substantially exceeding those of the CPS for some components, remain well below independent estimates. Interest income, in particular, is substantially under reported.

Measurement Improvements.

This review has also suggested things which could be done to further improve SIPP income estimates and our understanding of them. There are four relatively simple steps which could be taken in the short run that might well yield positive measurement results.

- Workers' compensation should be added to the survivor's recipiency module.

- The recipiency items focusing on private pensions should be modified to make reference to profit plans.

- An item should be added to the annual round-up questionnaire in the income tax

module to determine the disposition of estate and trust income between dividends and other sources.

- Wave-to-wave changes in recipiency estimates for unemployment compensation should be closely monitored to insure that measurement failures m the recipiency update procedure like those which occurred in the SIPP development panels are avoided.

Over the medium term there are additional steps that would contribute to our understanding of the SIPP measurement process and could reasonably be expected to yield improved estimates through the introduction of recipiency edits, improved interviewer or relatively minor changes in recipiency measurement techniques. A modest research effort would be required in each case.

- The effect of mis-classification on AFDC recipiency measurement needs to be rigorously assessed. Work by Ruggles and Coder (1988) makes a very useful start in this direction. Their results should be carefully reviewed and reconciled with independent estimates to determine if recipiency edits could be introduced to successfully deal with the problem. The findings from the Bureau's ongoing record check studies may also prove useful in dealing with the mis-classification problem. Modest modifications to data collection techniques should also be considered.

- The characteristics of the relatively large number of unclassified retirement, survivor, and disability payments should be investigated. This could be accomplished by reviewing interviewer comments entered on questionnaires from past interview cycles or by making a special request for interviewers to annotate such recipiency reports during the initial recipiency interview of a future panel.

- The nature of income from unspecified types of financial assets should be similarly investigated.

- SIPP's sub-annual measures of self-employment income should be further investigated by exploring the relationship between business equity, net self-employment income, business withdrawals, and shadow wage estimates.

- It is likely that the shortfall of the SIPP estimates and trust income relative to the CPS arises from failure to establish receipt for individuals other than widows. Annual estate and trust aggregates from the SIPP and CPS should be tabulated by marital status, and if the results indicate that the SIPP-CPS difference is attributable to a shortfall in the SIPP estimates for persons other than widows, an item on estate and trust income should be added to the SIPP asset ownership module.

- The operation of skip patterns preceding the unemployment compensation recipiency items in the SIPP income update questionnaires should be reviewed to determine if they might contribute to a decline in recipiency levels after the initial interview.

- The possibility that veterans' payments are being mis-classified as U.S. military retirement pay should be assessed using the items that were included in the SIPP questionnaire for this purpose. If a significant amount of mis-classification is detected, the implementation of recipiency edits to correct the problem should be considered.

- As suggested by Coder (1988), comparisons between the summed sub-annual and annual roundup measures for wage and salary amounts should be fully exploited to learn more about the measurement characteristics of the sub-annual estimates.

- As outlined in the body of this report, the impact of eliminating the item on retirement as a reason for not working should be investigated to determine if the pool of respondents asked about retirement pensions was reduced by the elimination of this item.

- More could be learned about the completeness of SIPP estimates of private employee pensions by identifying the subset of SIPP pension recipients who belong to the tax-filer population (using information available from the annual roundup interview) and malting the relevant comparisons to IRS aggregates.

- The Bureau needs to devote more attention to the development of an ongoing set of independent estimates which are appropriate to the survey population and to survey income concepts. Particular attention should be given to improving techniques for constructing independent estimates for private pensions, interest, and dividend income.

In the longer run, the single most important and difficult task facing the Bureau in the arena of cross-sectional cash income measurement is to improve SIPP estimates of interest and dividend income. While modest advances may be expected by perfecting the SIPP item nonresponse adjustments and by placing them on the same footing as those employed in the CPS, substantial and fundamental reductions in bias are contingent on the introduction of administrative information directly into the post-collection estimation process. Every effort should be made to undertake these adjustments for the nonfiler as well as the tax-filer population so that reductions in bias will accrue over as much of the income distribution as possible. With sufficient persistence and skill this approach could place SIPP measures of property income on essentially equal footing with those of earnings and transfers. Extensions of the adjustment process by means of capitalization techniques could also lead to unprecedented reductions in the bias affecting survey measures of financial assets. Attainment of these goals would certainly be worth the very

considerable effort that would be required.

Conclusion.

In closing, it is worthwhile to recall that while the measurement properties of the SIPP income data are very important, fundamentally the SIPP income data are unique because of the company they keep, that is:

- broad definition of economic resources,
- a detailed representation of government tax and transfer structure as it relates to the economic circumstances of families and individuals,
- the collection of a large amount of contextual information that serves to condition behavior and economic needs, and finally,
- the measurement of monthly change for a large subset of the SIPP core variables.

Footnote Table 1. Comparison of SIPP and CPS estimates of the number of persons 16 years or older in 1983414 (In Thousands) (a)

	Number of persons age 16 or older in 1983-84 in thousands		
Element	**Total**	**Males**	**Females**
SIPP {b}	176,163	93,620	92,543
CPS {c}	177,720	94,711	93,009
Difference			
Number	-1,557	-1,091	-466
As a % of CPS	-0.9	-1.3	-0.5

{a} Civilian noninstitutional population and Armed Forces members living off base or on base with families.

{b} As of month 12 of the SIPP Longitudinal Research File, or on average, July 1984.

{c} Weighted average of estimates of the population as of March 1984 and March 1985. The time-weighted estimate pertains to mid September, 1984.

Source: Unpublished tabulations of the SIPP Longitudinal File and the March 1984 and 1983 Current Population Survey public use files produced at SSA.

Footnote Table 2. Comparison of SIPP and CPS annual wage and salary means and aggregated wage and income by annual work experience after hypothetical adjustment of the SIPP aggregate to the levels reported in the annual roundup interview.

Element	Total	Year-round, full-time	Other
MEAN AMOUNTS			
CPS	$15,132	$21,499	$6,391
SIPP	15,262	22,831	6,709
Difference {a}	130	1,332	319
As percent of CPS	0.9	6.2	5.0
AGGREGATE INCOME {b}			
CPS			
Untopcoded, age 15 or older	1,699.7	--	--
After topcoding, age 16 or older	1,693.7	1,392.4	301.3
SIPP			
Age 16 or older, adjusted to round-up			
All cases	1,730.8	1,373.6	357.2
Difference {a}	37.1	-18.9	55.9
As percent of CPS	2.2	-1.4	18.6

{a} SIPP-CPS.
{b} In billions.

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Table 1.--Comparison of CPS and hypothetical(a) SIPP Income aggregates for selected types of transfer income to independent estimates by type of transfer income calendar year 1983

(Income in billions)

Type of Income	Independent Estimate	Survey estimate		Survey short-fall			Survey as % of independent est.	
		CPS	SIPP-H{a}	CPS	SIPP-H{a}	Percent reduction in short-fall	CPS	SIPP-H{a}
Total	$336.4	$277.6	$306.0	$58.8	$30.4	48.3	82.5	91.0
Social Security and railroad retirement	155.2	142.3	153.8	12.9	1.4	89.1	91.7	99.1
Pensions	102.2{b}	79.7	91.0	22.5	11.2	50.2	78.0	89.0
Unemployment compensation	26.1	19.7	20.0	6.4	6.1	4.7	75.5	76.6
Veterans' Payments	14.0	8.8	11.5	5.2	2.5	51.9	62.9	82.1
Public assistance{c}	24.8(d)	20.5	22.3	4.3	2.3	41.9	82.7	89.9
Worker's compensation and related income	14.1	6.6	7.4	7.5	6.7	10.7	6.8	52.5

(a)Constructed by adjusting the 1983 CPS aggregates by the ratio of CPS to SIPP aggregates by type of transfer income as observed for calendar year 1984.
(b)Constructed by author. See table 13, notes b-d.
(c)Includes AFDC, SSI, general assistance, and other cash welfare.
(d)Includes an adjustment of the published independent estimate to account for aggregate general assistance payments. Survey estimates also include general assistance and other cash welfare.

Sources: U.S. Bureau of the Census, "Money Income of Households, Families and Persons in the United States: 1983," Series P-60, No. 146, Table A-2; table A-1, this paper; and summarization of unpublished Census Bureau tabulations..

Table 2.--Average monthly number of recipients and average monthly aggregate benefits by quarter, 1983 - 1984, with comparison to independent estimates(a)

Recipients and aggregate income by source	Average monthly estimate						
	1983		1984				
	Third Quarter{b}	Fourth Quarter	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual
Social Security							
Recipients							
Independent estimate	31,958	33,087	33,254	33,190	33,197	33,438	33,270
Survey estimate	31,710	31,857	32,370	32,432	32,376	32,604	32,446
As percent of the independent estimate	99.2	96.3	97.3	97.7	97.5	97.5	97.5
Aggregate income							
Independent estimate	12,444	12,498	13,054	13,111	13,129	13.247	13,135
Survey estimate	12,396	12,571	13,113	13,254	13,299	13,461	13,282
As percent of the independent estimate	99.6	100.6	100.5	101.1	101.3	101.6	101.1
Unemployment Compensation							
Recipients							
Independent estimate	2,962	2,734	3,608	2,662	2,456	2,590	2,834
Survey estimate	3,040	2,878	2,982	2,212	1,927	2,462	2.396
As percent of the independent estimate	102.6	103.4	82.6	82.5	78.5	95.1	84.5
Aggregate income							
Independent estimate	1 140	1,117	1,415	1,079	949	969	1.103
Survey estimate	1,150	1,193	1,206	897	762	978	961
As percent of the independent estimate	100.9	106.8	85.2	83.1	80.3	100.9	87. 1
Veteran's compensation or pension							
Recipients							
Independent estimates	3,938	3,977	3,913	3,859	3,824	3,815	3,853
Survey estimate	3,511	3,568	3,546	3,503	3,435	3,558	3,511
As percent of the independent estimate	89.2	89.7	90.6	90.6	89.8	93.3	91.1
Aggregate income							
Independent. estimate	1,046	1,047	1,044	1,063	1,046	1,037	1,048
Survey estimate	825	837	814	792	798	827	808
As percent of the independent estimate	78.9	79.9	78.0	74.5	76.3	79.7	77.1

See notes at end of table.

Table 2.--A monthly number of recipients and average monthly aggregate benefits by quarter, 1983 - 1984, with comparisons to independent estimates(a), CONT.

Recipients and aggregate income by source	Average monthly estimate						
	1983		1984				
	Third Quarter{b}	Fourth Quarter	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual
Aid to Families with Dependent Children							
Recipients							
Independent estimate	3,642	3,652	3,698	3,697	3,624	3,609	3,655
Survey estimate	2,859	2,894	3,129	3,171	2,973	2,913	3,047
As percent of the independent estimate	78.5	79.2	84.6	86.0	82.0	80.7	83.4
Aggregate Income							
Independent estimate	1,185	1,159	1,159	1,175	1,183	1,200	1,179
Survey estimate	903	910	989	1,010	949	945	973
As percent Of the independent estimate	76.2	78.5	85.3	86.0	80.2	78.8	82.5
General Assistance							
Recipients							
Independent estimate	***	***	***	***	****	***	***
Survey estimate	975	1,009	1,084	1,027	967	933	1,003
As percent of the independent estimate	***	***	***	***	***	***	***
Aggregate income							
Independent estimate	***	***	***	***	***	***	203 {c}
Survey estimate	197	200	212	202	186	179	195
As percent of the independent estimate	***	***	***	***	***	***	95.9
Supplement Security Income {d}							
Recipients							
Independent estimate	3,482	3,524	3,545	3 574	3,612	3,637	3,592
Survey estimate	3,205	3,216	3,362	3,492	3,549	3,568	3,493
As percent of the independent estimate	92.0	91.3	94.8	97.7	98.3	98.1	97.2
Aggregate income							
Independent estimate	748	742	772	783	785	791	783
Survey estimate	672	694	774	763	774	785	767
As percent of the independent estimate	89.8	93.5	96.4	97.4	98.6	99.2	97.9

(. . .) - Not available.

{a} Based an monthly program data adjusted to the survey universe using ratios of the survey to total payee population derived for 1979.

{b} September only.

{c} Bureau of Economic Analysis.

{d} Federally administered payments only.

Table 3. Assessment of the impact of possible misreporting of AFDC as other forms of cash welfare on survey estimates of the average monthly number of AFDC cases and average monthly aggregate benefits by quarter, 1983 - 1984.

Cases and aggregate benefits	Average monthly estimate						
	1983				1984		
	Third Quarter{a}	Fourth Quarter	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual
Independent estimate	3,642	3,652	3,698	3,687	3,624	3,609	3,655
Survey estimate							
Reported as AFDC per se	2,859	2,894	3,129	3,171	2,973	2,913	3,047
As percent of the independent estimate	78.5	79.2	84.6	86.0	82.0	80.7	83.4
Possibly misreported as other forms of P.A.{b}	339	379	408	396	385	395	396
As percent of the independent estimate	9.3	10.4	11.0	10.7	10.6	10.9	10.8
Sum of reported and possibly misreported	3.198	3,273	3,537	3,567	3,358	3,308	3,442
As percent of the independent estimate	87.8	89.6	95.7	96.7	92.7	91.7	94.2
AGGREGATE INCOME							
Independent estimate	1,185	1,159	1,159	1,175	1,183	1,200	1,179
Survey estimate							
Reported as AFDC per se	903	910	989	1,010	949	945	973
As percent of the independent estimate	76.2	78.5	85.3	86.0	80.2	78.8	82.5
Possibly misreported as other forms of P.A.{b}	84	94	98	99	90	89	94
As percent of the independent estimate	7.1	8.1	8.5	8.4	7.6	7.4	8.0
Sum of reported and possibly misreported	987	1,004	1,087	1,109	1,039	1,034	1,067
As percent of the independent	83.3	86.7	93.8	94.4	87.9	86.2	90.5

{a}September only.

{b}A married spouse absent, separated, divorced, widowed, or never married parent living with own children under age 18 and reporting receipt of General Assistance or other cash welfare, type not specified.

Table 4. — Distribution of persons receiving food stamps by number of months food stamps received, 1983-1984: SIPP and CPS

Months of receipt	SIPP		CPS		CPS as percent of SIPP
	Number	Percent distribution	Number	Percent distribution	
Total	25,677	100.0	20,358	100.0	79.3
Twelve	13,301	51.8	12,599	61.9	94.7
One - eleven	12,376	48.2	7,760	38.1	62.7

Source: Coder, Burkhead, Feldman-Harkins and McNeil, 1987 (table 9, p.21) and public use file tabulations from the March 1984 and March 1985 CPS

Table 5.--Comparison of survey estimates of the average monthly number of Food Stamp households, recipients and aggregate coupon value to independent estimates by calendar quarter, 1983 - 1984

{Persons and units in thousands, coupon value in millions}
Average monthly estimates by calendar quarter

Element	1983	1984			
	Fourth Quarter	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Independent Estimates					
Units	7,604	7,755	7,585	7,239	7,291
Persons	20,974	21,382	20,820	19,857	19,841
Coupon value	$904	$918	$884	$840	$896
Survey Estimates					
Units	6,746	6,917	6,812	6,416	6,523
Persons	19,080	19,448	18,869	17,921	18,181
Coupon value	$752	$782	$765	$711	$749
Survey as percent of independent estimates					
Units	88.7	89.2	89.8	88.6	89.5
Persons	91.0	91.0	90.6	90.3	91.6
Coupon value	83.2	85.2	86.5	84.7	83.6

{a}Excludes program activity In Gum, the Virgin Islands, and under the SSI Elderly Cash Out Demonstration Projects.

Source: BOC, Series P-70, U.S. Department of Agriculture, Food and Nutrition Service. Food Stamp Program. unpublished data.

Table 6.-- Number and percent of persons covered by Medicaid by age, 1983-1984: SIPP and CPS SIPP CPS

Age	SIPP		CPS		CPS rate as % of SIPP rate
	Number	Coverage Rate	Number	Coverage rate	
Total	21,221	9.3	19,319	8.3	89.4
Under age 18(a)	8,967	14.5	8,195	13.1	90.5
Age 18 or older	12,254	7.4	11,125	6.5	88.9

{a}Includes householders under age 18.

Source: Coder, Burkhead, Feldman-Harkins and McNeil, 1987 (Appendices H & I), U.S. Bureau of the Census, Series P-60, Nos. 148 and 150 (tables 3 & 9).

Table 7.--Estimates of the number of unemployment compensation recipients and aggregate benefit amounts January - April, 1979, based on the 1979 Research Panel of the Income Survey Development Program (ISDP), by mode of estimation

Mode of estimation and weighting scheme	Recipients in 1000's				Aggregate payments in millions			
	Jan	Feb	March	April	Jan	Feb	March	April
Combined wave estimates								
First interview share	3,029 (a)	2,234 (b)	1,073 (c)	***	$927 (a)	$708 (b)	$293 (c)	$ . . .
Second interview share		***	873 (c)	1,697 (b)	2,047 (a)	***	252 (c)	478 (b)	541 (a)
Calendar month estimate		3,029 (a)	3,107 (a)	2,770 (a)	2,047 (a)	927 (a)	960 (a)	771 (a)	541 (a)
Single wave calendar month estimates								
First interview only		3,029 (a)	3,351 (b)	3,219 (c)	***	927 (a)	1,062 (b)	879 (c)	***
Second interview only		. . .	2,619 (c)	2,546 (b)	2,047 (a)	***	756 (c)	717 (b)	541 (a)
Independent estimate (d)		3,185	3,576	3,523	3,088	1,022	960	1,026	817
Survey estimate as % independent estimate								
Combined		95.1	86.9	78.6	66.3	90.7	100.0	75.1	66.2
Single wave estimation								
First Interview		95.1	93.7	91.4	***	90.7	110.6	85.7	6.6
Second interview		***	73.2	72.3	66.3	***	78.8	69.9	66.2

(a) Full sample estimate.
(b) 2/3 sample estimate.
(c) 1/3 sample estimate.
(d) Includes regular state, federal civilian employee (UCFE), ex-servicemen (UCX) and Railroad Unemployment Insurance Act benefits.

Source: Unpublished tabulations from the 1979 ISDP Research Panel files for the first and second Interviews. Independent estimates are from Vaughan, Lininger and Whiteman "The Quality of Income and Program Data In the 1979 ISOP Research Panel", Review of Public Data Use, 1954:12:116.

Table 8.--Fluctuation in the completeness of the survey estimate of aggregate unemployment by the relative importance of the Extended Benefits and Federal Supplemental Compensation programs, 1983 to 1985 by calendar quarter.

	1983			1984				1985			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Independent estimate{a}	$1,668	$1,486	$1,696	$1,273	$1,104	$1,147	$1,608	$1,259	$1,084	$1,140	
% Ext. or FSC	26.1	23.7	15.5	14.5	13.3	12.0	8.7	5.7	.4	.2	
SURVEY ESTIMATES											
Regular benefits only	$1,287	$1,193	$1,205	$897	$762	$978	$1,393	$927	$783	$854	
As percent of the independent estimate	77.1	80.3	71.1	70.5	69.0	85.3	6.6	73.6	72.2	74.9	
Regular benefits plus supplemental {b}	$1,355	$1,282	$1,273	$951	$833	$1,053	***	***	***	***	
As percent of the independent estimate	$1.2	$8.3	75.1	74.7	75.5	91.8	***	***	***	***	

{a} Includes regular program and Federal and State extended benefits and Federal Supplemental Compensation.
{b} Includes regular program plus SUB pay and/or other employment benefits.

Source: Independent estimate based on data collected by the Unemployment Insurance Service, U.S. Department of Labor, Survey estimates for regular benefits taken from Coder (1987). Estimates for regular benefits plus supplemental benefits were developed by the author from SIPP public use data sets.

Table 9. — Comparison of combined wave and single wave recipient estimates for unemployment compensation, fourth quarter 1983 - fourth quarter 1984

Wave (interview)	Fourth Quarter 1983				Wave (interview)	First Quarter 1984			
	October	November	December	Average		January	February	March	Average
		Combined wave estimate						Combined wave estimate	
Wave 1	2,116	1,521	859	1,499	Wave 2	2,584	1,683	755	1,674
Wave 2	639	1,483	2,555	1,559	Wave 3	763	1,412	2,056	1,410
Total	2,755	3,004	3,414	3,058	Total	3,347	3,095	2,811	3,084
		Single wave estimate						Single wave estimate	
Wave 1	2,821	3,042	3,436	3,100	Wave 2	3,445	3,366	3,020	3,277
Wave 2	2,556	2,966	3,407	2,976	Wave 3	3,052	2,824	2,741	2,872
2 as % of 1	90.6	97.5	99.1	96.0	3 as % of 2	88.6	83.9	90.8	87.7

Wave (interview)	Second Quarter 1984				Wave (interview)	Third Quarter 1984			
	April	May	June	Average		July	Aug	Sept	Average
		Combined wave estimate						Combined wave estimate	
Wave 3	2,506	1,730	1,087	1,774	Wave 3	549	***	***	183
Wave 4	***	510	1035	515	Wave 4	1,533	2,036	1,455	1,675
Total	2,506	2,240	2,122	2,269	Wave 5	***	***	511	170
					Total	2,082	2,038	1,966	2,029
		Single wave estimate						Single wave estimate	
Wave 3	2,506	2,307	2,174	2,329	Wave 3	2,196	***	***	***
Wave 4	***	2,040	2,070	2,055	Wave 4	2,044	2,038	1,940	2,007
4 as % of 3	***	88.4	95.2	88.2	Wave 5	***	***	2,044	***
					4 as % of 3	93.1	***	***	***
		Fourth Quarter 1984			5 as % of 4	***	***	105.4	

Wave (interview)	Oct	Nov	Dec	Average
		Combined wave estimate		
Wave 4	1,000	569	***	523
Wave 5	1,124	1,960	3,083	2,056
Total	2,124	2,529	3,083	2,579
		Single wave estimate		
Wave 4	2,000	2,276	***	2,138
Wave 5	2,248	2,613	3,083	2,648
5 as % of 4	112.4	114.8	***	123.9

(. . .) - Not applicable.

Source: Author's tabulations of SIPP public use files.

Table 10. -- Comparison of SIPP and CPS annual estimates of the number of pension recipients and aggregate pension income by type of pension

(recipients in thousands, income in millions)

Type of income	Annual recipients 1983-84	Pension income: Aggregate Income 1983-84	Pension income: Aggregate Income 1984
Private pensions and annuities			
SIPP	8,499 {a}	540,319 {b}	$42,744 {b}
CPS	7,798 {c}	36,056 {c}	37,266 {c}
Difference as % of CPS	9.0	11.8	14.7
Public pensions			
SIPP	6,440 {d}	52,276	54,867
CPS	5,470 {d}	46,756	48,182
Difference as % of CPS	17.7	11.8	13.9
Federal civilian employee retirement			
SIPP	1,937	19,593	20,106
CPS	1,579	17,414	17,154
Difference as % of CPS	22.7	12.5	17.2
U.S. military retirement pay			
SIPP	1,437 {e}	15,532	16,374
CPS	1,421	14,761	15,328
Difference as % of CPS	1.1	5.2	6.8
State and local government pensions			
SIPP	3,066 {f}	17,151	18,387
CPS	2,470	14,581	15,700
Difference as % of CPS	24.1	17.6	17.1

{a} Private pensions only; 1.1 million persons also reported receipt of annuities or paid up life-insurance, and 1.4 million reported retirement or survivors pensions, or other payments for disability not elsewhere classified. The extent of overlap between these three sources is not known at the present time.
{b} Includes aggregate benefits from all three sources mentioned in note (a).
{c} Includes all recipients and benefits mentioned in note (a) with the exception of unclassified payments of disability.
{d} Number of pensions.
{e} Assuming no overlap between U.S. military retirement pay and National Guard or Reserve Forces Retirement.
{f} Assuming no overlap between State government and local government pension.

Source: Coder, Burkhead, Feldman-Harkins & McNeil, 1987, table 14; unpublished Bureau of the Census tabulations; table A-1, this paper.

Table 11.--Comparison of SIPP estimates to independent estimates of the number of public pension recipients and aggregate public income by type of pension

(recipients in thousands, income in millions)

Type of pension	Recipients {a}		Aggregate income 1984
	1983	1984	
Public pensions			
Independent estimate	5,846 {b}	6,358 {b}	$55,851
Survey estimate	5,851 {b}	6,332 {b}	54,867
As a percent of the independent estimate	100.1	99.6	98.2
Federal civilian employee retirement {c}			
Independent estimate	1,804	1,846	20,495
Survey estimate	1,739	1,851	20,106
As a percent of the independent estimate	96.4	100.3	98.1
U.S. military retirement pay			
Independent estimate{d}	1,350	1,379	15,942
Survey estimate	1,393{e}	1,433 {e}	16,374
As a percent of the independent estimate	103.2	103.9	102.7
State and local government pensions			
Independent estimate	2,692	3,133	19,413
Survey estimate	2,719 {f}	3,048 {f}	18,387
As a percent of the independent estimate	101.0	97.3	94.7

{a} Independent estimates of recipients pertain to the end of the calendar year unless otherwise specified. Survey estimates of recipients represent the average monthly number in the last calendar quarter. Independent estimates have been adjusted to conform to the survey universe using ratios developed by Czajka (see Czajka, et. Al. 1982, pp. 90-91).
{b} Number of pensions.
{c} Includes Civil Service and all other Federal government employee pensions excluding those classified under military retirement (see note {d}).
{d} Includes pensions based on service in the U.S. Armed Forces,the Coast Guard, and as commissioned officers in National Oceanic and Atmospheric Administration and the Public Health Service.
{e} Simple sum of regular U.S. Military Retirement pay and National Guard or Reserve Forces Retirement. Assumes no overlap among the recipients of these income sources.
{f } Simple sum of State and local government pensions. Assumes no overlap among the recipients of these income sources.

Source: Bixby 1986, table 2; unpublished data, Social Security Administration; unpublished Bureau of the Census tabulations; table A-1, this paper.

Table 12. -- Comparison of survey estimates to alternative independent estimates of aggregate private pension income received by the civilian noninstitutional population in 1983

(dollars in billions)

Element	Source of independent estimate			
	BEA National income accounts		SSA Private welfare expenditure series	
	Total	Periodic only (est.) {a}	Total	Periodic only (est.) {a}
Full estimate	$53.8	46.8	$63.1{b}	$54.9
LESS:				
Estimated amount not received by the survey universe {c}	3.8	3.3	4.4	3.8
EQUALS:				
Independent estimate of amount received by the survey universe	50.0	43.5	58.7	51.1
Survey estimate				
Aggregate				
SIPP		$39.7 {d}		
CPS		34.6		
As percent of the independent estimate				
SIPP	79.4	91.3	67.7	77.8
CPS	69.2	79.6	59.0	67.8

{a} Illustrative estimate net of withdrawals and lump sum payments.
{b} Private pension payments based on employment relationship
{c} Excludes estimated payments to decedents and persons living in institutions or outside the 50 States and the District of Columbia using ratios employed by Czajka.
{d} Hypothetical aggregate constructed by multiplying the 1983 CPS aggregate by the ratio of the SIPP and CPS aggregates for 1984.

Source: Bureau of Economic Analysis (1986 table 6.13, p. 69); Glanz (1987, table 8, p. 66); Czajk, et. al. (1982, pp. 108-113); unpublished tabulations provided by the Bureau of the Census.

TABLE 13.-- Comparison of CPS and hypothetical(a) SIPP income aggregates for pension income to independent estimates by type of pension, calendar year 1983

(income in billions)

Type of pension	Independent Estimate	Survey estimate		Survey short-fall			Survey as % of independent est.	
		CPS	SIPP-N{a}	CPS	SIPP-N(a)	Percent reduction	CPS	SIPP-N{a}
Total	$102.2	$79.7	$91.0	$23	$11	50.1	78.0	89.0
Private pensions and annuities	50.0{b}	34.6	39.7	15.4	10.3	33.0	69.3	79.4
Public pensions	52.2	45.1	51.4	7.1	.8	88.4	86.3	98.4
Federal government pensions	35.2{c}	31.8	35.9	3.3	-.7	***	90.5	102.1
Federal civilian employee pensions	20.0{c}	17.7	20.8	2.3	-.8	***	88.7	104.1
U.S. military retirement pensions	15.2{c}	14.1	15.1	1.1	.1	93.2	92.9	99.5
State and local government pensions	17.1{d}	13.3	15.5	3.8	1.6	58.7	77.7	90.8

{a}Constructed by adjusting the 1983 CPS aggregates by the ratio of CPS to SIPP aggregates by type of transfer income as observed for calendar year 1984.
{b}Constructed by author by adjusting NIA estimate for benefits paid by private pension and profit-sharing plans in 1983 to the survey universe using factors developed by Czajka (1982, pp. 108-110). Note that the unadjusted NIA estimate ($53.8 billion) is less than the independent estimate published by the Bureau of the Census ($54.7 billion) which presumably includes adjustments for overseas residence, institutionalization and so forth. The NIA aggregate is known to include withdrawals and lump sum awards. However, the amount of such payments is not known.
{c}The independent estimate published by the Bureau of the Census ($34.9 billion) refers to the sum of Federal civilian employee pensions and U.S. military retirement pensions. These estimates, distributed by type of Federal pension, were constructed by the author.
{d}Constructed by the author. The estimate employed by the Bureau of the Census ($20.5 billion) includes withdrawals and lump sum awards. Deletion of these components accounts for the lower independent estimates.

Source: U.S. Bureau of the Census, "Money Income of Households, Families and Persons in the United States: 1983," Series P-60, No. 146, Table A-2; Statistical Abstract of the United States 1986, tables 622 and 625. Survey of Current Business, July 1984, table 311; Social Security Bulletin, 1-87 Annual Statistical Supplement, table 172; Survey of Current Business (July 1986, table 6.13, p. 69); and unpublished data from the Bureau of the Census and the Social Security Administration.

Table 14. — Estimated number of persons age 16 years and older with wage and salary income, mean wage and salary income, by work experience, 1983-84: SIPP and CPS as observed

Number and mean amount by sex and race	All workers			Year-round, full-time workers			Other		
	SIPP	CPS{a}	Percent difference{c}	SIPP	CPS{a,b}	Percent difference{c}	SIPP	CPS{a}	Percent difference{c}
NUMBER WITH WAGE AND SALARY INCOME (in thousands)									
Total{d}	113.40	111,919	1.3	60,161	64,768	-7.1	53, 247	47.151	12.9
White	98,233	97,424	.8	52, 579	56,494	-6.9	45,656	40,930	11.5
Black	12,.142	11,622	4.5	5,887	6,546	-10.1	6,255	5,076	23.2
Males{d}	61,732	60,499	2.0	37,863	39,809	-4.9	23,869	20,690	15.4
White	54,021	53,233	1.5	33, 631	35,389	-5.0	20,390	17,844	14.3
Black	5,975	5,742	4.1	3,158	3,399	-7.1	2,817	2,343	20.2
Females{d}	51,676	51,420	.5	22,298	24,959	-10.7	29,378	26,461	11.0
White	44,212	44,191	.0	18,948	21,105	-10.2	25,264	23,085	9.4
Black	6,167	5,880	4.9	2,729	3,147	-13.3	3,438	2,733	25.8
MEAN WAGE AND SALARY INCOME									
Total{d}	$14,255	$15,132	-5.8	$21,325	$21,499	-.8	$6,266	$6,391	-1.9
White	14,728	15,560	-5.3	21, 900	22,085	-.8	6,467	6,555	-1.3
Black	10,383	11,480	-9.5	16,368	16,387	-.1	4,751	5,149	-7.7
Males{d}	18,150	19,233	-5.6	24,760	25,106	-1.4	7,665	7,942	-3.5
White	18,867	19,917	-5.3	25,449	18,068	.7	5,061	5,556	-8.9
Black	12,001	12,962	-7.4	18,193	18,068	.7	5,061	5,556	-8.9
Females(d)	9,601	10,307	-6.9	15,491	15,746	-1.6	5,130	5,178	-.9
White	9,670	10,312	-6.2	15,602	15,887	-1.8	5,222	5,216	.1
Black	8,816	10,031	-12.1	14,257	14,571	-2.2	4,497	4,801	-6.3

{a} As observed.
{b}Includes all armed forces members reporting wage and salary income.
{c} SIPP-CPS/CPS*100.
{d} Includes persons of other races.

Sources: Coder, Burkhead, Feldman-Harkins and McNeil (1987, Appendix D, pp. 4-6), and SSA tabulations of the SIPP Longitudinal Research File of the number of persons age 16 or older as of the twelfth month of observation by sex and race. All CPS estimates are based on unpublished SSA tabulations of the March 1984 and 1985 Current Population Survey public use files.

Table 15. -- Difference between SIPP and CPS mean wage and salary earnings by sex and race, persons age 16 and older with wage and salary income, 1983-84: As observed and using hypothetical SIPP means

Race and sex	Observed means				SIPP with CPS means {a}			Percent of the difference in observed means between attributable to:	
	SIPP	CPS	Difference between SIPP and CPS means		Hypothetical mean	Difference between observed and hypothetical SIPP means		Higher CPS component effects {d}	Composition
			Dollar amount	Percent difference		Dollar amount	Percent difference	means{c}	
Grand mean{e}	14,255	$15,132	-878	-5.8	$14,491	-236	-1.6	26.9	73.1
White	14,728	15,560	-832	-5.3	14,952	-225	-1.5	27.0	73.0
Black	10,383	11,480	-1,096	-9.5	10,623	-239	-2.3	21.8	78.2
Males{e}	18,150	19,233	-1,083	-5.6	18,471	-321	-1.7	29.6	70.4
White	18,867	19,917	-1,050	-5.3	19,178	-311	-1.6	29.6	70.4
Black	12,001	12,962	-961	-7.4	12,169	-168	-1.4	17.5	82.5
Females{e}	9,601	10,307	-706	-6.9	9,736	-135	-1.4	19.1	80.9
White	9,670	10,312	-642	-6.2	9,789	-119	-1.2	18.6	81.4
Black	8,816	10,031	-1,215	-12.1	9,124	-308	-3.4	25.4	74.6

{a} Observed CPS means by work experience, sex, and race weighted by SIPP population estimates by work experience, sex, and race.
{b} As observed
{c} Difference between observed and hypothetical SIPP mean divided by difference between SIPP and CPS observed means times 100.
{d} One hundred minus the percentage attributable to higher CPS component means.
{e} Includes persons of other races.

Source: See table 14.

Table 16. — Persons ages 15 or older by annual self-employment earnings and sex, 1983-84: SIPP and CPS

Annual self-empl. Amt.	TOTAL SIPP % distrib.	TOTAL SIPP Cumul. % distrib		TOTAL CPS % distrib.	TOTAL CPS Cumul. % distrib.		MEAN SIPP % distrib.	MEAN SIPP Cumul. % distrib.		MEAN CPS % distrib.	MEAN CPS Cumul. % distrib.		WOMEN SIPP % distrib.	WOMEN SIPP Cumul. % distrib.		WOMEN CPS % distrib.	WOMEN CPS Cumul. % distrib.	
Tot. number {a}	13,505	13,505		12,252	12,252		8,985	8,985		8,674	8,674		4,520	4,520		3,579	3,579	
Tot. %	100.0	100.0		100.0	100.0		100.0	100.0		100.0	100.0		100.0	100.0		100.0	100.0	
Loss	---	---		11.6	11.6		---	---		11.7	11.7		---	---		11.4	11.4	
$ 1 - $999	23.5	23.5		18.1	29.7		15.8	15.8		13.6	25.3		38.8	38.8		29.1	40.5	
$1,000 - $1,999	11.0	34.5		6.6	36.4		9.1	24.9			5.2	30.5		14.8	53.6		10.2	50.6	
$2,000 - $2,999	7.1	41.6		6.2	42.6		4.4	31.4			5.2	35.7		8.5	62.0		8.5	59.2	
$3,000 - $3,999	5.5	47.1		4.5	47.1		5.4	36.8			4.3	40.0		5.8	67.8		5.1	64.3	81.6
$4,000 - $4,999	5.0	52.1	68.1	3.5	50.6	63.9	4.6	41.3	58.2		3.4	43.4	56.6	5.8	73.6	87.9	3.8	68.1	
$5,000 - $5,999	4.0	56.1		4.1	54.8		4.0	45.3			4.1	47.5		4.2	77.8		4.3	72.4	
$6,000 - $6,999	3.6	59.8		2.9	57.7		4.0	49.2			2.7	50.2		2.9	80.7		3.3	75.7	
$7,000 - $7,999	3.0	62.7		2.3	60.0		3.2	52.5			2.4	83.1		2.5	78.2				
$8,000 - $9,999	5.4	68.1		3.9	63.9		5.7	58.2			4.2	56.6		4.8	87.9		3.4	81.6	
$10,000 - $12,499	5.0	73.1		7.3	71.4		5.8	64.0			8.2	64.9		3.5	91.3		5.6	87.2	
$12,500 - $14,999	3.9	77.0		2.3	73.7		5.2	69.2			2.4	67.3		1.2	92.5		1.8	89.0	
$15,000 - $17,499	3.3	80.3	21.3	4.6	78.3	25.0	4.2	73.4	26.9		5.4	72.7	28.9	1.5	94.0	10.2	2.7	91.8	15.4
$17,500 to $19,999	2.7	82.9		2.1	80.3		3.3	76.7			2.5	75.2		1.3	95.3		.9	92.7	
$20,000 - $24,999	3.5	86.6		5.3	85.6		4.7	81.4			6.4	81.6		1.3	96.6		2.7	95.4	
$25,000 - $29,999	2.9	89.4		3.3	88.9		3.7	85.1			4.0	85.5		1.5	98.1		1.6	97.0	
$30,000 - $34,999	1.2	90.6		2.7	91.6		1.6	86.7			3.4	89.0		.4	98.5		1.0	98.0	
$35,000 - $39,999	1.3	92.0		1.3	92.9		1.9	88.6			1.7	90.7		.1	98.5		.4	98.3	
$40,000 - $49,999	1.7	93.7	5.6	2.1	95.1	8.1	2.5	91.2	7.9		2.8	93.5	10.5	.2	98.7	1.0	.5	98.9	2.3
$50,000 - $59,999	1.3	95.0		1.9	97.0		1.8	93.0			2.5	96.0		.3	99.0		.5	99.4	
$60,000 - $74,999	1.4	96.1		1.1	98.0		1.9	94.9			1.4	97.4		.3	99.4		.2	99.5	
$75,000 or over	3.6	100.0	5.0	2.0	100.0	3.0	5.1	100.0	7.8		2.4	100.0	4.0	.4	100.0	1.0	.5	100.0	9.6
$100,000 or over	2.2	. . .		. . .	. . .		3.0	. . .			. . .	. . .		.5	. . .		. . .	. . .	
Median self-employment income	$4,577	. . .		$4,662	. . .		$7,233	. . .			$6,632	. . .		$1,759	. . .		$1,815	. . .	
Excluding losses	. . .	. . .		6,000	. . .		. . .	. . .			$9,448	. . .		. . .	. . .		$2,216	. . .	
Mean self-employment income	14,010	. . .		10,711	. . .		18,467	. . .			12,997	. . .		5,150	. . .		5,170	. . .	
Excluding losses	. . .	. . .		12,670	. . .		. . .	. . .			15,361	. . .		. . .	. . .		4,190	. . .	

(...) Not availablew or not applicable.
{a} in thousands.

Source: Coder, Burkhead, Feldman-Markins & McNeil 1987, appendix D; special tabulations, March Current Population Survey public use files for income years 1983 and 1984.

Table 17. -- Poverty rates by type of earnings, 1983-84: SIPP and CPS

Element	Number				Percent
	Total		Poor		Poor
CPS, 1983-84					
Worked last year {a}	120,508		9,259		7.7
Wage and salary workers {a}	110,404		7,537		6.8
Self-employment	12,252		1,502		12.3
SIPP, 1983-84{c}					
Worked at a job or business last 12 months(d)	118,449		8,027		6.8
Received income from own business test 12 months{a}					
Including incorporated self-employed	16,172		1,151		7.1
Excluding incorporated self-employed:					
Estimate I		13,505 {b}		1,151 {a}	8.5
Estimate II	13,505	{b}	1,061	(f)	7.9
Estimate III	13,505	{b}	970	(g)	7.2

{a} Age 15 or older.
{b} Excludes incorporated self-employed.
{c} Using simulated CPS definition.
{d} Age 16-64.
{e} Includes incorporated self-employed.
{f} Net of incorporated self-employed assuming their poverty rates are commensurate with the median earnings of incorporated self-employed working full-time, full reference period in their businesses.
{g} Net of incorporated self-employed assuming their poverty rates are the same as CPS wage and salary workers.

Source: Coder, Burkhead, Feldman-Harkins & McNeil, 1987 (table 9, p. 20); Appendix D), and U.S. Bureau of the Census, Series P-60 (No. 147, table 14; No. 148, table 4; No. 150, table 4; and No. 152, table 10); special tabulations, March 1984 and 1985 CPS public use files.

Table 18.--Comparison of SIPP and CPS estimates of the number of property income recipients by type of property income, 1983-84

Type of income	SIPP	CPS	Difference as percent of CPS
Interest	123,109 {a}	98,567	24.9
Dividends	26,805	19,321	38.7
Net rent and royalties	14,040 {b}	11,967	17.3
Estates and trusts	521	1,317	-60.4

(a)Includes only recipients of interest from savings and money market accounts, certificates of deposit, and NOW accounts.
{b}Excludes royalties.

Source: Unpublished Bureau of the Census tabulations.

Table 19.--Comparison of SIPP and CPS estimates of aggregate property income by source, 1983-84 and calendar year 1984

(dollars in millions

Type of income	1983-84			1984		
	SIPP	CPS	Difference as percent of CPS	SIPP	CPS	Difference as percent of CPS
PRE 1984 CPS INTEREST IMPUTATION PROCEDURE						
Total	$192,384	$158,254	1.6	200,890	$165,416	21.4
Financial assets	170,327	133,804	27.3	170,791	139,856	22.1
Interest	115,657	104,697 {a}	10.5	115,425	109,199 {a}	5.7
Dividends	38,251	29,106	31.4	40,335	30,657	31.6
Financial assets, n.e.c.	16,389	. . .	. . .	15,031	. . .	. . .
Net rent and royalties	16,999{b,c}	17,154	-.9	25,536 {c}	17,725	44.1
Royalties	. . .	. . .	. . .	8,949	. . .	. . .
Estates and trusts	5,058	7,297	-30.7	4,563	7,835	-41.8
POST 1984 CPS INTEREST IMPUTATION PROCEDURE						
Total	$192,354	$183,082	5.1	$200,890	$194,878	3.1
Financial assets	170,327	158,631	7.4	170,791	169,318	.9
Interest	115,687	129,525	-10.7	115,425	138,661	-16.8
Dividends	38,251	29,106	31.4	40,335	30,657	31.6
Financial assets, n.e.c.	16,389	. . .	. . .	15,031	. . .	. . .
Net rent and royalties	16,999 {b,c}	17,154	-.9	25,536 {c}	17,725	44.1
Royalties	. . .	. . .	. . .	8,949	. . .	. . .
Estates and trusts	5,058	7,297	-30.7	4,563	7,835	-41.8

(. . .) - Not available or not applicable.

{a}Imputed aggregate for 1984 estimated by author on basis of the ratio of imputed to unimputed mean for interest income observed for 1983 under the pre-1984 imputation procedure.

{b}Excludes royalties.

{c}lncludes income from roomers and boarders.

Source: Nelson & Weiniak, 1984; Nelson, 1985; Coder, Burkhead, Feldman-Harkins & McNeil, 1987 (Appendix F); unpublished Bureau of the Census tabulations.

Table 20. -- Comparison of SIPP and CPS aggregate interest and dividend income to independent estimates, 1983-84 and calendar year 1984

(dollars In billions)

Element	1983-84 (MIA-based)	1984	
		MIA-based	Reported to IRS
INTEREST			
Independent estimate	$239.1	$254.6 {a}	$176.4
Survey estimate			
SIPP	115.7	$115.4	
CPS			
Original imputation	104.7	109.2	
Revised imputation	129.5	138.7	
Survey estimate as a % of the Independent estimate			
SIPP	48.4	45.3	65.4
CPS			
Original imputation	43.8	42.9	61.9
Revised imputation	54.2	54.5	73.6
DIVIDENDS			
Independent estimate	$63.6	$66.5 {a}	$50.6 {b}
Survey estimate			
SIPP	38.3	$40.3	
CPS	29.1	30.7	
Survey estimate as a % of the independent estimate			
SIPP	60.1	60.7	79.7
CPS	45.8	46.1	60.6

{a}Personal income aggregate from the National Income and Product Accounts (NIPA) adjusted to the survey universe based on observed relationship between NIPA aggregate and independent estimate for the CPS universe in 1983.
{b}Total domestic and foreign dividends received.

Source: Table A-1, and BOC 1985f (table A-2).

Table 21.-- Distribution of tax returns and aggregate income by size of adjusted gross income, selected sources of income, 1984

(returns in thousands, dollars in billions)

Size of adjusted gross income	Number of returns	Adjusted gross income	Salaries and wages	Interest	Dividends
Total	99,438.7	52,139.9	$1,807.1	$176.4	$50.6
$100,000 or more	1,005.0	212.0	117.9	22.4	16.8
$1,000,000 or more	14.8	34.7	7.8	3.5	3.7
As percent of total					
$100,000 or more	1.0	9.9	6.5	12.7	33.1
$1,000,000 or more	.0	1.6	.4	2.0	7.4

Source: IRS (1986 table 1.4).

Table 22. -- Selected characteristics of interest bearing assets held at financial institutions by portfolio structure, late 1954(a)

(unweighted data)

Portfolio structure	Person sample count	Interest amount	Asset Value	Mean amount		Annualized rate of return
				Interest {b}	Balance	
Total	10,068	$3,087,174	$97,012,431	$307	$9,636	9.5%
Regular savings or credit union accounts only	4,626	230,704	9,577,414	50	2,070	7.2%
Interest bearing checking accounts only	527	44,320	1,754,906	84	3,330	7.6%
Regular savings or credit union accounts and interest bearing checking accounts only	199	118,868	4,365,209	597	21,936	8.2%
Savings certificates and interest bearing checking accounts only	173	125,813	4,601,578	727	26,599	8.2%
Regular savings or credit union accounts and money market deposit accounts only	492	200,026	6,942,447	407	14,111	8.6%
Regular savings or credit union accounts and interest bearing checking accounts only	1,365	185,059	5,999,122	135	4,385	9.3%
Regular savings or credit union accounts and savings certificates only	794	369,974	11,714,918	466	14,754	9.5%
Regular savings or credit union accounts, money market deposit accounts, and savings certificates only	248	325,787	10,042,138	1,314	40,492	9.7%
Regular savings or credit union accounts, interest bearing checking accounts and savings certificates only	418	368,111	11,329,359	881	27, 104	9.7%
Regular savings or credit union accounts, interest bearing checking accounts, and money market deposit accounts only	331	191,463	5,795,461	578	17,509	9.9%
Money market deposit accounts and savings certificates only	94	99,373	2,950,718	1,057	31,391	10.1%
Money market deposit only	226	96,443	2,808,102	427	12,425	10.3%
Regular savings or credit union accounts, interest bearing checking accounts, money market accounts and savings certificates only	254	442,317	12,214,558	1,557	43,009	10.9%
Certificates of deposit only	166	100,125	2,523,889	603	15,204	11.9%
Interest bearing checking accounts, money market deposit accounts and savings certificates only	122	188,788	4,392,612	1,547	36,005	12.9%

{a} Restricted to sample person for whom both interest income and the corresponding asset value was reported in the survey.
{b} Four month mean.

Source: Derived from unpublished tabulation from the fourth interview of the 1984 Survey of Income and Program Participation provided by the Bureau of the Census.

Table A-1. — Comparison of SIPP and CPS estimates of aggregate income by source, calendar year 1984

Type of income	SIPP	CPS	SIPP as percent of CPS
Total money income	$2,419,691	$2,417,390	100.1
Regular money income	2,414,630	2,417,390	99.9
Earnings	1,872,538	1,905,988	96.2
Wages or salaries	1,676,505	1,770,717	94.7
Self-employment	196,033	135,271	144.9
Nonfarm	171,650	126,641	135.5
Farm	24,383	8,630	282.5
Public and private transfers	335,154	300,195	111.6
Social Security or Railroad Retirement	165,009	151,476	108.9
Social Security	159.381	147.50	108.1
Railroad Retirement	5,628	3,973	141.7
Pension Income	97,611	85,448	114.2
Private pensions & annuities	42,744	37,266	114.7
Public pensions	54,867	46,182	113.9
Federal Government	36,480	32,482	112.3
Federal civilian retirement	20,106	17,154	117.2
U.S. military retired pay	16,374	15,328	106.8
State and local government	16,357	15,700	117.1
Unemployment compensation	12,330	12,169	101.3
Veterans payments	10,914	8,349	130..7
Workers compensation and related payments	7,644	6,775	112.8
Public assistance	23,712	21,819	108.7
Aid to families with Dependent Children	11,679	10,940	106.8
Supplement Security income	9,276	8,444	109.9
General assistance and other welfare	2,757	2,435	113.2
Alimony and child support	11,889	9,402	126.5
Alimony	2,718	. . .	. . .
Child	9,171	. . .	. . .
Private contributions	6,045	4,757	127.1
Property income	200,890	194,878	103.1
Financial assets	170,791	169,318	100.9
Interest	115,425	138,661	83.2
Dividends	40,335	30,657	131.6
Financial assets, n.e.c.	15,031	. . .	. . .
Net rent and royalties	25,536 {a}	17,725	144.1
Estates and trusts	4,563	7,835	58.2
All other regular money income	6,048	16,329	37.0
Lump sum payments	5,061	. . .	. . .

(. . .) - Not available or not applicable.
{a} Includes income from roomers and boarders.
Source: Unpublished Bureau of the Census tabulations.

Table A-2. -- Comparison of the percent of aggregate income imputed in the SIPP calendar year 1984 and the CPS calendar 1983

Type of income	SIPP	CPS{a}	SIPP as percent of CPS
Total money income	11.4	. . .	. . .
Regular money income	11.4	20.1	56.9
Earnings	10.0	18.9	52.7
Wages or salaries	8.3	17.9	49.1
Self-employment	20.1	32.0	62.8
Nonfarm	19.8	32.9	60.2
Farm	22.1	21.4	103.2
Public and private transfers	12.1	20.7	58.5
Social Security or Railroad Retirement	11.9	20.5	58.3
Social Security	11.8	. . .	. . .
Railroad Retirement	16.3	. . .	. . .
Pension income	14.2	23.3	60.9
Private pensions and annuities	16.5	23.9	68.9
Public pensions	12.5	22.8	54.6
Federal government	12.8	24.3	52.7
Federal civilian retirement	12.8	. . .	. . .
U.S. military retired pay	13.2	. . .	. . .
State and local government	11.5	19.7	58.4
Unemployment compensation	10.4	19.1	54.5
Veterans payments	11.2	17.3	64.9
Workers compensation and related payments	10.9	25.0	43.6
Public assistance	7.5	15.1	49.3
Aid to Families with dependent children	5.9	12.8	46.1
Supplemental Security Income	6.7	17.6	49.4
General assistance and other welfare	9.8	19.5	50.3
Alimony and child support	7.7	15.3	50.2
Alimony	14.5	. . .	. . .
Child support	5.7	. . .	. . .
Private contributions	16.0	21.6	74.1
Property income	23.9	32.4 {a}	73.8
Financial assets	24.7	33.9 {a}	72.3
Interest	20.2	44.8 {a}	45.1
Dividends	46.8	33.6	139.1
Financial assets, n.e.c..	7.5 {b}	. . .	. . .
Net rent royalties	27.7 {c}	22.1	125.5
Estates and trusts	25.8	28.2	91.5
All other regular money income	15.4	22.3	68.9
Lump sum payments	5.6	. . .	. . .

(. . .) - Not available or not applicable.

{a} Using revised imputation methodology for interest income.
{b} Royalties and other financial assets.
{c} Net rental income only.

Source: Unpublished Bureau of the Census tabulations.

Table A-3. -- Comparison of the percentage of persons age 16 or older in the SIPP and the CPS receiving wage and salary income by annual work experience, 1983-84

Work experience by sex	All races				White				Black			
	SIPP	CPS	Difference	t-ratio	SIPP	CPS	Difference	t-ratio	SIPP	CPS	Difference	t-ratio
Grand total	64.4	63.0	1.4	4.7	64.6	63.5	.2	3.7	62.7	59.5	3.2	3.3
(s.e.)	(.3)	(.1)	(.3)	(.3)	(.1)	(.3)			(.9)	(.4)	(1.0)	
Males	73.8	71.4	2.4	6.1	74.4	72.2	2.2	5.2	68.7	65.3	3.4	2.3
(s.e.)	(.4)	(.2)	(.4)	(.4)	(.2)	(.4)			(1.3)	(.6)	(1.5)	
Females	55.8	55.3	.6	1.3	55.6	55.3	.3	.7	57.9	54.7	3.1	2.2
(s.e)	(.4)	(.2)	(.4)	(.4)	(.2)	(.5)			(1.3)	(.6)	(1.4)	
Year round, full-time	34.2	36.4	-2.3	-7.8	34.6	36.8	-2.2	-7.0	30.4	33.5	-3.1	-3.0
(s.e.)	(.3)	(.1)	(.3)	(.3)	(.1)	(.3)			(.9)	(.4)	(1.0)	
Males	45.3	47.0	-1.7	-3.8	46.3	48.0	-1.7	-3.5	36.3	38.6	-2.4	-1.5
(s.e.)	(.4)	(.2)	(.4)	(.4)	(.2)	(.5)			(1.4)	(.6)	-(1.5)	
Females	24.1	26.8	.2.7	-7.5	23.6	26.4	-2.6	-6.5	25.6	29.3	-3.7	-2.9
(s.e.)	(.3)	(.2)	(.4)	(.4)	(.2)	(.4)			(1.1)	(.5)	(1.3)	
Other	30.2	26.5	3.7	13.1	30.0	26.7	3.4	11.1	32.3	26.0	6.3	6.4
(s.e.)	(.3)	(. 1)	(.3)	(.3)	(.1)	(.3)			(.9)	(.4)	(1.0)	
Males	28.5	24.4	4.1	10.3	28.1	24.2	3.9	9.1	32.4	26.6	5.7	3.9
(s.e.)	(.4)	(.2)	(.4)	(.4)	(.2)	(.4)			(1.4)	(.6)	(1.5)	
Females	31.7	28.5	3.3	8.4	31.8	28.9	2.9	6.8	32.3	25.5	6.8	5.1
(s.e.)	(.4)	(.2)	(.4)	(.4)	(.2)	(.4)			(1.2)	(.5)	(1.3)	

NOTE: Calculation Of the CPS standard errors has been modified to reflect the fact that the CPS estimates are based on the weighted average of two consecutive CPS's, yielding an effective sample size that is 1.5 times greater than when estimates are based on a single year's survey. (The effective sample size is greater by a factor of 1.5 rather than two because 1/2 of the sample is common to both years.) CPS generalized variance parameters for calculating the standard error of a percentage vary by race but not sex (see BOC 1985e, table B-5). Corresponding SIPP generalized parameters also vary by race but not sex (see BOC 1985b, table C-7).

Source: Numerators are from table 14, denominators from special tabulations of Bureau of the Census March Current Population public use files and the SIPP Longitudinal Research File.