

# Medical Out-of-pocket Expenses in the 2013 and 2014 CPS ASEC<sup>1</sup>

Hubert Janicki  
U.S. Census Bureau, Washington, D.C

## Abstract

This working paper compares medical out-of-pocket expenses (MOOP) in the 2013 and 2014 CPS ASEC. The comparison attempts to capture changes due, in part, to the redesign of the survey instrument. In addition, this paper examines changes within years due to an update of the variable edit specifications used for imputation of missing responses. This update incorporated additional variables about health insurance premiums paid by type of health insurance into the edit process. There are statistically significant differences in the distribution of MOOP when comparing across years and within years when comparing the distribution edited using the updated specifications.

## Introduction

The U.S. Census Bureau added several survey questions aimed at quantifying medical out-of-pocket expenses of CPS ASEC respondents in 2010 as part of a broader research program on poverty (Citro and Michael, 1995). This research program has resulted in a substantial number of research papers that analyze the effect of MOOP on poverty and economic inequality more broadly.<sup>2</sup> More recently, the 2014 redesign of the CPS ASEC health insurance questions was accompanied by revisions to the MOOP questions and revisions to the edit specifications of MOOP questions that define the rules for imputation of missing responses. More information on the CPS ASEC instrument redesign of health insurance and accompanying questions is found in Brault (2014), Medalia *et al.* (2014), and Janicki (2014). The goal of this working paper is to document and compare the available data before and after the survey instrument changes and edit specification revisions.

## Data and Methodology

The data for MOOP spending is the 2013 and 2014 Current Population Survey Annual Social and Economic Supplement (CPS ASEC). The CPS ASEC is representative of the civilian, non-institutionalized population.<sup>3</sup> The reference period for MOOP questions in the 2013 survey is the 2012 calendar year and 2013 for the 2014 survey. Approximately 77,000 household are interview (or approximately 210,000 individuals). The CPS ASEC is the official survey used for national poverty estimates. All monetary values reported have been converted to constant 2012 U.S. dollars by applying the CPS Medical Care index (CUUR0000SAM series) from the Bureau of Labor Statistics.

In 2010, questions about health insurance premiums (HIPREM) and medical out-of-pocket payments (MEDAMT) were introduced. A third question regarding over-the-counter out-of-pocket expenses (OTCMEDAMT) was introduced later. The questions took the following form,

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<sup>2</sup> See for example, Burtless and Savon (2010), Burkhauser *et al.* (2012) Caswell and O'Hara (2010), Caswell and Short (2011) among others.

<sup>3</sup> The estimates in this paper (which may be text, figures, and tables) are based on responses from a sample of the population and may vary from the actual values because of sampling variability or other factors. As a result, apparent differences between the estimates for two or more groups may not be statistically significant. All comparative statements have undergone statistical testing and are significant at the 90 percent confidence level unless otherwise stated.

*During 2009, about how much did (name/you) pay for health insurance premiums yourself/himself/herself?*

and,

*During 2009, about how much was paid for (name's/your) own medical care, including payments for hospital visits, medical providers, dentist, medicine, or medical supplies?*

with a follow-up question asking what fraction of these expenditures were to be reimbursed by health insurance. In 2011, the set of questions was 1) expanded to include a statement excluding reimbursed expenses, and 2) an over-the-counter expenses question was added following the health insurance premium question:

*During 2010, 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.*

and,

*During 2010, about how much was paid for (name's/your) for over-the-counter health related products such as aspirin, cold remedies, bandages, first aid supplies, and other items?*

*Include any amount paid on (your/his/her) behalf by anyone in this household, that was not reimbursed.*

and,

*Aside from over-the-counter items, during 2010, about how much was paid for (name's/your) own medical care, including payments and co-payments for hospital visits, medical providers, dental services, prescription medicine, vision aids, and medical supplies?*

*Include any amount paid on (your/his/her) behalf by anyone in this household, that was not reimbursed.*

These questions remained the same for the 2011, 2012, and 2013 surveys. The 2014 survey saw several significant changes incorporated into the survey instrument. First, the question was revised and clarified. The health insurance premiums questions now includes a reference to the respondent's employer contribution when applicable. Second, the order of the questions changed with medical out-of-pocket payments now preceding over-the-counter medical expenses. Third, the questions were optionally shortened at the discretion of the field representative in an effort to reduce repetition and respondent burden:

*[Earlier I recorded that (name's/your) employer or union did not pay for (your/his/her) entire health insurance premium.] Last year, how much did (name/you) pay out-of-pocket for ALL health insurance premiums covering (yourself/himself/herself) or others in the household?*

*[Optional text: Include both comprehensive and supplemental plans (such as vision or dental insurance).]*

and,

*Last year, how much was paid out-of-pocket for (name's/your) OWN medical care, such as copays for doctor and dentist visits, diagnostic tests, prescription medicine, glasses and contacts, and medical supplies?*

*[Optional text: Include any amount paid out-of-pocket on (your/his/her) behalf by anyone in this household.]*

and,

*Last year, how much was paid out-of-pocket for (name's/your) non-prescription healthcare products such as vitamins, allergy and cold medicine, pain relievers, quit smoking aids, AND anything else not yet reported?*

*[Optional text: Include any amount paid out-of-pocket on (your/his/her) behalf by anyone in this household.]*

Apart from these instrument changes, several aspects of the edit specification that details the imputation procedure were changed. These changes to the edit specification were needed to address changes in employment-based health insurance estimates due to the survey instrument redesign (Medalia *et al.*, 2014). Furthermore, there is evidence that some respondents report that their employer paid for some or none (but not all) of the health insurance premium, yet report a seemingly inconsistent value of the employee contribution of zero (Janicki *et al.*, 2013). To address these concerns, imputation is now done separately for policyholders of employer-sponsored plans only, or direct-purchase plans only, public, and other policyholders or dependents. In particular, the imputation procedure now uses the information obtained in the variable PAID that collects information on whether the policyholder's employer paid for all, some, or none of the total health insurance premium.

The following section highlights the changes in the 2013 and 2014 distribution of MOOP. In an effort to disentangle changes in the imputation edit specifications and instrument changes, the section also presents summary statistics created from the original and revised datasets for both years.

## **Results**

The following tables detail the results. Key summary statistics were calculated using the original and revised edit specifications for 2013 and 2014. For ease of comparison, the universe of respondents is restricted to those age 15 and over. Comparing the original and revised edit specifications for each year shows the effect of changes to the edit specifications alone on the distribution of MOOP. In contrast, a comparison of 2013 and 2014 statistics holding edit specifications fixed at the revised method across both years illustrates the effect of 1) changes in the survey instrument on instrument responses, and 2) any changes in the distribution of medical expenditures due to demographic changes, public policies, time effects, etc. A comparison of 2013 and 2014 statistics calculated using the original edit specification is presented as a natural benchmark since these edits were used to generate the CPS ASEC SPM research files.<sup>4</sup>

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<sup>4</sup> <https://www.census.gov/hhes/povmeas/data/supplemental/public-use.html>

This section documents the following findings. First, changes in the edit specifications have effects on key statistics in both the 2013 and 2014 data. The magnitude of these changes is not the same across years. Second, there are statistically significant differences in MOOP estimates across years when calculated using the old and new edit specifications. In particular, the results suggest changes in estimates due to changes in the CPS ASEC health insurance survey instrument or other factors that might have altered the distribution of medical expenses (public policies, time effects, demographics, etc.).

Table 1 reports the mean and standard deviation of the distribution of medical expenses for individuals age 15 and older by expense type that were edited with the original and revised edit specifications for 2013 and 2014. Differences in average health insurance premiums were statistically significant between the original edit and the revision of the edits for MOOP; the revised estimates showing higher (than the original) mean expenditures in 2013 (a difference of \$127) and lower (than original) mean expenses in 2014 (a difference of \$23). In contrast, differences in variance of health insurance premiums were not statistically significant between edit revisions for both years. Average health insurance premiums and medical expenses were all not statistically different between 2013 and 2014 when defined using the original edit specification. However, over-the-counter expenses declined by \$4 between 2013 and 2014. The revised specification showed statistically significant declines in average health insurance premiums and over-the-counter expenses between 2013 and 2014 (a difference of \$136 and \$7, respectively). Increases in variance of health insurance premiums and over-the counter expenses were statistically significant between 2013 and 2014 when calculated using the original and revised edit specifications.

A key feature of the changes in the MOOP survey instrument and edit specifications was the additional of question prompts and edit specification changes that attempted to reduce the frequency of zero health insurance expenditure responses among health insurance policyholders. Table 2 shows that the frequency of zero health insurance premiums declined between 2013 and 2014 and within years with the revised edits. Table 2 reports that the fraction of respondents with zero health insurance premiums declined from 64.6 percent to 63.2 percent between 2013 and 2014 using the original edit specification and declined from 59.7 percent to 58.0 percent using the revised edit specification. Despite substantial changes in the overall distribution of health insurance premiums and the number of respondents reporting zero health insurance premium payments within year, the distribution of premiums conditional on a non-zero value of premiums are comparable (Table 3). Mean values are not statistically different in 2013 across all expense categories and health insurance premiums decreased from \$2,603 to \$2,540 in 2014 when comparing the original and revised edit specification. Nevertheless, average conditional health insurance premiums showed statistically significant declines between 2013 and 2014 using both original and revised edit specifications.

The CPS ASEC asks respondents with employer-sponsored health insurance whether their employer paid all, some, or none of the total health insurance premium. The revised edit uses this information when imputing values of health insurance premiums, while the original edit does not. Table 4 illustrates the implications of this imputation strategy on the average and standard deviation of premiums for policyholders. Among these respondents, health insurance premiums among those whose employer paid some or none increased substantially in 2013 when comparing the original and revised edit specification, but were not statistically different in 2014. In particular, among those whose employer paid 'None' of the respondent's health insurance premium, average values increased from \$2,494 in 2013 using the original edit to \$3,201 using the revised edit. In addition, there was no statistically significant difference between

premiums paid by these groups in 2014. Comparing these groups across years shows that while there was no statistically significant change in premium payments between 2013 and 2014 using the original edit, average health insurance premiums declined from \$3,201 to \$2,543 when calculated using the revised edit specification. Some of these changes are likely due to revision of the edit specifications that expanded the imputation algorithm to depend on whether the employer paid for all, some, or none of the policyholder health insurance premium. The frequency of zero health insurance premium among policyholders declined substantially among those reporting ‘some’ or ‘none’ of the premium was paid by the employer (Table 5). In particular, among those that reported ‘some’ payment by the employer, the fraction reporting zero employee health insurance premium contribution declined from 24.8 percent to 5.4 percent in 2013. The decline in 2014 was comparable.

The revised edit allows for separate imputation of policyholders of direct-purchase health insurance plans only. Table 6 details moments of the premium distribution and frequency of zero health insurance payments. Health insurance premiums increase in 2013 from \$3,379 to \$4,098 using the revised edit, while in 2014 average premiums are not statistically different. Average health insurance premiums declined between 2013 and 2014 using either edit specification. In addition, standard deviations of health insurance premiums increase between 2013 and 2014 using either edit specification. The frequency of zero premiums is higher in the original edit than in the revised dataset. For example, in 2013 26.0 percent of direct-purchase policyholders report no health insurance premium payments in the original edit specification, while 11.0 percent report no premium payments in the revised edit. Comparable declines are observed in 2014. Finally, the fraction of policyholders reporting zero health insurance premiums paid increased between 2013 and 2014 using either edit specification.

## **Conclusions**

The findings of this report suggest that there are substantial differences in the distribution of health insurance premiums and expenses between 2013 and 2014. Some of these changes are due to revisions of edit specifications used in the imputation process, while other changes are due to instrument changes or policy changes. This working paper documents the changes in the MOOP distribution and details these changes by revisions of edit specifications.

## **References**

- Burkhauser, R.V., Larrimore, J., and Simon, K. (2012) “Measuring the Impact of Health Insurance on Levels and Trends in Inequality and How the Affordable Care Act of 2010 Could Affect Them” *Contemporary Economic Policy*, Vol. 31, Issue 4.
- Burtless, G. and Svaton, P. (2010) “Health Care, Health Insurance, and the Distribution of American Incomes,” *Forum for Health Economics & Policy*, Vol. 13, Issue 1.
- Brault, M. (2014) “Non-Response Bias in the 2013 CPS ASEC Content Test,” SEHSD Working Paper 2014-17, U.S. Census Bureau, Washington, D.C.
- Medalia, C., O’Hara, B., Rodean, J., Steinweg A. and Brault, M. (2014) “Changing the CPS Health Insurance Questions and the Implications on the Uninsured Rate: Redesign and Production Estimates,” SEHSD Working Paper 2014-16, U.S. Census Bureau, Washington, D.C.

Caswell, K.J. and O'Hara, B. (2010) "Medical-out-of-pocket Expenses, Poverty, and the Uninsured," SEHSD Working Paper 2010-17, U.S. Census Bureau, Washington, D.C.

Caswell, K.J. and Short, K.S. (2011) "Medical Out-of-pocket Spending Among the Uninsured: Differential Spending & the Supplemental Poverty Measure," SEHSD Working Paper 2011-24, U.S. Census Bureau, Washington, D.C.

Citro, C.F. and Michael, R.T. (1995) *Measuring Poverty: A New Approach*. Washington, D.C.: National Academies Press.

Janicki, H. (2014) "Comparing 2010 SIPP and 2013 CPS Content Test Health Insurance Offer and Take-Up Rates," SEHSD Working Paper 2014-08, U.S. Census Bureau, Washington, D.C.

Janicki, H., O'Hara, B., and Zawacki, A. (2013) "Comparing Methods for Imputing Employer Health Insurance Contributions in the Current Population Survey," SEHSD Working Paper 2013-23, U.S. Census Bureau, Washington, D.C.

Tables

Table 1: Out-of-pocket Medical Expenses Mean and Standard Deviation

	2013		2014		Comparison of 2013 and 2014 T-statistic (Absolute Value)	2013 Comparison of Original and Revised Edit T-statistic (Absolute Value)	2014 Comparison of Original and Revised Edit T-statistic (Absolute Value)
	Mean	Standard Error	Mean	Standard Error			
<b>Health Insurance Premiums</b>	943	7	957	10	1.49		
<b>Health Insurance Premiums (Revised)</b>	1,070	8	934	9	13.39	12.33	1.73
<b>Medical Expenses</b>	689	14	698	10	0.58		
<b>Medical Expenses (Revised)</b>	689	14	681	10	0.53	0.00	1.14
<b>Over-the-counter Expenses</b>	154	2	150	2	2.11		
<b>Over-the-counter Expenses (Revised)</b>	154	2	147	2	4.09	0.00	1.60
	<b>Standard Deviation</b>	<b>Standard Error</b>	<b>Standard Deviation</b>	<b>Standard Error</b>			
<b>Health Insurance Premiums</b>	2,836	50	3,599	132	6.01		
<b>Health Insurance Premiums (Revised)</b>	2,937	47	3,512	129	4.65	1.47	0.47
<b>Medical Expenses</b>	4,813	1,146	4,348	790	0.39		
<b>Medical Expenses (Revised)</b>	4,813	1,146	4,244	771	0.48	0.00	0.09
<b>Over-the-counter Expenses</b>	460	34	565	41	2.32		
<b>Over-the-counter Expenses (Revised)</b>	460	34	551	40	2.05	0.00	0.23

Source: 2013 and 2014 CPS ASEC. Note: Sample includes all individuals age 15 and older.

Table 2: Fraction of Respondents with No Out-of-pocket Medical Expenses by Type

	2013		2014		Comparison of 2013 and 2014 T-statistic (Absolute Value)	2013 Comparison of Original and Revised Edit T-statistic (Absolute Value)	2014 Comparison of Original and Revised Edit T-statistic (Absolute Value)
	Mean	Standard Error	Mean	Standard Error			
<b>Health Insurance Premiums</b>	64.6	0.2	63.2	0.2	6.56	20.81	17.68
<b>Health Insurance Premiums (Revised)</b>	59.7	0.2	58.0	0.2	7.06		
<b>Medical Expenses</b>	33.1	0.2	30.6	0.2	9.70	0.00	1.12
<b>Medical Expenses (Revised)</b>	33.1	0.2	31.0	0.2	8.19		
<b>Over-the-counter Expenses</b>	18.5	0.2	21.3	0.2	11.35	0.00	0.29
<b>Over-the-counter Expenses (Revised)</b>	18.5	0.2	21.4	0.2	11.75		

Source: 2013 and 2014 CPS ASEC. Note: Sample includes all individuals age 15 and older.



Table 3: Mean and Standard Deviation Conditional on Positive Medical Out-of-pocket Expenses by Type

	2013		2014		Comparison of 2013 and 2014	2013 Comparison of Original and Revised Edit	2014 Comparison of Original and Revised Edit
	Mean	Standard Error	Mean	Standard Error	T-statistic (Absolute Value)	T-statistic (Absolute Value)	T-statistic (Absolute Value)
<b>Health Insurance Premiums</b>	2,665	17.4	2,603	24.8	2.44	0.54	1.81
<b>Health Insurance Premiums (Revised)</b>	2,652	17.1	2,540	24.2	4.47		
<b>Medical Expenses</b>	1,030	21.1	1,006	14.8	1.11	0.00	1.17
<b>Medical Expenses (Revised)</b>	1,030	21.1	982	14.5	2.23		
<b>Over-the-counter Expenses</b>	189	1.9	191	2.0	0.76	0.00	1.60
<b>Over-the-counter Expenses (Revised)</b>	189	1.9	186	2.0	1.23		
	<b>Standard Deviation</b>	<b>Standard Error</b>	<b>Standard Deviation</b>	<b>Standard Error</b>			
<b>Health Insurance Premiums</b>	3,975	98.0	5,096	248.8	4.70	0.83	0.35
<b>Health Insurance Premiums (Revised)</b>	3,867	84.8	4,974	242.8	4.77		
<b>Medical Expenses</b>	5,830	1410.0	5,166	963.4	0.46	0.00	0.09
<b>Medical Expenses (Revised)</b>	5,830	1410.0	5,042	940.2	0.55		
<b>Over-the-counter Expenses</b>	499	38.6	623	47.7	2.41	0.00	0.22
<b>Over-the-counter Expenses (Revised)</b>	499	38.6	608	46.6	2.15		

Source: 2013 and 2014 CPS ASEC. Note: Sample includes all individuals age 15 and older with non-zero expenses.

Table 4: Health Insurance Payments by Employer Contribution Mean and Standard Deviation

	2013		2014		Comparison of 2013 and 2014 T-statistic (Absolute Value)	2013 Comparison of Original and Revised Edit T-statistic (Absolute Value)	2014 Comparison of Original and Revised Edit T-statistic (Absolute Value)
	Mean	Standard Error	Mean	Standard Error			
<b>All paid by employer</b>	755	27.0	754	44.8	0.01	6.11	0.29
<b>All paid by employer (Revised)</b>	525	26.4	736	43.7	4.84		
<b>Some paid by employer</b>	2,024	18.8	1,973	29.4	1.73	18.31	1.15
<b>Some paid by employer (Revised)</b>	2,545	21.4	1,925	28.7	20.51		
<b>None paid by employer</b>	2,494	86.8	2,658	113.2	1.36	5.17	0.40
<b>None paid by employer (Revised)</b>	3,201	105.6	2,594	110.4	4.75		
	Standard Deviation	Standard Error	Standard Deviation	Standard Error			
<b>All paid by employer</b>	2,820	101.2	3,872	362.5	3.04	2.47	0.18
<b>All paid by employer (Revised)</b>	2,452	109.4	3,779	353.8	3.93		
<b>Some paid by employer</b>	3,230	50.4	4,804	375.2	4.33	0.52	0.22
<b>Some paid by employer (Revised)</b>	3,271	60.9	4,688	366.2	4.02		
<b>None paid by employer</b>	5,043	210.9	5,936	379.1	2.38	2.02	0.27
<b>None paid by employer (Revised)</b>	5,729	265.6	5,793	370.0	0.17		

Source: 2013 and 2014 CPS ASEC. Note: Sample includes all individuals age 15 and older with employer-sponsored health insurance only.

Table 5: Fraction of Respondents with No Health Insurance Payments by Size of Employer Contribution

	2013		2014		Comparison of 2013 and 2014 T-statistic (Absolute Value)	2013 Comparison of Original and Revised Edit T-statistic (Absolute Value)	2014 Comparison of Original and Revised Edit T-statistic (Absolute Value)
	Mean	Standard Error	Mean	Standard Error			
<b>All Paid by Employer</b>	72.8	0.6	72.7	0.7	0.14	7.37	6.50
<b>All Paid by Employer (Revised)</b>	79.5	0.6	79.4	0.7	0.20		
<b>Some Paid by Employer</b>	24.8	0.3	26.4	0.4	3.86	53.01	44.50
<b>Some Paid by Employer (Revised)</b>	5.4	0.2	6.8	0.2	5.59		
<b>None Paid by Employer</b>	35.5	1.2	27.3	1.3	5.66	8.50	8.18
<b>None Paid by Employer (Revised)</b>	22.7	1.0	13.2	1.1	7.68		

Source: 2013 and 2014 CPS ASEC. Note: Sample includes all individuals age 15 and older with employer-sponsored health insurance only.

Table 6: Health Insurance Payments for Direct-Purchase Plans Only Summary Statistics

	2013		2014		Comparison of 2013 and 2014 T-statistic (Absolute Value)	2013 Comparison of Original and Revised Edit T-statistic (Absolute Value)	2014 Comparison of Original and Revised Edit T-statistic (Absolute Value)
	Mean	Standard Error	Mean	Standard Error			
<b>All Health Insurance Premiums</b>	3,379	85.1	2,750	77.9	6.51	5.95	0.61
<b>All Health Insurance Premiums (Revised)</b>	4,098	85.9	2,684	76.1	14.71		
	<b>Standard Deviation</b>	<b>Standard Error</b>	<b>Standard Deviation</b>	<b>Standard Error</b>			
<b>All Health Insurance Premiums</b>	5,772	312.6	6,581	349.4	2.06	0.75	0.32
<b>All Health Insurance Premiums (Revised)</b>	5,475	240.1	6,423	341.0	2.68		
	<b>Mean</b>	<b>Standard Error</b>	<b>Mean</b>	<b>Standard Error</b>			
<b>Fraction with No Health Insurance Premiums</b>	26.0	0.8	36.0	1.0	9.28	15.00	11.89
<b>Fraction with No Health Insurance Premiums (Revised)</b>	11.0	0.6	20.0	0.9	9.78		

Source: 2013 and 2014 CPS ASEC. Note: Sample includes all individuals age 15 and older with a direct-purchase plan only.