

Work Related Expenditures in a New Measure of Poverty

Kathleen Short, Martina Shea, T.J. Eller
U.S. Bureau of the Census
August 7, 1996

This paper reports the general results of research undertaken by Census Bureau Staff. The views expressed are attributable to the author(s) and do not necessarily reflect those of the Census Bureau. Paper prepared for the 1996 Meetings of the American Statistical Association.

Abstract for 1996 ASA - Social Statistics Section

Work Related Expenditures in a New Measure of Poverty

This paper examines various methods of accounting for work related expenses (including child care expenses) in a new measure of poverty. We include a discussion of the treatment of these expenses in defining poverty. We begin with the imputation method as proposed by the Committee on National Statistics' panel on poverty. In the report released in May of 1995, they recommend a measure of family resources that contains income that is available to buy goods and services minus expenses that cannot be used to buy goods and services. This measure subtracts work related expenditures from income before determining poverty status, along with medical out of pocket expenditures, taxes paid and so on.

We begin with this measure and examine various alternatives using the Current Population Survey. We then use data from the Survey of Income and Program Participation to update the imputations. We reestimate the imputed expenses using the CPS. We then move on to examine the effect of using reported data in the SIPP, and compare resulting distributions of work-related expenses. In all cases we recompute poverty estimates to examine the effect on poverty rates of using these various methods.

In May of 1995 the Committee on National Statistics of the National Research Council released a report on a new measure of poverty. This report presented a series of recommendations concerning the changes that should be incorporated in such a measure. The recommendations included changes to the poverty thresholds or the measurement of need, changes to the measurement of resources, and data sources on which a new poverty measure would be based.

Among the recommendations are the following concerning the measurement of resources;

Recommendation 1.2 Family resources should be defined -- consistent with the threshold concept -- as the sum of money income from all sources together with the value of near-money benefits that are available to buy goods and services in the budget, minus expenses that cannot be used to buy these goods and services. Such expenses include income and payroll taxes, child care and other work-related expenses, child support payments to another household, and out-of-pocket medical care costs, including health insurance premiums.¹

Among the various dimensions included in the resource measure as recommended in the report, this paper focuses on work-related expenses only. Work-related expenditures in this paper also include child care expenses incurred in order to work. The report offered further detail on a measure of work-related expenditures.

Recommendation 4.2 The definition of family resources for comparison with the appropriate poverty threshold should be disposable money and near-money income. Specifically, resources should be calculated as follows:...

- for families in which there is no nonworking parent, deduct actual child care costs, per week worked, not to exceed the earnings of the parent with the lower earnings or a cap that is adjusted annually for inflation; - for each working adult, deduct a flat amount per week worked (adjusted annually for inflation and not to exceed earnings) to account for work-related transportation and miscellaneous expenses;...²

The report further states;

...as originally developed, the official poverty thresholds implicitly included some allowance for such costs (through the multiplier), but the thresholds have never been adjusted to reflect increases in these costs due to changes in societal work patterns.³

There are alternative ways of incorporating child care and other work related costs in a new measure of poverty. The NRC panel proposed subtracting a flat amount for work-related expenses other than child care, rather than actual expenses, because of the tradeoff that people often make between housing and commuting costs--by choosing a more expensive home closer to work or a less expensive one farther away.⁴

The same argument for fixed amounts can be made for the treatment of child care expenses. Reported child care expenses reflect parental choices. For instance, two-parent families with both parents in the labor force

might work different shifts to avoid the necessity for outside child care. Also, reported expenses reflect what families can afford to pay for child care, but not always the amount necessary to acquire adequate child care. A family might opt to leave a child unsupervised during working hours, because it cannot afford child care. This family might not be poor, even though subtracting an adequate amount to pay for child care would render this family poor. Likewise, some families with high child care costs might be counted as poor, even though their overall level of well-being might be higher than that of some nonpoor families with lower or no child care costs. One way to avoid this problem is to subtract fixed amounts.

However, using fixed amounts avoids some problems while it can potentially create others, particularly with respect to child care. A good poverty measure should allow one to assess changes in policy. Such changes are not reflected in a measure that subtracts an absolute fixed amount from income. There is an alternative measure that would allow one to gauge policy changes while avoiding most problems associated with reported amounts. This measure would subtract a fraction of the median of reported amounts from each family with working parents. The use of the median in the cost calculation would reflect policy changes while the application of a fixed amount to every working family avoids the causality associated with using reported amounts (i.e. the tradeoff between housing costs and commuting expenses).

We describe the measure presented in the NRC report, and present alternatives for consideration. We present poverty estimates using the measure for work related expenses, using both the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP). Finally we describe the data collection effort necessary to implement the recommended measure.

THE NRC MEASURE

The NRC poverty panel developed a prototype poverty measure which is described in their report. This prototype included a measure of work-related expenses and child care expenses. The expenditure amounts were estimated using SIPP data and then these amounts were used with CPS income information to explore the poverty measure.

Work related expenses other than child care. The poverty panel measure of work-related expenses other than child care proposed to subtract a flat weekly amount for these updated annually for inflation. These expenditures were restricted to be not more than the person's earnings.

While no data on work-related expenses are collected in the CPS, they are available from the SIPP. The NRC panel used data from the 1987 panel of the SIPP, the most recent data available. They used the median value of \$14.42 (92 dollars) for all persons for all weeks reported working in the March 1987 and 1993 supplements to the CPS.

Tabulations from wave 3 of the 1987 SIPP panel provided a basis for the amount. In 1992 dollars the mean weekly amount for all workers (whether reported expenses or not) was \$29 or \$1450 for a 50-week work year. The median weekly amount was \$17. NRC used \$14.42 per week worked or 85 percent of the median.

Child Care Expenses. The NRC Panel on Poverty and Family Assistance proposed to deduct reported out-of-pocket child care costs from the income of families with both parents or the only resident parent in the work force, and to limit this deduction to the earnings of the parent with the lower earnings, or to a specified cap. Child care expenses were estimated from the 1990 SIPP panel topical module about child care. They used a two-step procedure for each of two separate groups, two-parent families in which both parents worked and single parents who worked. First, logit regressions for the two groups estimated the probabilities of incurring child care expenses based on the race of the head, the number of children of various ages, region, and family income. The two-parent equation also included the mother's earnings as a proportion of family earnings. Second, weekly expenses of working parents who paid for child care were regressed on the same set of explanatory variables. The logit regression results from SIPP were used to establish the probability that a family in CPS had incurred child care expenses. Based on this probability the family was randomly selected to either have or have not incurred expenses. If the family was selected to have incurred expenses, the Ordinary Least Squares (OLS) regressions were used to impute the amount of child care expenses to the CPS family, based on the family's characteristics. This model is applied in the following data analysis.

DATA ANALYSIS

The following analysis is based on the 1991 SIPP panel for child care expenses, and, due to lack of more recent data, on the 1987 SIPP panel for other work related expenses. We investigate different measures of child care and other work related expenses, with an emphasis on the important issue of using fixed versus reported costs.

Work-related expenses

The NRC committee recommended deducting, for each working adult, a flat amount per week worked, not to exceed earnings, to account for work expenses. NRC used \$14.42 (1992 dollars), based on SIPP tabulations. In 1987, the SIPP collected information on work-related expenses from people who had at least one employer in the reference period. Three types of expenses were identified:

- Annual expenses - Annual work related expenses such as union dues, licenses, permit, special tools, or uniforms.
- Mileage expenses - The number of miles usually driven to and from work in a typical week, for people who do some driving to work. An estimate of 22.5 cents per mile was used to convert mileage to expenses.
- Other expenses - Other expenses incurred in getting to and from work, such as bus fares

or parking fees, for a typical week.

These data suggest that more than 90 percent of workers (aged 15 or older) had some type of work expense. One-third had annual work-related expenses, one-tenth had other expenses, and almost nine-tenths of workers reported doing some driving to work. About three-fourths of poor workers reported some work expenses, and more than nine-tenths of nonpoor workers reported work expenses. Aggregate estimates show overwhelmingly that the main cost of work is mileage cost. If one costs out miles driven at 22.5 cents per mile, 82 percent of overall work related expenditures are mileage costs of 2.8 million per week.

SIPP data show that, in 1987, of those persons who worked, mean annual costs on miscellaneous expenses were \$98.00, weekly commuting distance was 79 miles, and weekly expenses for bus/train/parking fees were \$2.00.

These estimates compare reasonably to independently collected data.⁵ American Housing Survey data show a 1985 mean travel time of 20.9 minutes to work, and a median of 20 minutes in 1990. Data from the 1990 decennial census show average travel time was 22.4 minutes. This represents the amount of time from home to work, one way. At a speed of 30 miles per hour this would be about 11 miles per trip.

Data from the National Personal Travel Survey for 1990 show average trip length is 10.7 miles and speed is 32.3 mph. These data show an average travel time of 19.7 minutes. The SIPP estimate, for those who worked some time, of mean weekly miles is 79 miles. Divided by 10 trips per week this would be an average of about 8 miles per trip.

Data from 1994 Consumer Expenditure Survey on other work related expenditures are also quite similar to SIPP estimates. Their question is, "During the past 12 months, did you (or any members of your Consumer Unit) have any occupational expenses such as union dues, tools, uniforms, business or professional association dues, licenses, or permits." The annual sample mean for occupational expenses for all consumer units in 1994 was \$84.96.

Figure 1 shows the number of households with reported expenses in the 1987 SIPP, as well as the number of households that would be affected by the panel's proposal to assign a fixed expense to each working member of the household. For the fixed expense approach we looked at the 1987 SIPP and the March 1988 Supplement to the CPS. In the 1987 SIPP, 64.3 million households report some non-zero work-related expenditures. If all households with at least one worker were assigned some work-related expenditures, the 1987 SIPP estimates 74.7 million households would be affected. The 1987 CPS estimates 77.0 million households would be affected under this scenario.

However, Figure 1 masks an important data quality issue associated with using reported data as a basis for estimating the effect of work-related expenditures on poverty rates. Specifically, not all workers over a given year are asked about their work-related expenses during the year. The SIPP topical module asks about work-related expenses for those who worked during the reference period only - the four months before the topical module is administered. This fundamental disparity between the reference period and the yearly period which forms poverty measures causes almost one fifth of workers on a yearly basis to not have any measure of the incidence or size of work-related expenditures.⁶ Assigning a fixed amount to all workers avoids this problem.

Figure 2 shows the average yearly work-related expenses, for workers reporting expenses, in the reported data and compares the estimates of average yearly work-related expenses - using a fixed amount - \$11.78 (1987 dollars) - across the SIPP and the CPS in 1987. Average reported expenses are more than twice the average expenses in the fixed cost scenario - \$2,058 versus \$823 in the CPS (all 1987 dollars).⁷ Some workers report large work-related expenses.

Figure 3 gives some sense of the estimates of aggregate work expenses between the scenarios and the datasets. Aggregate reported expenses are larger than aggregate fixed expenses in both the CPS and the SIPP. Implementing the NRC's recommendation to subtract work-related expenses from income before comparing income to the poverty threshold by definition raises the poverty rate. Figure 4 illustrates the magnitude of the increase among the scenarios and datasets. In 1987, the poverty rate was 10.8 in the SIPP and 13.4 in the CPS, using the current, official definition of poverty.⁸ Using reported expenses, the poverty rate would increase from 10.8 to 12.0 in the SIPP. Using fixed costs for work expenditures would not increase the poverty rate in the SIPP

relative to the current measure. In the 1987 CPS, the effect of accounting for work-related expenses using a fixed cost per week would be to increase the poverty rate from 13.4 to 14.1.

Child care expenses

Topical module data on child care in the 1991 SIPP panel provides the basis for our analysis. In SIPP, each child can have only one designated parent or guardian. Parents or guardians of children less than 15 years of age who were in the labor force or attended school during the reference period were asked about their child care arrangements and costs during the last month only. The above described two-step procedure yields estimated child care costs in the CPS. Potential biases arise since costs were reported for only one month (the twelfth panel month, September, October, November, or December of 1991, depending on the rotation group), and allowable deductions in a given calendar year were based on the earnings of the guardian and spouse in that month. We assume in our analysis that the pattern observed in the last month of the reference period held true for the entire calendar year.

Some SIPP households have more than one parent/child unit. In these cases we arrive at estimates of yearly costs by calculating deductions separately for each parent/child unit and then adding the separate deductions. We examine three alternative measures of child care expenditures. Measure 1 is the measure proposed by the NRC panel, Measure 2 consists of a fixed amount set at the cap on the dependent care tax credit, and Measure 3 is equal to 85% of median expenditures. The figures also depict "reported amounts". These differ from the NRC measure in that they are not subject to the earnings and dependent care tax credit restrictions. Figure 5 shows the number of households that incurred child care expenses during 1991 for the three different measures and for reported expenditures. Average and aggregate yearly costs are depicted in figures 6 and 7. Figure 8 shows the effects on the poverty rate of each of the measures. The NRC measure (denoted as Measure 1 in figures 5 through 8) yields average child care expenses of \$2,847 in CPS and \$2,449 in SIPP, not significantly different from one another. Aggregate expenditures amount to \$22.8 and \$15.5 Billion, respectively. Subtracting these expenses from income has no effect on the poverty rate.

The mean of unrestricted reported amounts is \$3,263, amounting to \$21.6 billion of aggregate child care expenditures. Subtracting these reported expenses from income has no significant effect on the poverty rate. The NRC measure yields lower aggregate child care expenditures than unrestricted reported amounts but the effect on the poverty rate is identical.

Measures 2 and 3 in figures 5 through 8 depict the alternative of applying fixed amounts of child care expenses to families in which each parent works. One way is to subtract a fixed amount, such as the cap on the dependent care tax credit of \$2,400 for one child or \$4,800 for two or more children from the income of all families with working parents (Measure 2). Alternatively, one could subtract a fixed amount equal to a percentage of median child care expenses from income (Measure 3). In the CPS, 20.1 million families are affected by such a fixed measure, larger than with the NRC measure (see figure 5). In the SIPP, 15.6 million families report such costs, also more than with the NRC measure. As can be seen in figure 7, aggregate expenditures are significantly higher using fixed amounts as opposed to reported amounts. Aggregate expenditures under Measure 2 amount to \$71.4 and \$55.4 billion in the CPS and SIPP, respectively, compared to \$21.6 billion in reported amounts. The poverty rate increases significantly from 14.8 to 16.4 percent in CPS, and from 12.1 to 13.3 percent in SIPP. Measure 3 depicts a situation where 85 percent of median reported expenses are subtracted from income, \$2,166 for families with one child and \$2,608 for families with two or more children.⁹ This results in lower aggregate amounts, compared to Measure 2, in the SIPP and the CPS datasets. In the CPS, average yearly expenditures are lower, as is the resulting poverty rate. However, the mean expenditures and the resulting poverty rate are not different in the SIPP dataset.

Combined expenses

Figures 9 and 10 depict the combined effect of child care and other work-related expenses on poverty. Because of the advantages of using fixed amounts we combine the NRC measure of work-related expenses with Measure 3 of child care expenses. As can be seen in Figure 8, accounting for these expenses increases the poverty rate significantly, from 12.1 to 13.5 percent for the year 1991 using the 1991 SIPP panel, and from 14.8 to 16.5 percent for the year 1992 using data from the March 1993 Supplement to the CPS. The elderly are not affected by this alternative poverty measure, while children are substantially affected. Both Blacks and Whites experience significant increases in poverty using the new definition and CPS data. Only Whites experience a significant increase in poverty using SIPP data.

SUMMARY AND RECOMMENDATIONS

...Critically important for the measurement of poverty is the availability of appropriate, high quality, and timely data - both for developing and updating the poverty thresholds and for estimating the resources available to families and individuals...

The March supplement to the CPS does not fulfill this requirement on different fronts, one of them that child care expenditures and work related expenses are not reported in the CPS. SIPP collects information on child care and other work related expenses, nevertheless there are a number of caveats. The information on child care expenses used in this paper was collected in wave 3 of the 1991 panel. As discussed earlier, potential biases arise since costs were reported for only one month (the twelfth panel month), and allowable deductions in a given calendar year were based on the earnings of the guardian and spouse in that month. We assume in our analysis that the pattern observed in the last month of the reference period held true for the entire calendar year. Using the 1992 panel to estimate the 1992 poverty population is more problematic since questions on child care are not asked until wave 6, covering the second half of 1993. In addition to the previous problem of applying one month's status to the whole calendar year, one would now also need to deflate 1993 child care expenditures back to represent expenses in 1992. Since economic conditions, such as the unemployment rate, and social trends, such as the father's involvement in child rearing, affect child care arrangements and thus expenses, deflated 1993 amounts might be biased proxies for 1992 amounts./10

The availability of timely data is important in a comprehensive measure of poverty as envisioned by the NRC panel. Thus child care data need to be collected several times during the panel, at fixed time intervals, so as to measure expenses every year at the same time. Since child care expenses are probably seasonal, i.e., higher during school vacations in summer and around the Christmas holidays, information should be collected in more "typical" periods. (It's also possible that child care expenses are lower during vacation time since parents often are forced to take time off from work. The relative strengths of these opposing effects are not known.)

Current plans for the 1996 panel ask about child care in waves 4 and 10, covering September, October, November, or December of a given year, depending on the rotation group. With the possible exception of December, the other months are probably "typical" months, and therefore appropriate for estimating yearly amounts. Unfortunately, the 1996 panel will not gather child care information anytime in 1997, necessitating either imputation, inflation of 1996 amounts, or deflation of 1998 amounts.

Starting with the 1996 panel, a topical module is added in wave three to facilitate the use of SIPP as the source of our official poverty estimation. Respondents are asked about child support paid and work-related expenses for main jobs and businesses that are held on the last day of the reference period. Respondents give detailed information about modes of transportation to and from work and the costs associated with them. They also answer questions about such costs as union dues, licenses, uniforms, etc. The appendix contains a copy of the module questionnaire.

As noted above in our discussion, a substantial fraction of respondents did not answer the topical module questions on child care and other work-related expenses used in this study. An effort would have to be made to model these expenses for nonrespondents. This issue is important only if we use reported amounts./11

The same arguments against using reported amounts apply to both child care and other work-related expenses. Thus, a new measure of poverty should ideally be consistent in its treatment of the two types of expenses. It should reflect the money that is necessary to meet an acceptable standard of quality. It should not reflect what people can afford or the sacrifices they are willing to endure. A new measure should also allow one to gauge policy changes. Fixed amounts as a percent of median expenditures on child care and other work-related expenses meet these conditions and are, in our opinion, the best option available.

Footnotes 1/Citro, Constance F. and Robert T. Michael, *Measuring Poverty a New Approach*. Washington, DC, National Academy Press; 1995. P 40.

2/Op cit. P 66.

3/Op cit. P 240.

4/The panel proposed a separate geographic adjustment of the thresholds for differences in housing costs, so deducting a flat amount for work expenses is appropriate.

5/U.S. Department of Transportation. *Travel Behavior Issues in the 1990's*. July 1992.

6/The one-fifth estimate is an unweighted person count. Even if the reference period for the topical module were changed, problems of recall over the longer time period would cause the resulting data to be suspicious.

7/The differences in the estimated average yearly expenditure in the fixed cost scenario result from differences in the estimates of hours worked and weeks worked between the CPS and the SIPP.

8/The differences in the estimates of poverty between the datasets stem largely from differences in reported income, with SIPP capturing more income than the CPS.

9/\$2,166 is not significantly different from \$2,608.

10/A recent Census Bureau report P70-53 showed that the proportion of preschoolers with working mothers who were cared for in an organized facility jumped from 23 percent in 1991 to an all-time high of 30 percent in 1993, while the proportion of fathers who were taking care of preschoolers declined accordingly.

11/Modeling work-related expenses was not feasible for the 1987 SIPP data. Our models were unable to explain more than three percent of the variation in work related expenses.