

Developing Monthly Poverty Estimates Based on the Monthly Current Population Survey Labor Force Public Use Files

A Report on Methods and Results

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Working Paper

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I. SUMMARY

The Census Bureau has been the source of estimates of the American poverty population for five decades. The first official estimates of poverty date back to those developed for 1959 based on the 1960 Decennial Census of Population and Housing. Since that time these estimates of poverty have been made every ten years based on other Decennial Censuses and annually based on the March supplement to the Current Population Survey (CPS). More recently, the Survey of Income and Program Participation (SIPP) has provided “unofficial” measures of poverty based on the collection of monthly income sources and amounts employing a longitudinal survey design.

While the March CPS remains the official source of poverty estimates as defined in the Office of Management and Budget's (OMB) Statistical Policy Directive 14, many alternative methodologies have been examined for estimating the number of persons and families with inadequate income and other resources. Of late, most of the attention regarding poverty measurement has focused on how varying definitions of resources (income side) and poverty thresholds (needs side). The catalyst for much of this research has been the National Academy of Sciences' most recent report titled, “Measuring Poverty: A New Approach”, released in September 2008. To our knowledge, however, there have been no attempts to improve the timeliness of the poverty measure.

The recessionary period that began in December 2007 serves to illustrate the need for a more current measure of poverty. In August 2009 the Census Bureau released estimates of the poverty for calendar year 2008. These were the first poverty estimates that in a small way reflect the economic hardship resulting from the recession. They, however, fail to reflect the effects of the rapidly increasing unemployment rate that did not occur until the early part of 2009. We must continue to wait until August 2010 in order to obtain any measure of poverty that fully reflects the recession until 32 months after it began.

While some might argue that the monthly unemployment rate is sufficient to chronicle the economic situation of households between the annual income and poverty measures provided by the March CPS income supplement, the timing and nature of the current protracted economic slowdown provides some traction for the need for an additional measure of economic hardship.

This document describes the exploration of methods for measuring “poverty” on a monthly basis that use data from the monthly Current Population Survey (CPS), the household survey providing the Nation's employment and unemployment statistics. Further, these estimates can be generated within 30 days following the release of the Bureau of Labor Statistics (BLS) release of the monthly unemployment rate.

Summary of Methods

The estimation methods are based largely on four data sources. These are 1) monthly public-use microdata files based on the Current Population Survey (CPS) that contain responses to the labor force questions used to generate unemployment and other labor-related topics, 2) the public-use microdata files based on the annual income supplement to the March CPS, 3) counts of total unemployment insurance weeks compensated by month, and 4) weekly unemployment benefit amounts payable by states.

Since the current official poverty measure compares family total money income to a set of poverty thresholds that vary by family size, number of children and age of the family householder, we needed to develop methods for estimating family total money income monthly for all sample families in the CPS. Our sources for total money income were: family earnings derived from questions for those sample persons entering either their fourth or eighth monthly interview (in CPS jargon MIS 4 and 8 where MIS is the abbreviation for month-in-sample), simulated family weekly unemployment benefits, and weekly family “other” income (the sum of the remaining components of total money income) generated by statistically matching each sample monthly family to a donor family from the “nearest” March CPS. The March CPS collects detailed income source and annual amount data for all components of total money income at a person level. The annual amounts from the March CPS were divided by 52 to transform them to a weekly accounting basis.

Estimates of poverty were generated for all month between January 2005 and August 2009. The estimates were created by comparing family total money income to official poverty thresholds (transformed into weekly amounts) updated monthly based on changes in the Consumer Price Index.

Summary of Results

Our final time series estimates of monthly poverty rates for persons are shown in Chart A. The detailed poverty rates, population counts, etc. can be found in Appendix A. The poverty estimates in this chart came about as the result of a number of revisions and adjustments to the basic method described above. The chart shows two series, one based directly on the monthly samples and a second showing the moving 3-month moving average.

The chart clearly shows our model’s ability to track increases in the poverty rate as the recession deepened. It also shows significant month to month fluctuations in the poverty rate from month to month. Based on our research we believe that the main contributors to these fluctuations are sampling variability and, to a lesser extent, the quality of the statistical match from month to month.

We believe that the main factor contributing to monthly-to-month changes in poverty rates is sampling variance. The sample we use, by definition, is restricted to 25-percent of the total sample since the weekly earnings question are asked solely in months-in-sample 4 and 8.

Hence, there is no sample overlap from month-to-month. Statistics, such as the unemployment rate, on the other hand, benefit greatly from the covariance provided from the 75-percent sample overlap from month-to-month.

The main concerns regarding the statistical match are which set of matching variables provides the best measure of poverty and month-to-month variations in the “quality” of the matches.

First, we observed that the choice of variables used to link March and monthly families has nontrivial effects on the overall monthly poverty rates. While this is not necessarily unexpected, it is difficult to know which set of characteristics used in the match produces the “best” set of estimates. We were able to select a set of matching variables that produced the best results for March since we can compute a poverty rate directly based on the weekly family earnings from the labor force questions and the income amounts directly from the income supplement. We do not know, however, if this is the best set overall since the quality of the statistical matches we tested was measurably lower for months other than March.

Secondly, the quality of the statistical match clearly varies from month to month. This measure of quality is based on statistics generated in the matching process that provide measures of correspondence between the characteristics of the March donor families and the monthly CPS families who acquire their “other income” values from the match. As one might expect, this correspondence is significantly higher in March.

It is certain that the results of our research have not yet yielded a method for estimating poverty that can be implemented in an ongoing published series. On the other hand, we have developed a new use of the CPS data, one that may inspire others to undertake similar research. The monthly CPS data, in general, provide opportunities for creating other series of demographic and economic statistics that can help shed light on changes in the situation of American families.

II. METHODOLOGY

II a. Deriving Family Income

The first task in developing monthly estimates of poverty was to estimate family income for the sample families in the monthly CPS. Ideally, monthly estimates of “poverty” require monthly estimates of family total money income as defined by the Census Bureau’s March CPS income supplement. Total money income derived from the Census’s income supplement is the sum of 23 individual sources of income over all family members.

The monthly CPS provides two measures of income were used in deriving monthly family total money income. One is a measure of total household income during the 12-month period prior to the household’s entry into the survey. This income measure is based on a single question. The household respondent is asked to choose the interval that contains the household income from list of bounded income intervals. The question is posed when the household enters the sample for the first time and then updated when it reenters one year later for a second round of four monthly interviews. While the information collected from this question was utilized in the estimation process, it played only a supporting role as describe later.

The second source of income information is the “usual weekly earnings” (actually restricted to wages and salary income) questions that are included in the monthly CPS, but only for the “outgoing” rotation groups (often termed months-in-sample 4 and 8). These are the sample households completing either their 4th or 8th monthly interview. Sample persons are not asked respond to a question about their usual weekly earnings, but are asked a series of questions, the responses to which are used to compute usual weekly earnings. As indicated above, not all persons are “in the universe for the questions even though they are working and have earnings. The following defines the universe of persons eligible for the weekly earnings questions:

- Persons age 16 years old and over
- Persons employed during the survey reference week (the week containing the 12th of the month)
- Persons who are designated as wage and salary workers excluding self-employed incorporated owners of their own businesses who are otherwise considered wage and salary workers by standard definitions
- Excludes those self-employed not incorporated, unpaid family workers, persons unemployed or on layoff, and all persons termed not in the labor force
- Excludes current members of the Armed Forces
- Persons in households in months-in-sample 4 or 8

As wage and salary income makes up about 77 percent of total money income, the usual weekly earnings questions provide information on the most important income component. It needed to be augmented, however, with income received from the other sources included in total money income in order to match the definition used for official poverty definition.

We decided to rely on the March CPS income supplement as our source of “other income” needed to arrive at the needed total money income amount for each monthly CPS family. Since we only have this income information directly for the March survey, we needed to develop methods to simulate “other income” amounts for all other months.

A simulation methodology was chosen that was based on hierarchical statistical matching techniques (see Appendix E for a description of statistical matching procedures and other definitions and explanations). Matching software developed by Sentier Research was used to match each monthly CPS family with a March CPS sample family having “similar” characteristics. The “other income” amount for the March CPS family (the donor) was then assigned to the monthly CPS family. Since the March CPS collects annual income amounts, the amounts assigned to the monthly family were divided by 52 to convert them to a weekly basis to be consistent with usual week earnings.

The process of arriving at total money income for the monthly CPS families included another step designed to provide a weekly amount of unemployment compensation that reflects the current situation for family members each month. The receipt of unemployment compensation and the amount received were simulated for all persons whose employment status was either “unemployed” or “on layoff for a job”. First, the receipt of unemployment compensation was assigned using a simple Monte Carlo simulation. The number of persons receiving unemployment compensation as reported from Bureau of Labor Statistics (BLS) sources was divided by the number of unemployed (or on layoff) persons as measured by the monthly CPS to provide the probability of receipt for the CPS unemployed population.

Currently unemployed persons were assigned a weekly amount of unemployment compensation in a second simulation process. In this process we first needed to impute a usual weekly earnings amount to the CPS unemployed since the amounts of unemployment benefits are tied to earnings levels, recalling that unemployed sample persons are not in the universe for the weekly earnings questions. A second hierarchical statistical match was developed to impute a weekly wage. In this match, the CPS unemployed were linked to CPS employed (the donors) having similar characteristics. The weekly wage amount was then assigned to the matching unemployed person. Once this amount was available, we assigned the weekly unemployment benefit using state-by-state benefit tables delineated by weekly earning amounts. A set of monthly diagnostic statistics showing key information about the unemployment benefit assignments is automatically transferred to an excel spreadsheet “tabulations_v7.xls” which is located in the “tabulations” subdirectory.

At this point it was possible to compute weekly family total money income. The components and sources are listed below:

Income Components from the Monthly CPS

- Wages and salary income from the monthly survey
- Unemployment compensation simulated

Income Components Linked from the Matching March CPS Families (other income)

- Self employment income
- Social Security
- Supplemental Security Income
- TANF and other cash public assistance
- Interest income
- Dividend income
- Net rental income and royalties
- Workers' compensation
- Veterans payments
- Retirement pensions and annuities
- Disability pensions
- Survivor pensions
- Child support
- Alimony
- Financial assistance from outside the household
- Educational grants and assistance
- Other periodic income not elsewhere classified

II b. Family Formation for the Monthly CPS

The monthly CPS public use data files do not contain explicit family identification numbers that group household members together into families that comply with standard Census Bureau definitions. Since the official poverty definition includes details regarding family composition, we needed to group household members into families using Census rules.

The procedures we developed used detailed household relationship information and age to group household members into three basic family types:

- Member of a primary family
- Member of an unrelated subfamily
- Unrelated individual age 15 and over

Members of primary families include all persons in the household that are related to the household reference person by blood, marriage, or adoption. Members of unrelated subfamilies are persons living with related persons, all of whom are not related to the household reference person. Unrelated individuals are persons living alone or living in a

household where they are not related to any other member. The income of the members of these family types are summed together to arrive at a total family income for purposes of determining poverty status. The official poverty definition excludes unrelated individuals under age 15 from the universe of persons for whom a poverty status is computed. This distinction, while seemingly strange, is imposed because the March CPS income supplement collects income information for persons age 15 and over. Hence, all unrelated individuals under age 15 would be defined as poor if they were not excluded.

The formation of family units included all information needed to compute poverty status as dictated by the official poverty matrix and to compute weighted estimates of the number of poor and the poverty rate. These are:

- Age of family reference person
- Number of family members
- Number of related children under age 18
- Sum of survey weights for all family members

II c. Computing Monthly Poverty Thresholds

We required the calculation of poverty thresholds for all month between January 2005 and August 2008. The thresholds were based on updates of the annual poverty thresholds for 1984 as published by the Bureau of the Census. These thresholds were updated for price change using the monthly CPI-U, assuming a starting reference point of June 1984. The matrix of poverty thresholds is shown in Appendix D.

II d. Data Sources and Acquisition

The two main source of survey data used in the project are the public use microdata files for the monthly CPS and the public use microdata files for the March CPS, often labeled the ASEC or “Annual Supplement for Economic Characteristics” by the Census Bureau. All of the data files used are available for downloading from the Census website at

<http://www.bls.census.gov/ferretftp.htm>

Documentation covering the contents of these files is also available for download at this site.

The files are in the form of ASCII text. As such the file layouts are required to extract the individual variables. We created extracts of these files using SAS and all data manipulations and modeling were made using SAS programming methods.

The ASEC data files from the March CPS include all sample households from the monthly CPS and additional sample households that supplement the sample size for low income and minority populations. These supplemental households were removed before the statistical

matches were made so that the matches would not be biased. Identifying these supplemental households on the ASEC files requires a check on the variable named “a-fnlwgt”. All supplemental sample persons have a zero for this weighting-related variable.

The ASEC data files also required removal of all households containing current armed forces members since the monthly CPS files exclude these individuals. This exclusion can be made by removal all households containing any member have a value of “2” for the variable labeled “p-stat”.

Basic Monthly Files

We have downloaded a total of 48 monthly CPS public use files covering the period from January 2005 to August 2009. These files can be found in the subdirectory “monthly_poverty_project\monthlydata\zippedmonthlypublicuse” along with the record descriptions. The number of sample persons on these files varies but is generally slightly larger than 150,000 each month. This count includes both adults and children in sample households.

March CPS Files

We also downloaded the March CPS public use files from the same Census site for 2005 to 2009. These files are located in the subdirectory “monthly_poverty_project\marchdata\zippedpublicuse” along with the record descriptions. The March CPS data files contain three record types 1) household, 2) family, and 3) person. Since the March CPS includes both the monthly sample and additional Hispanic and low-income households, its sample is significantly large than the monthly survey alone. The person sample for each March is approximately 230,000. The number of household records approximates 75,000 and the number of family records 90,000. The count of family records includes both groups of related persons and persons living alone or in households where they are not related to any other family members.

Unemployment Benefits Data

An important component of the model is the imputation of weekly unemployment benefits to the currently unemployed sample persons. These imputations rely on a Monte Carlo simulation that uses the ratio of persons receiving unemployment benefits to the CPS monthly count of unemployed to assign receipt of unemployment receipt. The data used to estimate the number of persons receiving unemployment benefits was provided by the Bureau of Labor Statistics in the form of a set of unpublished counts of total “UI Weeks Compensated”. These are shown in Appendix B. The monthly number of persons receiving unemployment compensation was computed by dividing the total weeks compensated by 4.33. As these counts of weeks are only available at the national level we were not able to account for any variation in the proportion of unemployed receiving benefits by State or other geographic detail.

The second set of information needed is the actual weekly benefits payable to the unemployed. This set is contained in the spreadsheet file “benefitsbystate_v1.xls” located in the “ancillarydata\uibenefits” subdirectory.

II e. Program Organization and Detail

The programs used to generate the final set of estimates are based on many variants tested during the research period. All of the programs and supporting data have been organized within a directory “monthly_poverty_project” that is included in a companion CD. There are a large number of programs and supporting files required to generate the estimates presented later. A detailed listing and program sequences are shown in Appendix F. A general overview of the process is given here.

The basic sequence of programs required begins with creation of “extracts” of a subset of the variables contained on each monthly CPS data file for each person. The extracts include a set of person-level demographic information such as age, gender, relationship to householder, family type, family number, race, Hispanic origin, marital status, and educational attainment, as well as the necessary employment characteristics and weekly earnings amounts. These person variables were accompanied by household-level variables such as geographic information such as state, metropolitan area, population size of metropolitan areas, metropolitan-nonmetropolitan residence, region, and “control card” income. The extracted employment items include weekly employment status (working, with a job but not at work, unemployed, on layoff, going to school, retired, etc) reason of unemployment, duration of unemployment, when last worked, occupation, industry, etc.

For the period from January 2005 to August 2009 the extract program does not require any changes other than updating the name of the input and output files to reflect the month and year of the survey. To facilitate this process of updating the execution for the month and year of the survey we have used “batch” processing in which the updates are embedded in the batch execution. The batch files are included in a subdirectory “batch”.

Creation of each extract is followed by the following series of steps:

- Compute the total number of unemployed from the full CPS monthly sample who did not report “QUITTING” as the reason for leaving their last job and have had a job at some time in their life (not “NEVER WORKED”)
- Compute the number of persons receiving unemployment compensation based on the BLS data (the spreadsheet of weeks compensated shown in Appendix E is converted to a SAS data set by reading the spreadsheet from a SAS program)
- Create a subset of the full file containing only persons in MIS 4 and 8 since these are the persons subject to the weekly earnings questions
- Impute a weekly wage to the unemployed persons since the weekly earnings questions are not asked for them (using statistical matching)

- Using the probability of unemployment benefit receipt, assign receipt of benefits to all unemployed using Monte Carlo methods.
- Assign weekly unemployment benefit from “lookup” table of weekly benefits by state (lookup table was SAS data set created by reading the spreadsheet from a SAS program). See Appendix B for values.
- Create family level unit characteristics by family type (primary families, unrelated subfamilies, and unrelated individuals) for each family and assign a unique family id to each family member.
- Create family level weekly wage and family level weekly unemployment compensation amounts by summing across all persons in each family.
- Create a unified family “record” containing variables that all information needed to perform the statistical match with March CPS families to obtain the other components of “total money income”.
- A variable is generated that contains the sum of the sample weights of all persons in the family so that a person-based poverty estimates can be made without accessing the individual records of the family members.

This phase of the processing generates 56 SAS data sets.

In the assignment of unemployment benefit receipt using the ratio of the total national number of persons receiving benefits to the CPS month number of unemployed we found that the weighted count of those assigned receipt almost always fell below the total used as the numerator of the ratio. In order to assure that the weighted count matched the count derived from the BLS data source it was necessary to repeat the assignment procedure and end the assignments when the target was achieved.

The statistical match between the monthly CPS families and the March CPS families required that we prepared five sets of “donor” families from the March CPS, one for each survey conducted during the 2005 to 2009 period. As in the case of the monthly CPS, we first generated extracts containing subsets of the full file content. The March CPS data files contain separate “records” for households, families, and persons, with variables that permit linkages between them. Extracts for each of these three record types were made by three separate programs and the results merged together to form a set of unified family records containing the other income information needed by the CPS monthly families and the common variables needed for the statistical match. Note that since the final version of the statistical match utilized weekly family wage values as a key variable, the March CPS families were limited to only those in MIS 4 and 8.

Once the March CPS family donor files were generated we then conducted the statistical match between the March donor families and the 56 monthly family files. The statistical match program was the same for all of the 56 executions. The programs were run within the batch processor so that the month and year of the monthly CPS family file could be updated in an automated way. The statistical match program which is a shell around a set of statistical match SAS “macro functions” automatically selects the nearest March donor file (defined by the

distance, in months, from the March donor file to the CPS monthly family file). That means, for example, that the statistical match for October 2007 would utilize the family donors from the March 2008 CPS.

The output of the statistical match is a file containing the unique identification number of the March family selected in the matching process along with the family number of the monthly CPS family that requires the other income sources to complete its estimate of total money income.

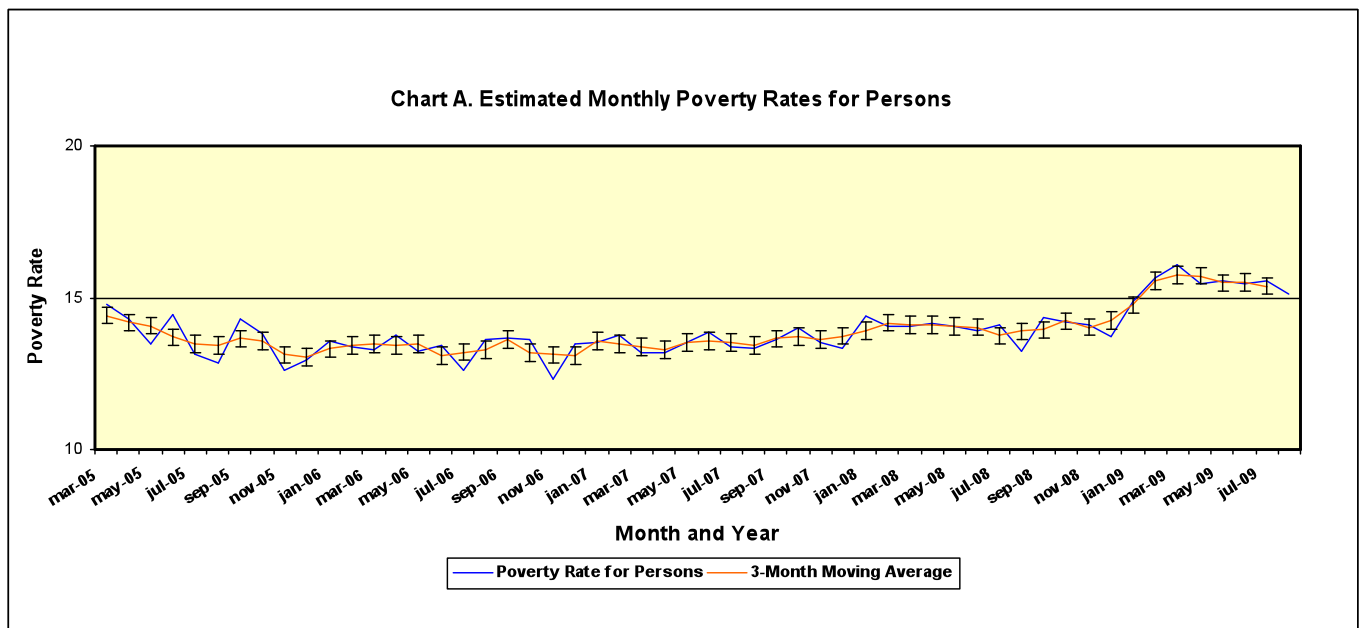
A match-merge data step is included in the statistical match program that links the output of the statistical match to the base March CPS family file so that the other income information can be transferred to the CPS family. The amount taken from the March CPS donor family is then divided by 52 to put it on a weekly basis. This amount is then added to the family weekly earnings and family weekly unemployment compensation obtained in earlier processing. The output of the various data sets contained within the statistical match program produces a final data set from which poverty estimates can be computed.

The computation of the actual poverty estimates is made in the final program in the sequence. The output of the statistical match is the input to this program. The poverty computation requires a poverty threshold matrix that reflects changes in the CPI-U from the base year to the current income reference month. The values in the matrix are updated automatically within the SAS program. We maintain a list of the monthly CPI-U values in an excel spreadsheet that can be found in the "ancillarydata\cpis\" subdirectory.. The program creates a data set from the spreadsheet and then selects the appropriate value based on the month and year associated with the current file being accessed for poverty estimation. We use the 1984 official poverty matrix as the base and the June 1984 CPI-U as the starting point for updating the threshold values. The weighted population counts, weighted poverty counts, and the poverty rates for persons and for families are transferred directly to an excel spreadsheet by the program. This spreadsheet is located in the tabulations subdirectory and is named "tabulations_v7.xls" located in the "tabulations" subdirectory. The same program prints the monthly poverty matrix in the "sas log" and also generates a group of selected family income statistics for primary families that are automatically placed in the spreadsheet as well.

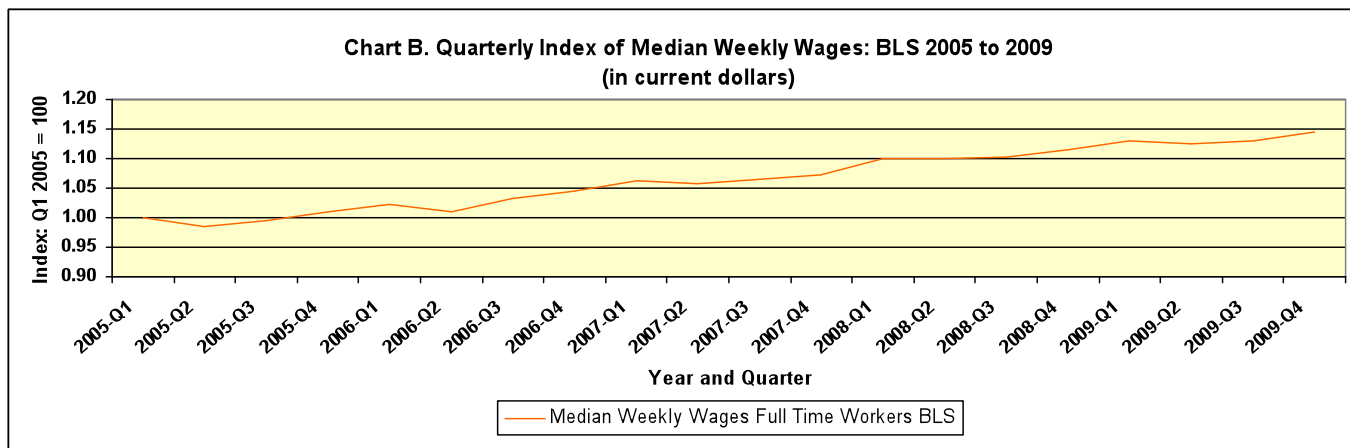
III. DISCUSSION OF RESULTS

The objective of this effort was to explore the feasibility of using the monthly data from the Current Population Survey (CPS) to generate estimates of poverty that inform us about the situation of low income families during the periods between the release of the annual official poverty estimates each August. If a viable measure of subannual poverty could be developed, it could join the monthly unemployment rate and the quarterly average weekly earnings series published by the Bureau of Labor Statistics as an indicator of family hardship.

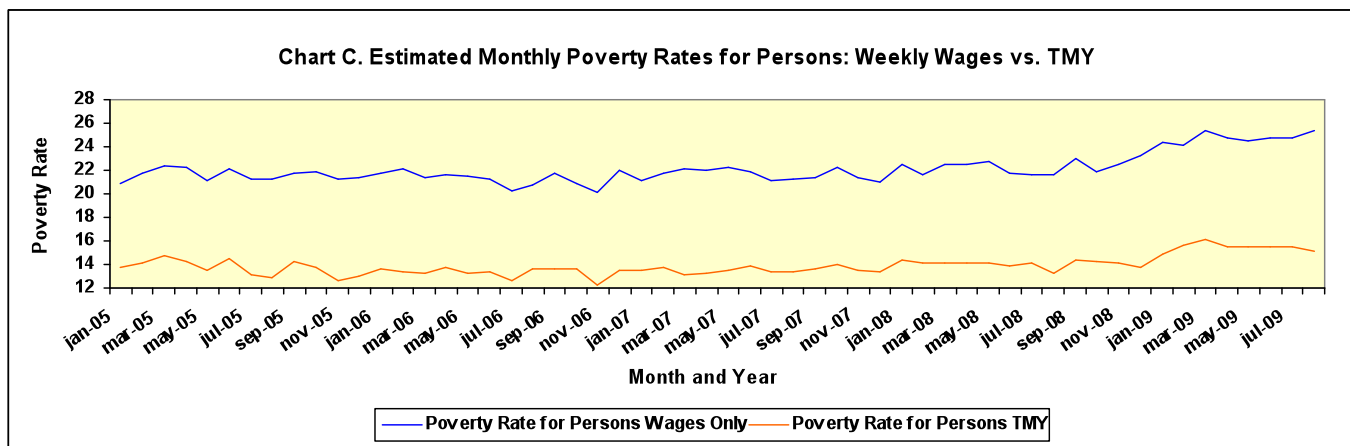
Our final set of poverty estimates are shown graphically in Chart A. The detailed monthly statistics are contained in Appendix A. We have made estimates for each month from January 2005 to August 2009. Chart A shows the estimated person poverty rates for single months (blue line) and for 3-month moving averages (orange line). The “error bars” provide an estimate of the 90-percent confidence limits around the 3-month moving average values. The 90-percent confidence interval on a poverty rate of 14.0 percent is about plus/minus 0.3 percentage points for the 3-month averages and about 0.5 percentage points for the single-month estimate. The 90-percent confidence interval on the annual poverty estimate derived from the March CPS was plus/minus 0.2 percent for the 12.5 percent rate for 2008.



As a reference point we show an index based on median weekly earnings series (full time workers only) published quarterly in Chart B. The BLS uses the same week earnings data that form the corner post of our monthly poverty estimates. They (the BLS) combine monthly survey estimates into a quarterly series in order to reduce sampling variability and this strategy appears imperative for our poverty estimates as well.



The variations expressed in the monthly poverty estimates reflect not only the sampling variability but variations introduced by the model as well. We have not made any direct attempt to measure that component of total error, often termed nonsampling error, but note that the Census Bureau does not provide measures of nonsampling error for its estimates either. We have, however, made a comparison of poverty rates generated solely from family weekly wage leaving out other income sources and amounts added from the statistical match to the March CPS. These rates are compared to the monthly poverty rates that do include other income sources (see Chart C). While we have not attempted to disaggregate the variance attributable to these components, the variation in the poverty rates based on total money income do not appear larger than those based only on family weekly wages.



TMY denotes “total money income”, the income definition used for official poverty measurement

The statistical match is a key element in the model. Without it we do not have a total money income measure needed to generate estimates of poverty that are based on the official poverty definition. While we do not think that it is a major contributor to month-to-month variation given a set of matching variables, the general level of our poverty estimates is affected by variables used to define the statistical linkage between the March and monthly CPS families. The estimates are also affected by how the March CPS donor pool of families is defined. For

example, if we choose to limit the pool of March family donors to those in MIS 4 and 8 we obtain higher estimates of poverty than if we expand the donor pool to include the full March sample of families.

We also noted that a matching variable defined for March CPS donor families based on weekly family earnings derived from the annual wages reported in the supplement led to lower poverty estimates. The weekly family earnings derived from annual wages is significantly higher than weekly family earnings derived from the monthly CPS questions.

We also know that the statistical matches for the March monthly surveys are “better” than those for other months, presumably because they involve the same base set of households. . This measure of quality is based on statistics generated in the matching process that provide measures of correspondence between the characteristics of the March donor families and the monthly CPS families who acquire their “other income” values from the match. As one might expect, this correspondence is significantly higher in March. For example, the statistical match for March 2009 monthly linked families defined by the highest match level 98 percent of the time compared to an 83-percent rate for January 2009.

As a general observation our monthly poverty estimates are higher than the official poverty estimates derived from the March CPS. Table 1 shows a comparison of annual average poverty rates derived from our model and the official poverty rates for 2005-2009.

Table 1. Comparison of Annual Average Monthly Poverty Rates and the Official Annual Poverty Rates for 2005-2009

Poverty Reference Year	Poverty Rate	
	Annual Average from Monthly CPS Model	March CPS
2005	13.7	12.6
2006	13.3	12.3
2007	14.2	12.5
2008	14.0	13.2
2009*	15.5	(na)
* January to August only		
(na) data not yet available		

While we have not explored the relationship in any detail, it is most likely that the annual reference period yields higher earnings amounts generated by members working part-year.

This can only result in lower poverty rates as the basis for the poverty thresholds is the same for both the annual and monthly measures reference periods.

Exploring Sensitivity Issues Related to the Statistical Match- As we have mentioned, the modeled poverty rate estimates are subject to nontrivial variation related to alternate statistical matching scenarios. The table in Appendix G. shows the results from using six matching alternatives.

APPENDIX A. Population, Poverty Counts, and Poverty Rates: January 2005 to August 2009

Table 1. Modeled Monthly Poverty Estimates for Persons Using Weekly Earnings from the Monthly CPS and Unearned Income "Matched" from the March CPS Annual Income Supplement ROUND 3

Reference Month and Year	Total Number of Persons (weighted)	Number of Persons with Weekly Family Income Below Poverty Level (weighted)	Poverty Rate for Persons	3-Month Moving Average	Official Poverty Rate from the March CPS Centered on Reference Year
jan-05	286,871,092	39,404,256	13.7	(x)	
feb-05	286,962,860	40,667,432	14.2	(x)	
mar-05	287,534,496	42,540,564	14.8	14.2	
apr-05	287,199,028	41,025,912	14.3	14.4	
may-05	288,133,980	38,855,676	13.5	14.2	
jun-05	287,847,276	41,579,796	14.4	14.1	12.6
jul-05	287,802,596	37,881,820	13.2	13.7	
aug-05	288,178,768	37,037,748	12.9	13.5	
sep-05	288,514,128	41,245,892	14.3	13.4	
oct-05	289,164,232	39,920,160	13.8	13.7	
nov-05	289,146,668	36,425,300	12.6	13.6	
dec-05	290,088,740	37,599,704	13.0	13.1	
jan-06	289,704,156	39,393,476	13.6	13.1	
feb-06	289,545,244	38,736,360	13.4	13.3	
mar-06	289,407,816	38,476,144	13.3	13.4	
apr-06	290,195,708	39,993,020	13.8	13.5	
may-06	290,424,840	38,448,328	13.2	13.4	
jun-06	290,107,076	38,971,028	13.4	13.5	12.3
jul-06	290,747,324	36,593,368	12.6	13.1	
aug-06	291,559,696	39,658,012	13.6	13.2	
sep-06	291,423,088	39,771,752	13.6	13.3	
oct-06	291,637,976	39,663,888	13.6	13.6	
nov-06	292,088,272	35,963,108	12.3	13.2	
dec-06	291,971,552	39,320,696	13.5	13.1	
jan-07	292,701,136	39,522,164	13.5	13.1	
feb-07	292,840,596	40,373,432	13.8	13.6	
mar-07	293,318,800	38,619,980	13.2	13.5	
apr-07	293,628,988	38,763,848	13.2	13.4	
may-07	294,221,732	39,749,492	13.5	13.3	
jun-07	293,957,676	40,751,216	13.9	13.5	12.5
jul-07	293,780,124	39,250,420	13.4	13.6	
aug-07	294,327,684	39,242,160	13.3	13.5	
sep-07	294,591,932	40,074,340	13.6	13.4	
oct-07	295,139,980	41,380,844	14.0	13.7	
nov-07	295,016,748	39,853,360	13.5	13.7	
dec-07	295,470,180	39,338,264	13.3	13.6	

APPENDIX B. Unemployment Compensation Benefit Levels by State: 2005 to 2009

State	Percent of Wages	Benefit Amounts									
		minamt05	minamt06	minamt07	minamt08	minamt09	maxamt05	maxamt06	maxamt07	maxamt08	maxamt09
al	0.50	\$45	\$45	\$45	\$45	\$45	\$235	\$235	\$235	\$235	\$255
ak	0.50	\$44	\$44	\$44	\$44	\$44	\$320	\$320	\$320	\$320	\$442
az	0.52	\$60	\$60	\$60	\$60	\$60	\$240	\$240	\$240	\$240	\$240
ar	0.50	\$73	\$73	\$73	\$73	\$73	\$409	\$409	\$409	\$409	\$431
ca	0.50	\$40	\$40	\$40	\$40	\$40	\$450	\$450	\$450	\$450	\$450
co	0.50	\$25	\$25	\$25	\$25	\$25	\$455	\$455	\$455	\$455	\$475
ct	0.50	\$15	\$15	\$15	\$15	\$15	\$576	\$576	\$576	\$576	\$594
de	0.57	\$20	\$20	\$20	\$20	\$20	\$330	\$330	\$330	\$330	\$330
dc	0.50	\$50	\$50	\$50	\$50	\$50	\$359	\$359	\$359	\$359	\$275
fl	0.50	\$32	\$32	\$32	\$32	\$32	\$275	\$275	\$275	\$275	\$330
ga	0.50	\$44	\$44	\$44	\$44	\$44	\$320	\$320	\$320	\$320	\$545
hi	0.62	\$5	\$5	\$5	\$5	\$5	\$523	\$523	\$523	\$523	\$363
id	0.50	\$58	\$58	\$58	\$58	\$58	\$364	\$364	\$364	\$364	\$534
il	0.47	\$51	\$51	\$51	\$51	\$51	\$511	\$511	\$511	\$511	\$390
in	0.52	\$50	\$50	\$50	\$50	\$50	\$390	\$390	\$390	\$390	\$443
ia	0.62	\$51	\$51	\$51	\$51	\$51	\$426	\$426	\$426	\$426	\$423
ks	0.55	\$101	\$101	\$101	\$101	\$101	\$407	\$407	\$407	\$407	\$415
ky	0.51	\$39	\$39	\$39	\$39	\$39	\$415	\$415	\$415	\$415	\$284
la	0.52	\$10	\$10	\$10	\$10	\$10	\$258	\$258	\$258	\$258	\$516
me	0.59	\$57	\$57	\$57	\$57	\$57	\$496	\$496	\$496	\$496	\$380
md	0.54	\$25	\$25	\$25	\$25	\$25	\$380	\$380	\$380	\$380	\$942
ma	0.50	\$32	\$32	\$32	\$32	\$32	\$900	\$900	\$900	\$900	\$362
mi	0.53	\$113	\$113	\$113	\$113	\$113	\$362	\$362	\$362	\$362	\$566
mn	0.50	\$38	\$38	\$38	\$38	\$38	\$538	\$538	\$538	\$538	\$230
ms	0.50	\$30	\$30	\$30	\$30	\$30	\$210	\$210	\$210	\$210	\$320
mo	0.50	\$35	\$35	\$35	\$35	\$35	\$320	\$320	\$320	\$320	\$407
mt	0.49	\$114	\$114	\$114	\$114	\$114	\$386	\$386	\$386	\$386	\$308
ne	0.50	\$30	\$30	\$30	\$30	\$30	\$298	\$298	\$298	\$298	\$393
nv	0.52	\$16	\$16	\$16	\$16	\$16	\$362	\$362	\$362	\$362	\$427
nh	0.39	\$32	\$32	\$32	\$32	\$32	\$427	\$427	\$427	\$427	\$584

APPENDIX B. Unemployment Compensation Benefit Levels by State: 2005 to 2009											
State	Percent of Wages	Benefit Amounts									
		minamt05	minamt06	minamt07	minamt08	minamt09	maxamt05	maxamt06	maxamt07	maxamt08	maxamt09
nj	0.60	\$85	\$85	\$85	\$85	\$85	\$560	\$560	\$560	\$560	\$459
nm	0.54	\$66	\$66	\$66	\$66	\$66	\$455	\$455	\$455	\$455	\$405
ny	0.52	\$40	\$40	\$40	\$40	\$40	\$405	\$405	\$405	\$405	\$494
nc	0.50	\$41	\$41	\$41	\$41	\$41	\$476	\$476	\$476	\$476	\$406
nd	0.43	\$43	\$43	\$43	\$43	\$43	\$385	\$385	\$385	\$385	\$503
oh	0.50	\$103	\$103	\$103	\$103	\$103	\$493	\$493	\$493	\$493	\$409
ok	0.57	\$16	\$16	\$16	\$16	\$16	\$392	\$392	\$392	\$392	\$482
or	0.49	\$108	\$108	\$108	\$108	\$108	\$463	\$463	\$463	\$463	\$566
pa	0.52	\$35	\$35	\$35	\$35	\$35	\$547	\$547	\$547	\$547	\$660
ri	0.60	\$68	\$68	\$68	\$68	\$68	\$641	\$641	\$641	\$641	\$326
sc	0.50	\$20	\$20	\$20	\$20	\$20	\$326	\$326	\$326	\$326	\$298
sd	0.50	\$28	\$28	\$28	\$28	\$28	\$285	\$285	\$285	\$285	\$275
tn	0.50	\$30	\$30	\$30	\$30	\$30	\$275	\$275	\$275	\$275	\$392
tx	0.52	\$57	\$57	\$57	\$57	\$57	\$378	\$378	\$378	\$378	\$444
ut	0.50	\$26	\$26	\$26	\$26	\$26	\$427	\$427	\$427	\$427	\$425
vt	0.58	\$61	\$61	\$61	\$61	\$61	\$409	\$409	\$409	\$409	\$378
va	0.52	\$54	\$54	\$54	\$54	\$54	\$363	\$363	\$363	\$363	\$541
wa	0.50	\$122	\$122	\$122	\$122	\$122	\$515	\$515	\$515	\$515	\$359
wv	0.55	\$24	\$24	\$24	\$24	\$24	\$408	\$408	\$408	\$408	\$424
wi	0.52	\$53	\$53	\$53	\$53	\$53	\$355	\$355	\$355	\$355	\$363
wy	0.52	\$28	\$28	\$28	\$28	\$28	\$387	\$387	\$387	\$387	\$415

Appendix C. Weeks of Compensated Unemployment: January 2005 to August 2009

Source for Determining Proportion of the Unemployed Receiving Unemployment Compensation

Month and Year	Total Weeks Compensated	Weeks Regular Programs	Weeks Reimbursable Claims	Extended Benefits	Ex Federal Employment UCFE	Ex-Military UCX	EUC Tier 1	EUC Tier 2
1/31/2005	12,990,668	12,741,884	248,781	3	0	0	0	0
2/28/2005	11,708,772	11,491,514	217,254	4	0	0	0	0
3/31/2005	12,572,234	12,341,444	225,461	5,221	93	15	0	0
4/30/2005	9,976,257	9,774,132	191,201	10,730	160	34	0	0
5/31/2005	9,741,067	9,528,194	200,826	11,858	136	53	0	0
6/30/2005	9,524,627	9,325,211	196,707	2,663	24	22	0	0
7/31/2005	9,357,408	9,152,474	204,931	3	0	0	0	0
8/31/2005	10,215,698	9,967,496	248,199	3	0	0	0	0
9/30/2005	8,554,450	8,347,573	206,872	5	0	0	0	0
10/31/2005	9,408,366	9,196,135	212,228	3	0	0	0	0
11/30/2005	9,653,345	9,429,033	224,303	9	0	0	0	0
12/31/2005	10,124,724	9,875,734	228,684	19,949	143	214	0	0
1/31/2006	12,877,140	12,600,466	257,991	18,300	154	229	0	0
2/28/2006	10,786,687	10,544,770	218,329	23,290	124	174	0	0
3/31/2006	11,196,926	10,954,364	218,441	23,999	60	62	0	0
4/30/2006	9,143,376	8,930,785	183,342	29,162	21	66	0	0
5/31/2006	9,220,205	9,013,091	189,670	17,249	27	168	0	0
6/30/2006	8,505,397	8,329,693	173,660	2,039	5	0	0	0
7/31/2006	9,267,331	9,080,247	186,739	344	1	0	0	0
8/31/2006	9,388,466	9,181,444	206,844	176	2	0	0	0
9/30/2006	7,700,115	7,522,240	177,776	99	0	0	0	0
10/31/2006	8,532,519	8,328,036	204,404	77	0	2	0	0
11/30/2006	8,537,246	8,339,315	197,890	41	0	0	0	0
12/31/2006	9,456,660	9,253,706	202,937	17	0	0	0	0
1/31/2007	12,876,074	12,634,331	241,738	5	0	0	0	0
2/28/2007	11,036,708	10,843,333	193,356	19	0	0	0	0
3/31/2007	10,785,925	10,599,812	186,095	18	0	0	0	0
4/30/2007	10,286,308	10,105,503	180,758	47	0	0	0	0
5/31/2007	9,287,075	9,118,429	168,644	2	0	0	0	0
6/30/2007	8,304,200	8,159,908	144,278	14	0	0	0	0
7/31/2007	10,162,655	9,988,604	174,047	4	0	0	0	0
8/31/2007	9,269,367	9,099,220	170,143	4	0	0	0	0
9/30/2007	7,964,302	7,803,179	161,117	6	0	0	0	0
10/31/2007	9,179,086	8,985,792	193,292	2	0	0	0	0
11/30/2007	8,612,324	8,438,617	173,705	2	0	0	0	0
12/31/2007	10,749,354	10,553,762	195,589	3	0	0	0	0
1/31/2008	13,403,571	13,192,093	211,470	8	0	0	0	0
2/29/2008	12,169,671	11,991,348	178,322	1	0	0	0	0
3/31/2008	12,948,904	12,770,058	178,846	0	0	0	0	0
4/30/2008	12,274,401	12,106,221	168,180	0	0	0	0	0

Appendix C. Weeks of Compensated Unemployment: January 2005 to August 2009

Source for Determining Proportion of the Unemployed Receiving Unemployment Compensation

Month and Year	Total Weeks Compensated	Weeks Regular Programs	Weeks Reimbursable Claims	Extended Benefits	Ex Federal Employment UCFE	Ex-Military UCX	EUC Tier 1	EUC Tier 2
5/31/2008	10,361,180	10,221,720	139,459	1	0	0	0	0
6/30/2008	11,011,875	10,858,515	149,595	3,692	21	52	0	0
7/31/2008	13,546,808	12,072,805	158,271	5,714	28	83	1,309,907	0
8/31/2008	16,738,503	11,110,580	154,520	5,399	42	115	5,467,847	0
9/30/2008	18,585,413	12,023,918	171,828	6,460	56	108	6,383,043	0
10/31/2008	16,420,143	11,733,846	169,468	31,661	116	152	4,484,900	0
11/30/2008	15,656,697	12,375,451	163,762	72,501	204	429	3,044,350	0
12/31/2008	26,587,023	19,070,822	224,686	5,207	7	9	7,286,079	213
1/31/2009	28,755,573	20,742,676	211,421	40,359	97	214	7,114,941	645,865
2/28/2009	29,956,957	21,595,504	207,255	9,516	102	60	5,594,039	2,550,481
3/31/2009	38,146,275	27,069,293	246,086	60,229	443	422	6,644,627	4,125,175
4/30/2009	34,836,452	24,226,795	213,324	295,957	1,250	749	6,362,490	3,735,887
5/31/2009	34,208,420	22,962,906	196,399	1,281,289	6,307	5,375	6,895,266	2,860,878
6/30/2009	39,537,879	25,118,343	220,408	2,385,106	12,170	12,463	8,519,322	3,270,067
7/31/2009	38,736,924	23,354,066	220,487	3,257,982	15,080	16,686	8,788,036	3,084,587
8/31/2009	39,598,007	22,437,412	233,469	3,440,333	17,826	18,263	10,220,260	3,230,444

Appendix E. Explanations and Definitions

Family- In this report the term “family” refers to both groups of related persons living together and to persons living alone or to persons living in the household but no related to anyone else in the household.

Monthly Poverty Measure- The measurement of poverty in this report is based on weekly family income during the reference month of the CPS. The poverty thresholds are based on the 1984 official poverty matrix that has been updated by the change in the Consumer Price Index from June 1984 to the reference month and converted to a weekly basis by dividing each threshold by 52.

Statistical Matching- Statistical matching methods (SMM) are an essential element of this attempt to develop monthly poverty estimates. The methods used here were developed by Sentier Research LLC for use in imputing missing responses to survey questions. In that use, the values of survey responses for persons that do respond are assigned to nonrespondents by matching individuals with similar characteristics. This is akin to “nearest neighbor” techniques but is much easier to implement. The matching routines used in this effort require a series of matching keys that are created for the “donors” (those cases donating data) and for the “needs cases” (those who will receive the matching donors response(s) for one or more targeted variables). The matching keys are derived from characteristics available for both the donor and needs groups. While there are many controls within the matching system, the basic match process is done by sorting the donors and needs groups on the each key and then merging the two files.

This type of matching is often referred to hierarchical when a series of matches is undertaken using different keys where each key in the sequence is “less detailed” or less desirable. After all attempts at matching have been completed the most desirable donor is selected and the response is appended to the needs case. The keys must be constructed by the user and must be ordered in such a way that the all needs cases match to at least one donor.

SMM’s were used here at two points. First, they were used to assign a weekly wage amount to the currently unemployed population so that the weekly wage amount could then be used in computing a weekly unemployment benefit. Second, they were used to assign non-labor income to monthly CPS families by linking records from the closest March CPS income supplement.

Matching Keys for Assigning Weekly Earning to Current Unemployed - Variables used to define the matching keys for assignment of weekly earnings to the currently unemployed are shown below. The keys themselves use various combinations of these variables:

- Gender
- Race
- Hispanic origin
- Age
- Occupation
- Highest grade attended
- Family relationship

- Geographic location (state, division, region)

Matching Keys for Assigning Non-labor Income to Monthly CPS Families - Variables used to define the matching keys for assignment of non-labor income to each monthly CPS family. The keys themselves use various combinations of these variables:

- Gender of family head
- Race of family head
- Hispanic origin of family head
- Age of family head
- Highest grade attended for family head
- Employment status of family head (including self-employed)
- Number of family members
- Number of children under age 18
- Type of family, e.g. married couple, female single family, unrelated individual
- Geographic location (metro area, state, division, region)

Sample Sizes - It is useful to note the approximate sample sizes for the data underlying our estimates. The sizes below refer to those applicable to November 2007 but are typical for all months during the period beginning January 2005:

- 59,122 donor families from the March CPS used to assign non-labor income amounts to monthly CPS families
- 14,913 families from the monthly CPS reflecting the 25 percent of the sample subject to the weekly earnings questions after removing families containing current Armed Forces members
- 134,285 total persons in the monthly CPS sample including children of any age
- 33,367 persons in the subsample of the monthly CPS subject to the weekly earnings questions (after removal of current Armed Forces)
- 26,075 persons age 16 and over
- 14,561 donors for assigning weekly earnings to the currently unemployed
- 710 unemployed persons needing assignment of a weekly earning amount
- 191 unemployed persons assigned a weekly unemployment benefit

Weights - A weight is assigned to all persons in the monthly CPS. The sum of weights for all sample persons reflects an independently derived estimate of the total population at the time of survey. As the sample for this study was restricted to 25 percent of the total sample, all survey weights have been multiplied by 4 before any weighted tabulations are made.

Control Card Income- Control card income is the term often given to the question posed when a sample household enters the CPS for either the first interview or returns for the first month of the second four-month series of interviews. The question appears as below:

- Less than 5,000
- 5,000 to 7,499
- 7,500 to 9,999
- 10,000 to 12,499
- 12,500 to 14,999
- 15,000 to 19,999

- 20,000 to 24,999
- 25,000 to 29,999
- 30,000 to 34,999
- 35,000 to 39,999
- 40,000 to 49,999
- 50,000 to 59,999
- 60,000 to 74,999
- 75,000 to 99,999
- 100,000 to 149,999
- 150,000 or more

Appendix F. Data and SAS Programs/Descriptions and Organizations

Overall Structure and Organization

The data and programs used in the project have all been placed in a directory named “monthly_poverty_project”. This directory is on the CD that is distributed with the final report. The directory can be placed as needed on a local PC or network as needed. All programs assume that the directory is on the “f:\” drive as that is drive location used on the research machine. In order to easily change all programs over to another location it will be necessary to change all occurrences of “f:\” to the root location on the machine where it is being installed. This can easily be done with a text editor such as TextPad or UltraEdit that can make global changes across all files in a directory.

The Input Data Files

The March CPS ASEC (annual supplement) files are located in the “marchdata” subdirectory. There are three subdirectories within this directory.

- marchdonorfiles
- marchextracts
- zippedpublicuse

The marchdonorfiles subdirectory contains the data sets used in the statistical matches.

The marchextracts subdirectory contains the household, family, and person extract files that were used to create the donor files.

The zippedpublicuse subdirectory contains the files and documentation downloaded from the Census Bureau web site for the March CPS from 2005 to 2009.

The monthly CPS files are located in the “monthlydata” directory. There are four subdirectories.

- needsincome

- povertyfiles
- zippedpublicuse
- workinglib

The needsincome subdirectory contains the monthly CPS family files used in the statistical matches;

The povertyfiles subdirectory contains the output of the statistical matches and as input to the program that computes the poverty rates and places them into the excel spreadsheet.

The zippedpublicuse subdirectory contains all of the CPS files and documentation downloaded from the Census/BLS website. These files are named using the month and year of the survey.

The workinglib subdirectory contains a single SAS data set containing state names and fips codes.

Ancillary Data

The “ancillarydata” subdirectory includes information such as the monthly CPI-U, the number of compensated weeks of unemployment, and the state level unemployment benefit amounts.

The directory contains three subdirectories as well as a number of SAS programs.

- cpis
- uibenefits
- uiclaims

The “cpis” subdirectory contains an excel spreadsheet containing monthly CPI-U values from January 2005 to August 2009 and a SAS data set created from the contents of the spreadsheet.

The “uibenefits” subdirectory contains the an excel spreadsheet containing state level weekly unemployment benefits by wage level for 2005 to 2009 and a SAS dataset created from the contents of this spreadsheet.

The “uiclaims” subdirectory contains an excel spreadsheet containing the total weeks compensated by unemployment benefits by month for the U.S. for 2005 to 2009 and a SAS dataset created from the contents of this spreadsheet.

The SAS programs under the “ancillarydata” subdirectory are the programs used to convert the spreadsheets for CPI-U, weeks of unemployment compensated, and state level unemployment weekly amounts to SAS datasets.

Programs Directory

The “programs” subdirectory contains the SAS programs that carry out the operations needed for the model. The directory contains four subdirectories.

- modeling
- formats
- includefiles
- run_parameters

The “modeling” subdirectory contains five SAS programs and one subdirectory named “createmarchinputs”.

The subdirectory “createmarchinputs” contains three SAS programs that are used to create the final March family donor pools for each year that are placed in the “marchdonorfiles” subdirectory. The family records in these files are linked to monthly CPS families by the statistical match.

- extfamrec.sas
- extpprec.sas
- generate_family_donor_record.sas

The “extfamrec.sas” program extracts variables from the household and family records on the March CPS public use files and merges the data from the two files. It excludes all records not in MIS 4 and 8. Note all related subfamily records are removed at this point.

The “extpprec.sas” program extracts variables from the person records on the March CPS public use files. This program also removes persons in households containing any current Armed Forces members and persons in supplemental households not included in the basic monthly sample.

The “generate_family_donor_record.sas” program combines the outputs of the previous two programs (families and persons) to create one donor record for each March CPS family to form the pool for the statistical match for that year.

The five SAS programs directly under the “modeling” subdirectory are:

- monthly_family_creator.sas
- assigndonorfamilies_from_nearest_march_v1.sas
- putmonthlypov_spreadsheet.sas
- set_run_params_file.sas
- set_run_params_file_whatmar.sas

The “monthly_family_creator.sas” program is the most complex and important program in the series. It performs the following tasks:

- extracts all variables needed from the monthly CPS public use file which contains observations for all persons in sample households
- computes the number of unemployed persons based on the full monthly sample
- computes the ratio of the number of persons receiving unemployment benefits (from administrative sources) to the total number of unemployed persons from the monthly survey
- assigns the receipt of unemployment compensation to sample unemployed persons using a Monte Carlo simulation
- assigns a weekly wage amount to all survey unemployed using a statistical match with survey persons in the universe reporting a weekly wage amount

- assigns a week unemployment benefit to sample persons who have been assigned as recipients of unemployment compensation in the Monte Carlo simulation
- forms family units from the household sample members, creating family level variables needed for the statistical match with March donor families
- sums weekly earnings and weekly unemployment compensation to create family level income variables for these income sources.
- creates a data set containing one record for each family. This is the file used in the statistical match with the March family donor file.

The `assigndonorfamilies_from_nearest_march_v1.sas` program is program shell around the statistical match routine. It manages the statistical match of the monthly CPS and the March donors. Following the match the program links the merges the output of the match with the data set containing the donors in order to transfer the other income amount to the monthly CPS family record.

The `putmonthlypov_spreadsheet.sas` program computes the poverty measures and transfers the results to a spreadsheet. The appropriate poverty threshold matrix is created automatically by the program based on the month and year of the survey. In addition to the poverty statistics the program also computes a number of measures of weekly family income and earnings that are also automatically into the spreadsheet. This excel spreadsheet must be open in order to permit the automatic transfer of data. The latest spreadsheet is in the subdirectory “tabulations” and is named `tabulations_v7.xls`.

The “`set_run_parameters_file.sas`” is a utility program that is used in the batch processing scheme to automatically set the reference month and year so that a series of programs can be executed without manual intervention. This program is used when processing monthly CPS files.

The “`set_run_parameters_file_whatmar.sas`” is another utility program that is used in the batch processing scheme to automatically set the reference month and year so that a series of programs can be executed without manual intervention. This program is used when creating the March CPS family donor files.

Other Subdirectories in Programs

The other subdirectories under the “`modeling\programs`” subdirectory include:

- `includefiles`
- `formats`
- `run_parameters`

The “`includefiles`” subdirectory contains a number of SAS code snippets that relate to creation of the variables used in forming the “keys” for the statistical matches.

The “`formats`” subdirectory contains SAS “`proc format`” code used in recoding variables used in the statistical matches.

The “run_parameters” subdirectory contains files generated by the “set_run_parameters_file.sas” programs. These files are queried at the beginning of most of the processing programs to obtain the reference month and year.

The “Stat Match Macro” Subdirectory (CRITICAL NOCHANGES)

The contents of this directory include the macro routines making up the statistical match system. You should be very careful not to alter or delete any of these routines. This directory does contain one other macro routine specific to the monthly poverty project. This is the “uidatatoexcel_m.sas” macro that is called in the “monthly_family_creator.sas” program. The macro transfers selected statistics related to the assignment of weekly earnings amounts and unemployment compensation benefits to the unemployed to the same spreadsheet referenced above (tabulations_v7.sas).

The “Stat Matches” Subdirectory (CRITICAL NO CHANGES)

All of the subdirectories in this directory are essential to the operation of the statistical matching macros and should not be altered or deleted in any way

The “Batch” Subdirectory

This subdirectory is a very important element of the estimation process. It contains a series of .cmd files (command files). The contents of these files are lines of code that execute programs sequentially. The purpose is to make it easy to create intermediate files and generate poverty estimates on a month by month basis in an orderly way, removing the use of the SAS interactive interface. For example, the entire processing sequence covering all months of all years can be encapsulated within one .cmd file.

Appendix G. Summary of Results Using Alternative Donor Pools and Monthly CPS Configurations

Comparisons of Poverty Rates for Persons Generated Using Various Statistical Matching Criteria, Donor Pool Selection, and Combinations of Monthly CPS Samples						
Reference Month	Estimates Based on Single Current Month (MIS 4 and 8)			Estimates Based by Combining Samples from Current Month (MIS 4 AND 8) and Match of Current Month (MIS 3 and 7) with Succeeding Month (MIS 4 and 8)		
	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From Monthly (1)	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From March Annual (2)	March Donor Pool Full Sample, Weekly Wage Used in Match Derived from March Annual (3)	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From Monthly (4)	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From March Annual (5)	March Donor Pool Full Sample, Weekly Wage Used in Match Derived from March Annual (6)
jan-09	14.9	13.2	14.1	15.1	13.7	14.4
feb-09	15.7	14.3	14.8	15.7	14.2	14.8
mar-09	16.1	14.8	15.1	15.5	14.1	14.6
apr-09	15.5	14.2	14.8	15.2	13.9	14.6
may-09	15.6	13.7	14.9	15.1	13.6	14.4
jun-09	15.4	14.2	14.5	15.2	14.0	14.4
jul-09	15.5	14.4	14.8	15.0	13.9	14.2
aug-09	15.1	13.7	14.9	15.3	13.8	14.4

APPENDIX H. Data and SAS Programs/Descriptions and Organizations

Overall Structure and Organization

The data and programs used in the project have all been placed in a directory named “monthly_poverty_project”. This directory is on the CD that is distributed with the final report. The directory can be placed as needed on a local PC or network as needed. All programs assume that the directory is on the “f:\” drive as that is the drive location used on the research machine. In order to easily change all programs over to another location it will be necessary to change all occurrences of “f:\” to the root location on the machine where it is being installed. This can easily be done with a text editor such as TextPad or UltraEdit that can make global changes across all files in a directory.

The Input Data Files

The March CPS ASEC (annual supplement) files are located in the “marchdata” subdirectory. There are three subdirectories within this directory.

- marchdonorfiles
- marchextracts
- zippedpublicuse

The marchdonorfiles subdirectory contains the data sets used in the statistical matches.

The marchextracts subdirectory contains the household, family, and person extract files that were used to create the donor files.

The zippedpublicuse subdirectory contains the files and documentation downloaded from the Census Bureau web site for the March CPS from 2005 to 2009.

The monthly CPS files are located in the “monthlydata” directory. There are four subdirectories.

- needsincome
- povertyfiles
- zippedpublicuse
- workinglib

The needsincome subdirectory contains the monthly CPS family files used in the statistical matches;

The povertyfiles subdirectory contains the output of the statistical matches and as input to the program that computes the poverty rates and places them into the excel spreadsheet. The zippedpublicuse subdirectory contains all of the CPS files and documentation downloaded from the Census/BLS website. These files are named using the month and year of the survey. The workinglib subdirectory contains a single SAS data set containing state names and fips codes.

Ancillary Data

The “ancillarydata” subdirectory includes information such as the monthly CPI-U, the number of compensated weeks of unemployment, and the state level unemployment benefit amounts. The directory contains three subdirectories as well as a number of SAS programs.

- cpis
- uibenefits
- uiclaims

The “cpis” subdirectory contains an excel spreadsheet containing monthly CPI-U values from January 2005 to August 2009 and a SAS data set created from the contents of the spreadsheet. The “uibenefits” subdirectory contains the an excel spreadsheet containing state level weekly unemployment benefits by wage level for 2005 to 2009 and a SAS dataset created from the contents of this spreadsheet.

The “uiclaims” subdirectory contains an excel spreadsheet containing the total weeks compensated by unemployment benefits by month for the U.S. for 2005 to 2009 and a SAS dataset created from the contents of this spreadsheet.

The SAS programs under the “ancillarydata” subdirectory are the programs used to convert the spreadsheets for CPI-U, weeks of unemployment compensated, and state level unemployment weekly amounts to SAS datasets.

Programs Directory

The “programs” subdirectory contains the SAS programs that carry out the operations needed for the model. The directory contains four subdirectories.

- modeling
- formats
- includefiles
- run_parameters

The “modeling” subdirectory contains five SAS programs and one subdirectory named “createmarchinputs”.

The subdirectory “createmarchinputs” contains three SAS programs that are used to create the final March family donor pools for each year that are placed in the “marchdonorfiles”

subdirectory. The family records in these files are linked to monthly CPS families by the statistical match.

- extfamrec.sas
- extpprec.sas
- generate_family_donor_record.sas

The “extfamrec.sas” program extracts variables from the household and family records on the March CPS public use files and merges the data from the two files. It excludes all records not in MIS 4 and 8. Note all related subfamily records are removed at this point.

The “extpprec.sas” program extracts variables from the person records on the March CPS public use files. This program also removes persons in households containing any current Armed Forces members and persons in supplemental households not included in the basic monthly sample.

The “generate_family_donor_record.sas” program combines the outputs of the previous two programs (families and persons) to create one donor record for each March CPS family to form the pool for the statistical match for that year.

The five SAS programs directly under the “modeling” subdirectory are:

- monthly_family_creator.sas
- assigndonorfamilies_from_nearest_march_v1.sas
- putmonthlypov_spreadsheet.sas
- set_run_params_file.sas
- set_run_params_file_whatmar.sas

The “monthly_family_creator.sas” program is the most complex and important program in the series. It performs the following tasks:

- extracts all variables needed from the monthly CPS public use file which contains observations for all persons in sample households
- computes the number of unemployed persons based on the full monthly sample
- computes the ratio of the number of persons receiving unemployment benefits (from administrative sources) to the total number of unemployed persons from the monthly survey
- assigns the receipt of unemployment compensation to sample unemployed persons using a Monte Carlo simulation
- assigns a weekly wage amount to all survey unemployed using a statistical match with survey persons in the universe reporting a weekly wage amount
- assigns a week unemployment benefit to sample persons who have been assigned as recipients of unemployment compensation in the Monte Carlo simulation

- forms family units from the household sample members, creating family level variables needed for the statistical match with March donor families
- sums weekly earnings and weekly unemployment compensation to create family level income variables for these income sources.
- creates a data set containing one record for each family. This is the file used in the statistical match with the March family donor file.

The assigndonorfamilies_from_nearest_march_v1.sas program is program shell around the statistical match routine. It manages the statistical match of the monthly CPS and the March donors. Following the match the program links the merges the output of the match with the data set containing the donors in order to transfer the other income amount to the monthly CPS family record.

The putmonthlypov_spreadsheet.sas program computes the poverty measures and transfers the results to a spreadsheet. The appropriate poverty threshold matrix is created automatically by the program based on the month and year of the survey. In addition to the poverty statistics the program also computes a number of measures of weekly family income and earnings that are also automatically into the spreadsheet. This excel spreadsheet must be open in order to permit the automatic transfer of data. The latest spreadsheet is in the subdirectory “tabulations” and is named tabulations_v7.xls.

The “set_run_parameters_file.sas” is a utility program that is used in the batch processing scheme to automatically set the reference month and year so that a series of programs can be executed without manual intervention. This program is used when processing monthly CPS files.

The “set_run_parameters_file_whatmar.sas” is another utility program that is used in the batch processing scheme to automatically set the reference month and year so that a series of programs can be executed without manual intervention. This program is used when creating the March CPS family donor files.

Other Subdirectories in Programs

The other subdirectories under the “modeling\programs” subdirectory include:

- includefiles
- formats
- run_parameters

The “includefiles” subdirectory contains a number of SAS code snippets that relate to creation of the variables used in forming the “keys” for the statistical matches.

The “formats” subdirectory contains SAS “proc format” code used in recoding variables used in the statistical matches.

The “run_parameters” subdirectory contains files generated by the “set_run_parameters_file.sas” programs. These files are queried at the beginning of most of the processing programs to obtain the reference month and year.

The “Stat Match Macro” Subdirectory (CRITICAL NOCHANGES)

The contents of this directory include the macro routines making up the statistical match system. You should be very careful not to alter or delete any of these routines. This directory does contain one other macro routine specific to the monthly poverty project. This is the “uidatatoexcel_m.sas” macro that is called in the “monthly_family_creator.sas” program. The macro transfers selected statistics related to the assignment of weekly earnings amounts and unemployment compensation benefits to the unemployed to the same spreadsheet referenced above (tabulations_v7.sas).

The “Stat Matches” Subdirectory (CRITICAL NO CHANGES)

All of the subdirectories in this directory are essential to the operation of the statistical matching macros and should not be altered or deleted in any way

The “Batch” Subdirectory

Appendix I. Summary of Results Using Alternative Donor Pools and Monthly CPS Configurations

Comparisons of Poverty Rates for Persons Generated Using Various Statistical Matching Criteria, Donor Pool Selection, and Combinations of Monthly CPS Samples						
Reference Month	Estimates Based on Single Current Month (MIS 4 and 8)			Estimates Based by Combining Samples from Current Month (MIS 4 AND 8) and Match of Current Month (MIS 3 and 7) with Succeeding Month (MIS 4 and 8)		
	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From Monthly (1)	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From March Annual (2)	March Donor Pool Full Sample, Weekly Wage Used in Match Derived from March Annual (3)	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From Monthly (4)	March Donor Pool MIS 4 and 8 Only, Weekly Wage Used in Match Derived From March Annual (5)	March Donor Pool Full Sample, Weekly Wage Used in Match Derived from March Annual (6)
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jun-09	15.4	14.2	14.5	15.2	14.0	14.4
jul-09	15.5	14.4	14.8	15.0	13.9	14.2
aug-09	15.1	13.7	14.9	15.3	13.8	14.4