Technical Appendix:
March 2013 CPS Auxiliary Data

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OVERVIEW OF THE 2013 CPS AUXILIARY DATA

The March Annual Social and Economic Supplement to the Current Population Survey (known as the ASEC or alternatively as the March CPS) is the data source most often used for estimating health insurance coverage in the U.S. population. There are, however, several important characteristics of health insurance that are not captured by the survey but which are particularly relevant to employer sponsored insurance (ESI) coverage. To address these limitations, the U.S. Department of Labor (DOL) Employee Benefits Security Administration (EBSA) has produced an auxiliary data file which contains recoded and imputed employment and health insurance variables, and an annual bulletin with summary tables based on the enhanced data.

As part of the process in creating the March 2013 Auxiliary Data, we have updated our data sources to reflect the newest available information. This document describes the current imputations and edits performed in order to provide estimates of employer sponsored insurance in detail for calendar year (CY) 2012.

The imputations performed can be broken down into two main categories: those dealing with access to coverage and those that describe the coverage in detail. Access to coverage includes whether an employer provides coverage as well as details about that employer such as size (number of employees) and sector. Coverage characteristics include funding and plan type and estimates of retiree and COBRA coverage. Starting with the CY 2010 Auxiliary Data, a variable for actuarial value (which represents the average proportion of benefits paid by insurance) has been imputed for active employees with health insurance in their own name.

In general, insurance and employment characteristics were imputed to employees as well as to other persons with employer sponsored insurance coverage in their own name. ESI dependents were given the characteristics of their primary policyholder (when that person could be found). Links for up to two policyholders were maintained for each dependent on the March CPS file so that characteristics of the secondary coverage could also be identified. One policyholder link was maintained for ESI policyholders who were also dependents.

As mentioned above, our starting data set was the March 2013 Annual Social and Economic Supplement to the CPS. The following enhancements were then made:

- Source of coverage, employer offers of coverage: While the March CPS asks whether insurance coverage is provided by an employer, it does not distinguish whether this coverage is from a current or former employer. The Medical Expenditure Panel Survey Household Component (MEPS-HC) provided data on whether ESI coverage was from a current or former employer and for workers whether health insurance was offered to them by their current employer. This data was the basis of our imputations and was taken from the survey years 2009 through 2011.

- Sector and size providing coverage: For persons with coverage from a former employer, it was necessary to impute both sector and size of the employer providing the coverage. This was done using the most recent three years of data (2010-2012) from the Medical

Expenditure Panel Survey Insurance Component (MEPS-IC), as provided by the Agency for Healthcare Research and Quality (AHRQ).

- Funding status, plan type and COBRA/retiree partition: Data from the MEPS-IC from 2010 through 2012, along with partitions and trends from the Kaiser/HRET Employer Health Benefits Surveys (2005 through 2012) were used to impute funding status and type of coverage for those with ESI as well to partition coverage from a former employer into retiree and COBRA.

- Federal estimates: Data, by type of plan, from the Office of Personnel Management (OPM) on employees (postal and non-postal), dependents and annuitants covered under the Federal Employees Health Benefits Program (FEHBP) was used to provide estimates at the Federal level.

- Actuarial values: Analysis done for DOL/EBSA using the National Compensation Survey (2005) was used with calculated plan values from the 2012 Kaiser/HRET Employer Health Benefits Surveys in order to impute actuarial values onto active policyholder records. In addition, ARC has included a set of "experimental" actuarial values in the Auxiliary dataset that uses a rating structure more consistent with the most recent Actuarial Value Calculator (AVC) from the Center for Consumer Information and Oversight.[1]

- Health spending: CPS variables on out of pocket spending and person-paid health insurance premiums had been introduced on the March 2011 CPS. After examination and comparison to other data sources, it was decided to include the former beginning with the March 2012 Auxiliary Data and Health Insurance Coverage Bulletin.

- Union Sponsorship: Data from the March CPS itself was used to identify current workers who obtained coverage through a union plan. Data from the Survey of Income and Program Participation (SIPP), 2008 Panel Wave 6 (2010) was used to impute union sponsorship to persons with coverage from a former employer.

These enhancements were implemented in the 12 steps that are detailed below:

[1] Due to the experimental nature of the AVC-consistent actuarial values, we have not included tabulations from them in the current Health Bulletin.

Step 1: Imputing coverage from a current versus former employer

The March CPS captures whether insurance coverage is provided by an employer, but not whether the coverage is from the policyholder's current or former employer. To impute the employer status, MEPS-HC 2009-2011 data was averaged to calculate probabilities of having coverage through a former versus a current employer. The results were enhanced with data from the 2009 through 2011 MEPS-IC, which provided counts of actives, retirees, and persons with COBRA coverage from non-Federal employers. Data from the FEHBP was used to provide estimates at the Federal level.

All March CPS records were initially checked to see if current versus former employer status could be determined with certainty. That is, if a person did not work at all during a year but had ESI in their own name, then they were assigned coverage by a former employer. For all others, it was necessary to impute the source of the coverage. The 2009-2011 MEPS-HC was used to calculate probabilities of having coverage through a former employer by age, work status and presence of retiree income. These relative probabilities were adjusted in order to reproduce the target likelihood of coverage being from a former employer based on the MEPS-IC.

Valid codes for status were set as:

0 = no ESI
1 = coverage through a former employer
2 = coverage through a current employer.

For CY 2012, this process resulted in 74.0 million ESI policyholders with coverage through their current employer and 14.4 million with coverage through a former employer.

As a result of the imputation, persons with ESI in their own names were assigned as follows:

Persons with ESI in Own Name
by Employment Status
(numbers in millions)

Employment Status	Number with ESI
Total	88.3
Worked in past year	**77.5**
Coverage from current employer	74.0
Coverage from former employer	3.5
Did not work in past year	**10.9**

Step 2: Imputing whether current employer offers ESI

While the March CPS captures whether individuals are covered by ESI, it does not ask if an employee is offered insurance by his or her current employer. The imputation of coverage through a current versus former employer (described in the previous step) resulted in a subset of persons who, by definition, had an employer that offered coverage.[2] For all other workers, however, it was necessary to impute whether or not their employer offered health insurance[3] and, if so, whether or not they were eligible for it.

Data from the 2009 through 2011 MEPS-HC was tabulated to calculate three year averages of offers and eligibility. These tabulations were converted to the probability of working for an offering employer and being eligible for coverage based on sector (private, Federal, and state/local), firm size (<50, 50-99, 100-499, and 500+) and hours worked (< 35 vs. 35 or more per week).

Valid codes for offer status at the person level were set to:

1 = Enrolled, coverage through current employer
2 = Employer offered, eligible, not enrolled
3 = Employer offered, not eligible, not enrolled
4 = Not offered.

Once this was completed, a final recode was performed such that Federal and state sector employees could not have the offer status "not offered" but were instead recoded to "offered, not eligible."

As a result of the imputation, persons who worked were partitioned in the following manner:

Coverage of Persons Who Worked
by Employer Offer Status
(numbers in millions)

Offer Status	Workers
Total	**157.3**
Employer offers coverage	**125.8**
Employee has coverage from employer	74.0
Employee offered (eligible), not enrolled	32.0
Employee not offered (not eligible), not enrolled	19.8
Employer does NOT offer coverage	**31.5**

[2] These were workers with coverage from their current employer.
[3] An employer is considered to offer coverage if it offers coverage to any employee, even if a specific employee is not offered the coverage due to eligibility issues.

Step 3: Imputing the sector that provides coverage

Given that the CPS provides information on current (March and past year) employment status, but not former employment, it was necessary to impute both sector and size of employers that provided coverage for those who had health insurance from a former employer. For those individuals who received pension or survivor's payments as reported in the March CPS, we used the sector of the employer that provided the payments to represent the sector providing insurance coverage. For those policyholders without such payments, the sector providing coverage was based on geography (state) and age of policyholder (under 55, 55-64 and 65+). We used data from the 2009 through 2011 MEPS-HC as well as the 2010 through 2012 MEPS-IC surveys and 2011 FEHBP data to determine target probabilities by these dimensions.

For dependents, the sector of the primary policyholder was used to determine where coverage was likely to have come from. For those few dependents without a link to a policyholder record, their own demographic characteristics (age, presence of survivor's income) were used to determine the sector providing coverage.

As a result of the imputations, persons were assigned to sectors in the following manner:

Coverage of all Persons with ESI
by ESI Status and Sector
(numbers in millions)

ESI Status	Sector	Number with ESI
ESI In Own Name	Total	**88.3**
	Private Sector	65.8
	Current Employer	58.5
	Former Employer	7.3
	Public Sector	22.6
	Current Employer	15.5
	Former Employer	7.1
ESI as Dependents	Total	**82.5**
	Private Sector	63.4
	Current Employer	60.1
	Former Employer	3.3
	Public Sector	19.1
	Current Employer	16.5
	Former Employer	2.7

Step 4: Imputing the size of employer that provides coverage

The March CPS provides information on current employer size. This means that for those individuals covered by a former employer, the size of the employer providing the health insurance had to be imputed. This imputation was done in a similar manner as the sector imputation.

The first step had all those with sector equal to either state or Federal government assigned the largest CPS size category (1,000+). Next, all other persons were assigned a size based on state, age (under 55, 55 to 64, or 65+) and sector. As with sector, data from the MEPS-IC was the primary source. If a policyholder was not found, person characteristics of the dependent were used instead. Dimensions were essentially the same as those used for the policyholder imputation, except that the age category for dependents included younger groupings.

As a result of the imputations, persons were assigned to size categories as summarized below:

Coverage of all Persons with ESI
by ESI Status and Employer Size
(numbers in millions)

ESI Status	Size	Number with ESI
ESI In Own Name	Total	**88.3**
	Employer Size < 100	20.4
	Current Employer	19.9
	Former Employer	0.5
	Employer Size 100+	68.0
	Current Employer	54.1
	Former Employer	13.9
ESI as Dependents	Total	**82.5**
	Employer Size < 100	18.4
	Current Employer	18.2
	Former Employer	0.2
	Employer Size 100+	64.1
	Current Employer	58.4
	Former Employer	5.8

Step 5: Imputing whether coverage was fully-insured or self-insured

The March CPS contains no information about the health insurance plans held by survey respondents. One of the characteristics of health insurance plans is funding status: whether an employer sponsored insurance plan is fully-insured (the employer contracts with another organization to assume financial responsibility for the enrollees' medical claims and administrative costs) or self-insured (the employer assumes some or all of these costs directly). All the information on plan funding for individuals with ESI has been imputed for the Bulletin as part of the Auxiliary Data.

Data on funding status, as well as plan type, for persons in non-Federal plans was obtained from tabulations of the 2010 through 2012 MEPS-IC files provided by AHRQ. Data was presented at the state (or geographic region) level for each year, and while there were some variations over the period, the relative values of each state versus the country as a whole were consistent. In addition to the MEPS-IC information, we also looked at the Kaiser/HRET surveys, through 2012, to determine appropriate penetration levels of self-insurance by size of employer.

The 2012 MEPS-IC levels of self-insurance were used by sector (private vs. state/local) along with the three year state averages to determine state specific targets for persons with ESI. All persons enrolled in Federal plans were assumed to be in fully-insured plans.

As a result of the imputation, persons were assigned funding status as follows:

Funding Status:
Self- vs. Fully-Insured
(numbers in millions)

Funding Status	Number with ESI
Total	**170.9**
Self-Insured	93.9
Fully-Insured	76.9

Step 6: Imputing type of plan

As noted in the prior step, the March CPS does not contain information on the details of the health plan an individual is enrolled in. As with plan funding, all details on the type of plan held by a person were imputed for those covered by ESI. Prevalence of coverage by plan type (HMO, PPO, POS, or high deductible plan (HDED)) was based on data from the 2012 MEPS-IC and the 2012 Kaiser/HRET survey. This data was presented by funding status (self-insured vs. fully-insured) and geography.[4] Imputations were done by these dimensions as well as by size of employer.

For Federal plans, the allocation was based on actual FEHBP data from 2011 trended to 2012, as obtained from the Office of Personnel Management. The data was given for employees (postal vs. other), annuitants (retirees) and dependents by plan type (HMO vs. PPO).

As a result of the imputation, persons were assigned plan types as follows:

Persons with ESI
by Funding Status and Type of Plan
(numbers in millions)

Funding Status	Total	HMO	PPO	POS	HDED
Total	**170.9**	**26.8**	**102.6**	**11.4**	**30.1**
In Self-Insured Plans	93.9	8.5	66.1	3.1	16.2
In Fully-Insured Plans	76.9	18.3	36.4	8.3	13.9

[4] Three years of non-published MEPS-IC data provided by AHRQ were averaged to obtain target percentages by plan type for each state. When smaller sample sizes were an issue on the MEPS-IC, three years of data by geographic region, rather than state, were used.

Step 7: Imputing the partition of COBRA versus retiree coverage

The March CPS does not distinguish between ESI coverage provided by a current or former employer, and it lacks information on whether coverage by a former employer is retiree coverage or COBRA. As this information has become increasingly important to DOL, the partition into retiree vs. COBRA has been imputed for the Bulletin as part of the Auxiliary Data.

Our 2012 "target" counts of persons with either COBRA or retiree coverage were obtained from AHRQ, based on the 2012 MEPS-IC, and from OPM data for the Federal Employees Health Benefits Program (FEHBP). Partitioning persons assigned with coverage from a former employee into retiree or COBRA coverage was based on person characteristics, using the CPS data itself as well as data from the MEPS-HC.

In general, policyholders were allocated first, with their dependents allocated according to policyholder characteristics. Dependents without policyholders (usually those with coverage from outside the household) were partitioned into retiree or COBRA coverage based on their own characteristics. In our allocation, the following March CPS characteristics were used: age, presence of pension income, sector providing coverage, and amount paid by employer towards coverage.

Age groups used were as follows: under 55, 55 to 64 and 65+. Presence of pension income was based on the March CPS variable "source of retiree income" (or survivor's income, if a dependent), with this income assumed to be pension related if the source was either company or union pension, Federal government retirement, state or local government retirement, or U.S. railroad retirement. The amount paid by an employer towards coverage is captured by the March CPS and includes the following categories: unknown,[5] all, some, or none.

Some persons were assigned to either COBRA or retiree with "certainty" (that is, person level characteristics alone determined the type of coverage held), while others were assigned based on the likelihood of coverage being either COBRA or retiree along with the desired total counts of each type of coverage.

The allocation rules and guidelines for assigning individuals to "retiree" or "COBRA" coverage are listed below, based on whether there was certainty or probability involved.

If there was pension income present, status was decided with certainty as follows:

- If person had pension (or survivor's) income and coverage was from public sector, then coverage was deemed retiree.

- If person had pension (or survivor's) income and coverage was from private sector and employer payment was anything (including unknown) except "none," then coverage was deemed retiree.

[5] This includes "not in universe" for those policyholders found through either the "other coverage" questions or the verification questions.

- If person was under 65, and had pension (or survivor's) income, coverage from private sector, and employer payment was "none," then coverage was deemed "COBRA."

- If person was aged 65 or over, though, coverage was deemed retiree.

If no pension (or survivor's) income was present, then the partition between retiree and COBRA was determined as follows:

- The count of persons allocated to retiree or COBRA coverage based on presence of pension income was subtracted from the target counts of retiree and COBRA persons by sector and age.

- Data from the MEPS-HC and MEPS-IC were used to develop probabilities of retiree vs. COBRA coverage for this remaining group by age, employer payment and sector (for private, state and local coverage); while FEHBP data was used to determine the probability of retiree coverage for Federal covereds.

- Persons age 66 and older who had Medicare were assigned to retiree coverage; while persons aged 65 were permitted to be assigned COBRA as part of the transition to Medicare.

As a result of the COBRA and retiree assignments, persons with coverage from a former employer (policyholders and dependents combined) were partitioned as follows:

Coverage of Persons with ESI from a Former Employer

by Age, Sector and Retiree vs. COBRA

(numbers in millions)

Age	Sector	Total ESI
Under Age 55	Total	**4.8**
	Private Sector	3.2
	Retiree Coverage	0.6
	COBRA Coverage	2.6
	Public Sector	1.6
	Retiree Coverage	1.0
	COBRA Coverage	0.5
Aged 55-64	Total	**5.8**
	Private Sector	2.8
	Retiree Coverage	2.0
	COBRA Coverage	0.8
	Public Sector	2.9
	Retiree Coverage	2.8
	COBRA Coverage	0.1
Aged 65+	Total	**9.8**
	Private Sector	4.5
	Retiree Coverage	4.4
	COBRA Coverage	0.1
	Public Sector	5.3
	Retiree Coverage	5.3
	COBRA Coverage	0.0

Step 8: Editing and imputing employer size for current workers

The March CPS contains an interval variable for size of employer for longest job held during the year. While this variable refers to firm size rather than the establishment or location the employee works at, tabulations suggested that not all respondents answer appropriately. While it was not possible to infer whether responses by workers in the private sector included all employer locations when determining their employer size, it was assumed that persons working for a state or the Federal government should fall into the largest employer size category. Responses were edited accordingly.

Starting with the March 2011 CPS, Census revised the employer size categories so that there were partitions at 10, 50 and 100 whereas there had previously been partitions at 10, 25 and 100. Although we have modified our analysis to use these new size categories, it also became necessary to include an additional partition at size 20 in order to determine Medicare secondary payer splits. Data from the three most current MEPS-HC files was used in order to determine the likely location of this partition for full time and part time workers.

Step 9: Imputing Medicare Secondary Payer (MSP)

When assigning primary coverage to individuals with more than one source of coverage during the year, the Bulletin ranks employer sponsored insurance (ESI) generally above all other sources. However, when a person has both Medicare and ESI, this is not always the case. For workers, certain employer sponsored health insurance plans are primarily responsible for payment. The Medicare Trust Funds are protected by the 1980 Congressional legislation that makes Medicare the secondary payer in these instances, thus shifting costs away from the Medicare program.[6] Under Medicare secondary payer rules, non-workers (retirees) with ESI always have Medicare as the primary payer. For workers, the primary payer for an individual with both sources of coverage depends on the size of the employer and whether the individual qualifies for Medicare due to age or disability. Since the March CPS does not ask individuals with multiple sources of coverage which of these two types of insurance is the primary payer, this variable had to be imputed for persons with ESI and Medicare.

In accordance with Medicare secondary payer rules: For active employees (and their dependents) a determination of primary payer depends on age and employer size. For workers or their spouses who are age 65 or over, ESI is the primary payer if the employer size is 20 or more (and Medicare is the Secondary Payer (MSP)), while for those younger than 65, ESI is the primary payer if the employer size is 100 or more (and Medicare is the Secondary Payer (MSP)). For those workers with employer size of fewer than 20 or 100 respectively, Medicare is the primary payer.

As noted in the prior step, the March CPS does not have an employer size split at 20, but rather a category for size 10 to 49; and, thus, we have used partitions based on the MEPS-HC to determine probabilities for persons in this size group to be randomly assigned to employer size under 20 or size 20 or greater.[7] For dependents with coverage from both Medicare and ESI, the dependent's age is used, but the size category is obtained from the policyholder providing coverage. A variable has been included in the Auxiliary Data file for all persons with both ESI and Medicare in order to indicate primary payer.

[6] CMS explanation of Medicare Secondary Payer can be found at http://www.cms.gov/Medicare/Coordination-of-Benefits-and-Recovery/Coordination-of-Benefits-and-Recovery-Overview/Medicare-Secondary-Payer/Medicare-Secondary-Payer.html.

[7] We have made this assumption only for the determination of MSP coverage.

As a result of the MSP imputation, we have the following coverage distribution:

Medicare Secondary Payer Coverage
By Age
(numbers in millions)

Age	MSP Status	Total ESI
Age under 65	**Total**	**1.6**
	Medicare Primary	1.0
	Medicare Secondary	0.6
Ages 65 and over	**Total**	**12.3**
	Medicare Primary	9.9
	Medicare Secondary	2.3

Step 10: Imputing actuarial values (AVs)

While the March CPS includes limited data on the cost of health insurance and annual medical expenditures, it does not collect the information required to determine the "actuarial value" of an individual's health insurance plan. "Actuarial value," or AV, represents the fraction of covered medical expenses paid for by a health insurance plan, calculated as an average over a standard population. Variables which represent the average value of an active employer sponsored health insurance plan have been imputed to active employees with health insurance in their own name and are included in the Auxiliary Data.

The starting point for the imputation of actuarial value was the 2005 National Compensation Survey (NCS). Actuarial Research Corporation (ARC) calculated actuarial values for the private sector plans based on the plan specifications (cost sharing and covered services) provided in this survey, and presented the distributional results by plan type, funding and employer size.

In order for these actuarial values to be relevant for plans in CY 2012, plan level detail from the 2006 through 2012 Kaiser/HRET Employer Health Benefits Surveys was used to calculate actuarial values for 2006 and 2012 as well as to explore changes in plan details and coverage parameters over time. Three main differences between the NCS data and the Kaiser/HRET data are: (a) the Kaiser/HRET surveys highlights the transition over time from fee-for-service (FFS) plans and their replacement by high deductible (HDED) plans, (b) the NCS analysis combines PPO and POS categories while they are separate categories in the Kaiser/HRET data and (c) the Kaiser/HRET survey contain plans for both the public and private sectors, while the NCS data is private sector only.

Comparing the NCS actuarial value distributions, as well as the AVs calculated from the KFF/HRET data showed that average actuarial values, as well as prevalence by type of plan and source of funding, have shifted over the time period from 2005 to 2012. We have preserved the general shape of the AV distributions (the relationship of the actuarial value to the mean at various points in the distribution), as calculated from the NCS data, within cell (sector by plan type by funding) while using the observed change in AVs through time to move the overall average values forward to CY 2012. These averages were imputed onto the Auxiliary Data as the "cell based actuarial value" and, while useful at the aggregate level, are not helpful for distributional analysis. The second "plan-specific actuarial value" variable was imputed from the Kaiser/HRET NCS-adjusted plan records using a plan to person record-by-record match prioritized by size. It is this variable that reflects the NCS distribution within plan type.

The resulting plan specific average actuarial values are shown in the table below:

Average Actuarial Values for Persons with Active ESI in Own Name
by Sector and Type of Plan

Sector	Total	HMO	PPO	POS	HDED
Private Sector Plans	0.8743	0.9189	0.8844	0.8750	0.8116
Public Sector Plans	0.8844	0.9484	0.8755	0.9198	0.8133

In addition to the AVs discussed above, ARC has included a set of "experimental" actuarial values in the Auxiliary Data that uses a rating structure more consistent with the most recent Actuarial Value Calculator (AVC) from the Center for Consumer Information and Oversight (CCIIO). Due to the exploratory nature of the AVs, they are not included in the Health Bulletin at this time but are being made available on the Auxiliary Data.

These "experimental" actuarial values use a version of the ARC rating system that has been adjusted to more closely calculate an actuarial value consistent with what the AVC would generate if the plan in question were evaluated using the CCIIO AVC. Developing this alternative version included evaluating a variety of health insurance plans, from simple comprehensive plans to more complex plans with service specific copayments, using both the AVC and the ARC rating system. The AVC assumes that the user will make a choice of one of four tiers of ACA compliant plans (platinum, gold, silver or bronze) prior to calculating the AV. Our goal was to find a set of mean spending amounts as well as an appropriate adjustment to our underlying expenditure distribution, which would allow "mimicking" the AVC for each of the four tiers. Once done, we could use these new means and expenditure distributions, along with an assumed tier for each plan, to calculate AVs for multiple plans in an automated fashion.

To mimic the AVC, the raw 2012 HRET/KFF survey data was first run through our basic actuarial rating system and plans were assigned tier values from 1 to 4, which corresponded to the tiers platinum, gold, silver and bronze. Based on these values, the plans were then divided into four groups and each group was run through our adjusted rating system using the adjusted means and distributions appropriate to each tier. For each plan, output was then linked back to the same set of CPS records that had the original actuarial values imputed to them, as described above. In general, our "experimental" actuarial values came in very close to these starting values with the largest difference seen among low end (bronze or below) plans.

The resulting experimental average actuarial values are shown in the table below:

Average Experimental Actuarial Values for Persons with Active ESI in Own Name

by Sector and Type of Plan

Sector	Total	HMO	PPO	POS	HDED
Private Sector Plans	0.8651	0.9172	0.8722	0.8790	0.8001
Public Sector Plans	0.8806	0.9503	0.8714	0.9182	0.8010

Step 11: Examining CPS variables on health spending

Starting with the March 2011 CPS, Census now includes information on health insurance premiums as well as out of pocket spending for both over the counter purchases (POTC-VAL) and medical care and equipment (PMED-VAL).

Tabulations of the person's share of health insurance premiums, by age and insurance status, yielded what appeared to be inconsistencies in the presence of dollars for persons without private health insurance. Upon further reading of the CPS question, it was determined that the wording was sufficiently vague[8] as to include dollars from more limited types of insurance beyond traditional private health coverage. Limiting our focus to persons with either ESI or individual (other private) insurance (OPHI) still resulted in inconsistencies with estimates from other data sources such as the MEPS-IC and the AHIP survey of individual insurance coverage. Issues included single/family premium ratios and missing values for covered persons. Consistent with last year, the decision was made to not include the person's share of health insurance premiums on the March 2013 Auxiliary Data set or in the 2014 summer Health Bulletin.

Levels of out of pocket spending were, however, compatible with estimates from the MEPS-HC by age and insurance status. In addition, we examined the distribution of spending for those with spending and found these distributions to be robust at both the high and low ends, and we have included the CPS estimates of out of pocket spending on the March 2013 Auxiliary Data set and tables. The out of pocket variable included in the Auxiliary Data is the sum of the two CPS variables (over the counter purchases and medical care). No edits or imputations beyond this summation were performed on the CPS values.

Mean Out of Pocket Spending
by hierarchical insurance

Insurance	Counts (millions)	Mean OOP
Total Population	311.1	$ 728
Insured	263.2	$ 778
ESI		
Policyholder	79.8	$ 940
Dependent	80.2	$ 664
Medicare	45.9	$ 1,129
OPHI		
Policyholder	7.3	$ 1,269
Dependent	10.5	$ 679
Other Public	39.4	$ 207
Uninsured	48.0	$ 454

[8] Question reads: "During 2012, about how much did (name/you) pay for health insurance premiums for (yourself/himself/herself) or others in the household, after any reimbursements? Please include premiums paid for HMOs, Fee for Service Plans, Commercial Medicare Supplements or other special purpose plans such as vision or dental plans. Include prescription drug insurance such as Medicare Part D premiums and Medicare Advantage premiums. DO NOT include Medicare part B premiums."

Step 12: Imputing whether coverage was provided through a union arrangement

For workers aged 15 or older, the March CPS provides limited information on whether a person is a member of a labor union or of an employee association similar to a union (CPS person variable: A-UNMEM), and for nonmembers asks if the person is covered by a collective bargaining agreement (CPS person variable: A-UNCOV). For simplicity, we summarized the two CPS union variables into a single variable which was coded to have values of either "1" (union) or "2" (not union). All persons who indicated either union membership or coverage through a collective bargaining agreement were considered "union." Those who responded in the negative to both questions were categorized as "not union." However, the usefulness of these questions was limited by the fact that they were asked for only one quarter of the working population (those who were in the survey during months 4 or 8) and excluded the self-employed. As a result, it was necessary to impute union membership to all other private or public sector workers and union coverage to all persons with employer sponsored insurance coverage. This was done by creating three imputed variables for union status: one for all workers (union membership), one for ESI policyholders (union coverage), and one for ESI dependents (union coverage).

We began the assignment process by looking at private and public sector workers. If the March CPS union variables gave a valid union status, we assigned union membership (yes or no) with certainty. For all other persons (those without a valid CPS union status), it was necessary to impute whether or not the worker belonged to a union. Probabilities of union membership were calculated using those CPS records with a valid set of responses to the union questions. This quarter of the working population generated probabilities based on age (<35, 35-55, 55-64, 65+), collapsed industry/sector of employment (agriculture/forestry/fishing, mining, wholesale, retail, finance/insurance/real estate, services, construction, manufacturing, transportation/utilities, healthcare, government), size of employer (<50, 50-499, 500+), hours worked (<35, 35+) and geographical region.

Next we assign with certainty union coverage status for ESI policyholders with coverage through their current employer based on their union worker status. This step was straightforward, as these records kept their assignment from the prior step.

Next, it was necessary to impute union coverage for those ESI policyholders with coverage from a former employer, whether or not they worked. This was to reflect the status of the employer providing coverage, while the previous union variable was based on the characteristics of the current employer. Probability cells from the 2010 SIPP were used for those with coverage through COBRA or as a retiree. Probability cells for COBRA covered include age (<55, 55+), size of employer providing coverage (<100, 100+), sector of employer providing coverage (private, federal, state/local) and current work status (work, no work). Probability cells for retirees include an additional age break at 65 and omit work status.

For ESI dependents (including those who were also policyholders) we created a variable with the same choices as those for policyholders. We used the affiliation of the primary policyholder wherever a link was available. In the absence of a direct link, the status was imputed based on

sector of coverage, size of employer providing coverage, age of dependent and whether coverage was active, COBRA or retiree.

As a result of the union assignments and imputations, workers, ESI policyholders and ESI dependents were partitioned as follows:

Union Membership or Coverage

(numbers in millions)

Population	Union Status	Total ESI
All Workers (with or without ESI, no self-employed)	**Total**	**142.4**
	Union Members	18.2
	Not Union	124.2
All Persons with ESI[9] (workers and non-workers)	**Total**	**165.4**
	Union Coverage	35.7
	Not Union	129.7

[9] This includes both policyholders and dependents, but excludes those with coverage only through self-employment.

USEFUL LINKS:

Current Population Survey's Annual Social and Economic Supplement (ASEC, or March CPS):

- Main CPS Page is found here: https://www.census.gov/cps/ with links to details such as methodology, data, definitions and technical documentation.
- Health insurance estimates from the CPS are from the Annual Social and Economic Supplement, with the main publication page found here: https://www.census.gov/hhes/www/poverty/publications/pubs-cps.html
- The main report from the March 2013 survey, "Income, Poverty and Health Insurance Coverage in the United States: 2012" can be found at: https://www.census.gov/prod/2013pubs/p60-245.pdf

Medical Expenditure Panel Survey (MEPS):

- Main MEPS page is found here: http://meps.ahrq.gov/mepsweb/ with background information here: http://meps.ahrq.gov/mepsweb/about_meps/survey_back.jsp
- Two of the main components are the Household Component (MEPS-IC) and Insurance Component (MEPS-IC). Links to those are found at: http://meps.ahrq.gov/mepsweb/survey_comp/household.jsp for the HC and http://meps.ahrq.gov/mepsweb/survey_comp/Insurance.jsp for the IC.

Survey of Income and Program Participation (SIPP):

- The Survey of Income and Program Participation, a longitudinal panel survey, is conducted by the Census bureau. Information on the SIPP can be found here: https://www.census.gov/programs-surveys/sipp/about.html
- Reports based on SIPP data can be found here: https://www.census.gov/programs-surveys/sipp/publications/p70s.html

Kaiser/HRET Employer Health Benefits Surveys:

- Archive of surveys from 2012 and earlier: http://kff.org/health-costs/report/employer-health-benefits-annual-survey-archives/
- Current survey page: http://kff.org/private-insurance/report/2013-employer-health-benefits/

Federal Employees Health Benefits Program (FEHBP)

- Overview of the program: http://www.opm.gov/healthcare-insurance/healthcare/
- Frequently asked questions, including about Medicare and the FEHBP: http://www.opm.gov/FAQS/topic/insure/index.aspx?cid=3d961dac-81d1-44e2-998c-ed80029feb70

National Compensation Survey:

- NCS home page: http://www.bls.gov/ncs/
- Employee Benefits in the United States: http://www.bls.gov/news.release/ebs2.toc.htm

- ASPE Research Brief on "Actuarial Value and Employer-Sponsored Insurance", which mentions the NCS actuarial values: http://aspe.hhs.gov/health/reports/2011/av-esi/rb.shtml

Actuarial Value Calculator (AVC) from the Center for Consumer Information and Oversight:

- Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation: http://www.gpo.gov/fdsys/pkg/FR-2013-02-25/pdf/2013-04084.pdf
- 2014 Actuarial Value Calculator: Link to Excel file found on http://www.cms.gov/cciio/resources/Regulations-and-Guidance/index.html
- 2014 Actuarial Value Calculator Methodology: http://www.cms.gov/CCIIO/Resources/Files/Downloads/av-calculator-methodology.pdf

REVISIONS TO THE MARCH CPS AND OUR METHODOLOGY:

As with last year, no substantial changes were made to the March 2013 CPS. Revisions to the March 2011 survey had included major changes to the health insurance questions and universe. With the introduction of the March 2013 survey we now have three consistent years in order to look at multi-year estimates of insurance. These will be forthcoming.

In terms of methodology, earlier incarnations of the March CPS based model remain as the basis for the current Auxiliary Data, with the March 2012 Auxiliary Data as the main starting point for this year's analysis. Revisions to this year's Auxiliary Data include the use of the Survey of Income and Program Participation (SIPP), Wave 6 of the 2008 Panel (2010 data) as a data source for imputing union coverage for those with COBRA or retiree coverage. In addition, we have refined the calculation of the actuarial value of health insurance plans for active policyholders. The March 2011 Auxiliary Data was the first to make use of the actuarial value variable, and several revisions to the calculation resulted in values for the current version that are not directly comparable to those from last year. The revisions included updated plan data (moving to the 2012 KFF/HRET Survey), updated private insurance benchmark of underlying expenses (based on updated CMS projections) and revisions to the program used to calculate the actuarial values. In addition, this year we are including an "experimental" actuarial value in the Auxiliary Data that attempts to mimic the calculation of actuarial values by the Actuarial Calculator provided by CCIIO.