Estimating Medical Care Economic Burden Using the CPS ASEC

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Abstract

This paper uses the 2011 Current Population Survey Annual Social and Economic Supplement (CPS ASEC) to estimate a measure of medical care economic burden. This measure is important for understanding impacts of increases in health expenditures and decreases in employer-sponsored insurance coverage and assessing the impact and design of the Affordable Care Act. This article estimates a measure of burden by comparing out-of-pocket medical spending with financial resources available for medical care. While prior work has examined medical expenditures as a percentage of income, this is the first paper to do so using the CPS ASEC. Results indicate an average burden of 11.6 percent with a median of 4.5 percent. Regression results suggest main factors associated with high burden, as well as falling into a lower income status after accounting for medical spending, include having a low income and purchasing insurance in the non-group market.

1 Introduction

In recent years, national health expenditures have grown,[1] and employers have increasingly passed on the cost of insurance plans to employees through cost sharing and out-of-pocket deductibles.[2,3] It is important to develop a measure to understand the burden imposed by these costs on individuals and families. Following implementation of the provisions of the Patient Protection and Affordable Care Act (ACA), a measure of medical care economic burden is useful in assessing the impact and design of the reforms, particularly for those with incomes near or below poverty.

This paper answers the call of the Panel on Measuring Medical Care Risk in Conjunction with the New Supplemental Income Poverty Measure[4]. In 2012, the panel called for the calculation of both a retrospective measure of the burden associated with paying for past medical expenses and a prospective measure of the economic risk associated with future medical care to complement the Supplemental Poverty Measure. This paper uses new questions in the 2011 Current Population Survey Annual Social and Economic Supplement[5] (CPS ASEC) to estimate a retrospective measure of medical care economic burden. The burden measure compares actual medical out-of-pocket expenditures (MOOP) with resources available for medical care in a prior period.

Estimating medical care economic burden provides a look at the impact of medical expenses on families across the income distribution. Examining burden by insurance, demographic, and geographic characteristics suggests factors associated with differences in the severity of burden. Estimating the percentage of individuals with high burden provides a measure of the extent to which individuals are encumbered by their medical expenses. In particular, examining the role of medical expenses for individuals at the margin of Medicaid eligibility is important for identifying the real impact of medical expenses for this vulnerable group. In addition, results can be useful for assessing policy-relevant income cutoffs to determine and evaluate policies such as the ACA over time.

This paper builds on previous work in the literatures on underinsurance and poverty. Several papers compare family medical cost exposure to family income as a measure of underinsurance using other data from various surveys[6,7,8,9,10,11,12,13]. In the literature on poverty, previous work using the CPS ASEC has estimated the number (or fraction) of families and their individual members who, as a result of out-of-pocket spending for medical care services and premiums, are pushed into poverty or some multiple of poverty.[14,15] Those papers compare a family's income to the federal poverty line before and after accounting for medical expenses.

This paper adds to the above literature by being the first to estimate a measure of medical care economic burden using the CPS ASEC. This study then uses the CPS ASEC to examine the relationship between burden and insurance, demographic, and geographic characteristics. This paper also estimates the percentage of individuals with high out-of-pocket burden and compares the result to those found in the literature using other datasets. Finally, the paper estimates regression results examining the likelihood of having high burden and the likelihood of being classified as below 1.38 of the federal poverty line after accounting for medical spending.

Results show a mean burden of 11.6 percent with a median of 4.5 percent. Descriptively, the main factors found to be correlated with having higher burden include age (being older than 65), having a disability, having low income (less than 1.38 of the federal poverty line), and insurance type (direct purchase). Regression results yield consistent findings.

2 Data & Methods

The analysis sample consists of the 2011 Current Population Survey Annual Social and Economic Supplement (CPS ASEC), a nationally representative survey of the civilian non-institutionalized population living in the United States, covering the 2010 calendar year. The CPS ASEC is mostly administered in March, with some respondents interviewed in February and April. In 2011, approximately 75,000 households were interviewed representing approximately 205,000 individuals. The CPS ASEC is the official survey used for national poverty and health insurance coverage estimates.

The 2011 CPS ASEC introduced many questions for calculating the Supplemental Poverty Measure (SPM) updating the U.S. poverty measure. To consider medical expenses when estimating poverty, such variables as family- and person-level amounts paid for health insurance premiums, medical out-of-pocket payments, spending on over-the-counter health related products, and total spending on medical care were collected.[16] The addition of these variables allows for computation of a measure of medical care economic burden.

Medical out-of-pocket expenditures (MOOP) include such expenses as insurance premiums, payments and co-payments for hospital visits, medical providers, dental service, prescription medications, vision aids, medical supplies, and over-the-counter health-related items. We impute out-of-pocket premium amounts for persons who did not report paying out-of-pocket insurance premiums but indicated sharing paying the premium cost with their employer. We also impute out-of-pocket premium expenses for persons who did not report any premium expenses but reported that their employer paid for some or none of their employer-sponsored insurance or reported directly purchasing their insurance on the market.[17] We also imputed Medicare Part B premiums and added them to MOOP for individuals for whom these premiums were included in income, but not in MOOP. Income is measured before taxes. Results were also estimated using income after deducting imputed federal and state taxes as a robustness check and were not significantly different from each other in most cases. Both MOOP and income numbers cover the 2010 calendar year. In all analyses, standard errors are calculated using replicate weighting methods.

This analysis calculates burden by comparing family MOOP to family income for each individual in the sample. For the purposes of this analysis, the family is defined as the health insurance unit.[18] The health insurance unit is defined to consist of members of the nuclear family. Married individuals, regardless of age, are assigned to units with their spouses, and children 18 years and younger who are not married and have no children of their own are assigned to units with their parents, regardless of parental age and marital status. Children with no parent in the household but who are related to the household reference person are assigned to the unit of the household reference person. All other individuals are assigned to single units.

Appendix 1 and Appendix Exhibit A – 1 present results using alternative definitions of the family as a robustness check. The health insurance unit is the level used to calculate MOOP and income rather than the family defined by all relatives (the Census Bureau's definition of family) or the family defined as parents and their children regardless of the children's age, marital, and parental status. This definition more accurately reflects the relevant unit of analysis for insurance coverage and determining eligibility for public programs.[19]

The original sample consisted of 204,983 individuals. Individuals not in the poverty universe for whom the Census Bureau cannot determine poverty status, such as unrelated individuals under age 15, were excluded from the sample. Families with self-employed individuals were dropped from the analysis since these individuals could earn negative income. Families with MOOP of greater than $200,000 were dropped from the analysis since these MOOP values seemed implausibly large as amounts paid out of pocket. Families with incomes of $100 or less were dropped from the analysis since these families' resulting burden estimates were outlying.[20] The final sample consists of 174,175 individuals corresponding to 88,496 families.

The distribution of MOOP values is very skewed. Many families report zero MOOP, while a small number of families report extremely large MOOP. Approximately 8.1 percent of families in the analysis sample have MOOP values equal to zero. Of families reporting zero MOOP, 41.4 percent are uninsured, 27.6 percent are covered by government insurance, 20.6 percent are covered by private insurance, and the remainder has some mix of coverage. As with the distribution of MOOP, the distribution of burden is also skewed: many families have no or low burden, but a small number of families have very high burden. Exhibit 1 presents the distribution of non-zero burden values.

[Exhibit 1]

3 Results

3.1 Burden by Characteristics

We first examine the mean and 50th, 90th, and 95th percentiles for burden for the full analysis sample and by various characteristics. Exhibit 2 presents results for the full sample and for select characteristics. Additional results are presented in Appendix Exhibit A - 2. Mean estimates are presented for comparison purposes, but the percentile estimates provide a more revealing depiction of the burden distribution. The mean burden for the full sample is 11.6 percent. Fifty percent of individuals have burden of less than 4.5 percent, and the top 5 percent have burden of greater than 32.5 percent.

[Exhibit 2]

Examining results by health insurance type, the greatest number of individuals are covered by employer-provided health insurance, and these individuals have a mean burden of 9.3 percent corresponding to a 50th percentile of 4.7 percent and 95th percentile of 24.6 percent. Compared to all other individuals, those covered by direct purchase health insurance have a much higher mean burden of 44.1 percent corresponding to 50th and 95th percentiles of 10.9 percent and 93.8 percent, respectively.

After individuals covered by direct purchase insurance, individuals covered by a combination of private and government insurance have higher mean burden than most other individuals, with a mean of 18.8 percent corresponding to 50th and 95th percentiles of 10.7 percent and 50.1 percent, respectively; this group is mainly comprised of seniors with Medicare and direct purchase insurance. The groups with the lowest mean burden include the uninsured and those with Medicaid and military coverage.[21] This low mean burden could reflect underuse of medical services for the uninsured. This low mean burden could also reflect the zero or small co-share for Medicaid services and military insurance coverage.

We also examine burden by a number of other characteristics. Examining burden by race/ethnicity[22], Whites and individuals not identifying as White, Black, Asian, or Hispanic have the highest mean burden.[21] Individuals with disabilities have higher mean burden than those without disabilities. Individuals aged 65 years and older have higher mean burden than those younger than age 65. Single individuals have higher mean burden than married individuals. Results by income to Department of Health and Human Services (HHS) poverty guideline ratios in general show the magnitude of mean burden decreasing with increased income. The poverty guidelines are important because they are used as the basis for eligibility for Medicaid given a family's income. Results using Census poverty thresholds are consistent with those using the HHS poverty guidelines and are presented in Appendix Exhibit A - 2.

Appendix Exhibit A - 2 presents results by a number of other characteristics including family size, region, metropolitan status[23], and nativity. Families consisting of single individuals have higher mean burden than those consisting of two or more individuals. Individuals living in principal cities have lower mean burden as compared to those living elsewhere.[24] Burden estimates are similar across Census regions. Native individuals have higher burden than non-native individuals.

The main factors appearing to be correlated with higher burden include age (being older than 65), having a disability, having low income (less than 1.38 of the federal poverty line), and insurance type (direct purchase and private insurance). Race/ethnicity, geography, and marriage/family size factors are correlated with much smaller differences in mean burden between groups.

3.2 Percentage with High Burden

To obtain a fuller picture of the impact of burden on individuals, we next examine the percentage of individuals in families with high burden, a measure that has been used throughout the literature as a marker of underinsurance.[10,13] Following the literature, an individual is considered to have high burden if his or her family burden is 10 percent or more of his or her family income. To compare our data with results in the literature, we estimate the percentage with high burden including and excluding health insurance premiums using the CPS ASEC. Results are presented in Appendix Exhibit A - 3. Results show that 26.9 percent of all individuals have high burden including health insurance premiums. Examining this estimate by age group, 22.0 percent of individuals younger than 65 have high burden including premiums. Using the Medical Expenditure Panel Survey (MEPS), the percentage of individuals younger than 65 that have high burden including premiums was estimated to be 18.8 percent for 2009[10]; we are unable to

perform a formal statistical test of the difference of the means for our estimates and the MEPS estimates because the standard errors associated with the MEPS estimates were not published. We also find that 21.7 percent of individuals 19-64 have high burden including premiums;[25] 8.2 percent of individuals 19-64 have high burden excluding premiums which is lower than the comparable 2010 estimate (which excluded premiums) of 17.6 percent using Commonwealth Fund Health Insurance Survey data[13]. We also find that 57.6 percent of individuals aged 65 and older have high burden including premiums.

Next, we investigate whether the factors found to be associated with higher mean burden are also associated with having high burden after controlling for other characteristics. To do this, we perform a logit regression estimating the likelihood of having high burden of 10 percent or greater, as defined previously. We control for all characteristics presented previously with the exception of Census poverty thresholds since they are nearly identical to the HHS poverty guidelines, which were included.

Exhibit 3 presents factors associated with having high burden as average marginal effects of the logit regression. Compared to being uninsured, many types of coverage are associated with high burden, and the effect is particularly strong for direct purchase insurance. However, we do not see a statistically significant difference for military coverage, and Medicaid coverage is associated with being less likely to have high burden. Families with more than one person are more likely to have high burden than those with only one person. All other race/ethnicity groups are less likely to have high burden than non-Hispanic Whites. Individuals living in the Northeast are less likely to have high burden than those living in the West. Individuals living in a principal city are less likely to have high burden than those not in a CBSA or MSA; this may reflect higher costs of medical care in urban areas. Individuals in progressively higher poverty guideline groups have lower likelihoods of having high burden. Individuals without a disability are less likely to have high burden than those with a disability, and single individuals are less likely to have high burden than married individuals. Native individuals are more likely to have high burden than non-native individuals. All other age groups, 19-25 year-olds most prominently, are less likely to have high burden than those ages 65 and older. These results are generally consistent with the descriptive results presented earlier.

[Exhibit 3]

3.3 Benefit Eligibility after Accounting for Medical Expenses

Next, we consider how medical expenses affect the calculation of poverty status and Medicaid benefit eligibility. In determining a family's poverty status, resources used to pay for medical expenses are included as income. However, a family whose income exceeds the official poverty line may have resources classified as below the poverty line after paying for medical expenses, especially if those expenses are large. Since resources spent on medical expenses are not available to provide for other basic needs, an alternative approach for classifying poverty levels could define income as a family's resources available after deducting spending on medical care. This definition is important because 1.38 of the federal poverty line is used as the cutoff for Medicaid eligibility. Accordingly, an individual may have income that falls below the threshold after accounting for medical expenses, but may not qualify for Medicaid since their family's official income exceeds the threshold.

Comparing estimates of poverty using official and alternative definitions of income can identify individuals most afflicted by medical expenses at the margin of Medicaid eligibility and identify factors associated with being at this margin. We perform several logit regressions estimating the likelihood of being classified above 1.38 of the federal poverty line using the official definition of income but below this threshold using the alternative definition accounting for medical expenses. To identify whether particular types of expenses drive the results, we calculate income using several alternative measures of medical expenses: insurance premiums (estimated for individuals with private insurance only), non-premium expenses, and all medical expenses including premiums. The analysis includes only individuals whose family income exceeds 1.38 of the federal poverty line using the official definition. We control for all characteristics presented previously as in the burden regression. Exhibit 4 presents these results as average marginal effects of the logit regressions.

[Exhibit 4]

In all regressions, individuals closer to the poverty line are more likely to be classified below 1.38 of the federal poverty line using an alternative income measure accounting for medical expenses.[26] Single individuals and individuals with no disability are less likely than their married and disabled counterparts to be classified below the cutoff. Controls for family size, metropolitan status, and nativity are not statistically significantly different from the omitted groups in any of these regressions.

We find differences in the likelihood of being classified below the benefit eligibility cutoff by insurance coverage. Across all regressions, individuals with direct purchase insurance were the most likely to be classified below 1.38 of the federal poverty line using the alternative income definitions. Looking at premium expenses for those with private insurance coverage, only individuals with direct purchase insurance are more likely to be classified below the cutoff as compared to individuals with some mix of private and government coverage. Looking only at non-premium expenses, individuals with direct purchase insurance as well as individuals with a combination of private and government insurance are more likely to be classified below the cutoff compared to uninsured individuals. After accounting for all medical expenses including premiums, individuals with any type of insurance coverage are more likely to be classified below the cutoff compared to the uninsured except for those with military coverage, and the effect is particularly strong for individuals with direct purchase insurance.

Using the alternative income definitions, we also find differences in the likelihood of being classified below the benefit eligibility cutoff by race/ethnicity, region, and age. Blacks and Hispanics are less likely to be classified below 1.38 of the federal poverty line than non-Hispanic Whites in regressions accounting for premium expenses and all medical expenses including premiums. Only Hispanics are less likely to be classified below the cutoff than non-Hispanic whites after accounting for non-premium expenses. Controls for region were not statistically significantly different in regressions accounting for premium expenses. However, after accounting for non-premium expenses, individuals living in all other regions are less likely to be classified below 1.38 of the federal poverty line than those living in the West. After accounting for all medical expenses including premiums, only individuals living in the Northeast region are less likely to be classified below the cutoff than those living in the West. Compared to those

aged 65 and older, all other age groups are less likely to be classified below the cutoff after accounting for premium expenses and all medical expenses including premiums. After accounting for non-premium expenses, only individuals aged 19-25 are less likely to be classified below the cutoff than those aged 65 and older.

These results suggest that in general the same factors associated with high mean burden and having high burden are associated with having a higher likelihood of being classified below the Medicaid eligibility cutoff using the alternative income definitions.

4 Conclusion

While prior work has examined medical expenditures as a percentage of income, this is the first paper to do so using the CPS ASEC. Using the CPS ASEC, we estimate a mean burden of 11.6 percent with a median of 4.5 percent. We find that 26.9 percent of all individuals have family burden greater than 10 percent of family income. Further, regression results examining the likelihood of having high burden and the likelihood of being classified below the benefit eligibility cutoff after accounting for medical spending yield consistent findings.

This analysis complements other measures that explore how factors that are usually out of the family's control affect being classified below the poverty line or in a particular income threshold. One example of such a measure is the Supplemental Poverty Measure, which computes the number of individuals in poverty including medical expenses and other expenses and is often compared to the official poverty measure. Future work can integrate this analysis into a Supplemental Poverty Measure framework. While this analysis presents estimates of retrospective measures of financial burden from actual out-of-pocket medical care spending, these estimates serve as a precursor to future work developing a prospective measure of medical care economic risk that can assess the exposure to, or potential for incurring, future expenses using the CPS ASEC.

Notes

[1] Centers for Medicare and Medicaid Services. (2013). *National Health Expenditure Accounts: Historical National Health Expenditures by Type of Service and Source of Funds, CY 1960-2011.*

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[5] Data are subject to error arising from a variety of sources. For more information on sampling and non-sampling error, see www.census.gov/apsd/techdoc/cps/cpsmar11.pdf (accessed January 22, 2014).

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[15] O'Hara, B. (2004). Do Medical Out-of-pocket Expenses Thrust Families into Poverty? *Journal of Health Care for the Poor and Underserved, 15*, 63-75.
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[17] Janicki, H., O'Hara, B., & 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.
[18] State Health Access Data Assistance Center. (2012). *Defining "Family" for Studies of Health Insurance Coverage.* Issue Brief Number 27, University of Minnesota.
[19] Holahan, J., & Cook, A. (2005). Changes in Economic Conditions and Health Insurance Coverage, 2000-2004. *Health Affairs, 24*, w498-w508.
[20] Estimates including these families with very low incomes were skewed. Including individuals from these families, the mean burden estimate was considerably higher (79.3 percentage points) while the median was lower (0.5 percentage points).
[21] The mean burdens for each of these groups are not significantly differently from each other.
[22] Respondents may report more than one race. The discussion and results presented throughout this paper use the race-alone or single-race concept whereby a particular race/ethnicity group is defined as those who reported that particular race/ethnicity and no other.
[23] CBSA refers to core-based statistical areas; MSA refers to metropolitan statistical areas.
[24] Mean burden is not statistically different for individuals not living in a CBSA or MSA as compared to those living outside principal cities.
[25] The percentages of individuals with high burden including premiums for those younger than 65 and those ages 19-64 are not significantly differently from each other.
[26] In general, individuals in all other income to poverty guideline ratio groups are more likely to be classified below 1.38 of the federal poverty line as compared to those whose family incomes are at or above four times the poverty line. The only exception is those whose family incomes are at or above three times the poverty line and below four times the poverty line in the regression examining premium expenses (column 1 in Exhibit 4).

Exhibit List

Exhibit 1 (figure)
Distribution of Non-Zero Burden Values for Families
SOURCE: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)
Notes:

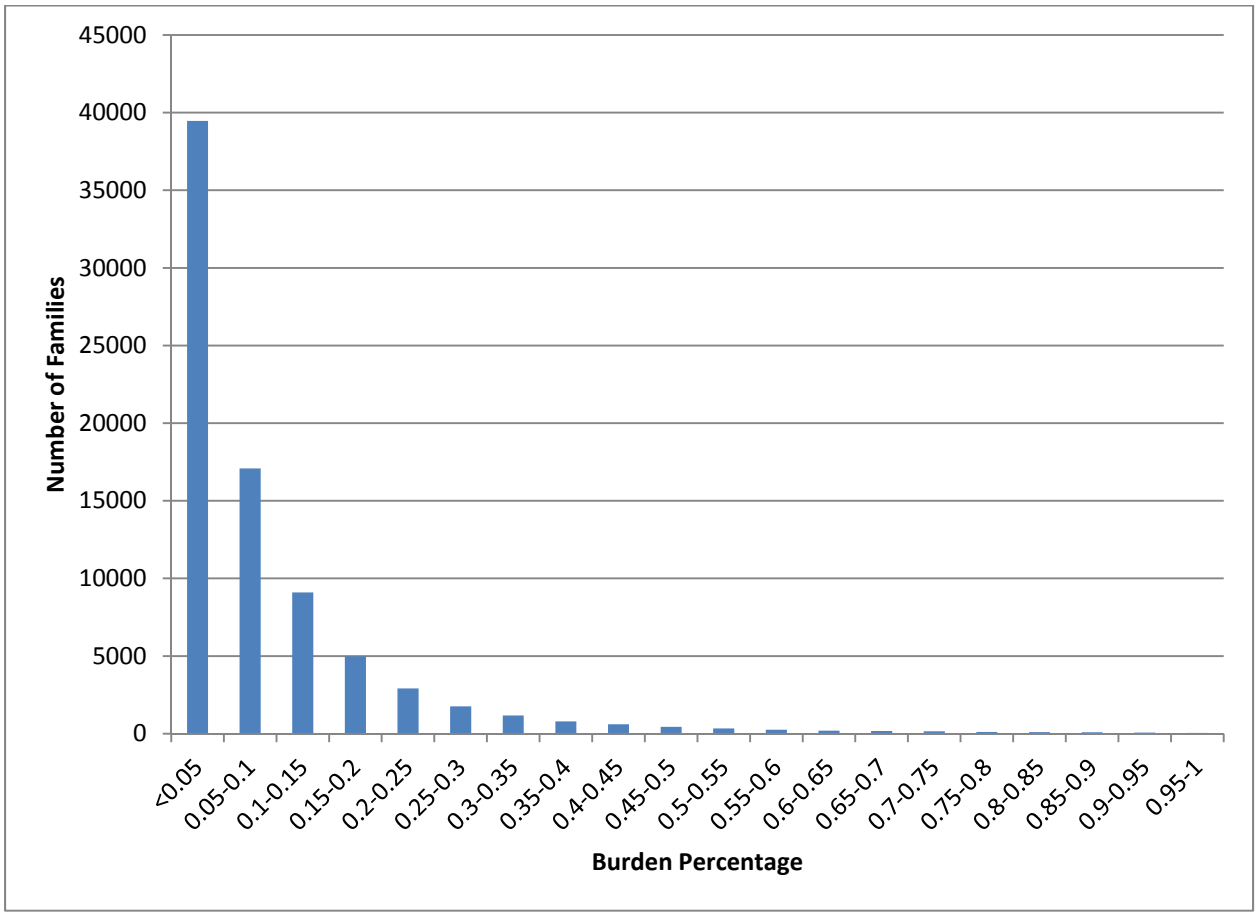
Exhibit 2 (table)
Select Burden Results
SOURCE: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)
Notes:

Exhibit 3 (table)
Correlates of High Burden: Regression Estimates
SOURCE: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)
Notes: Average marginal effects from logit regression. Standard errors calculated using replicate weighting methods are in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Exhibit 4 (table)
Correlates of Falling below the Medicaid Eligibility Cutoff: Regression Estimates
SOURCE: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)
Notes: Average marginal effects from logit regression. Standard errors calculated using replicate weighting methods are in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Figures

Exhibit 1: Distribution of Non-Zero Burden Values for Families



Source: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)

Tables

Exhibit 2: Select Burden Results

		N	Mean	50th Percentile	90th Percentile	95th Percentile
Full Sample		174,175	11.6%	4.5%	21.1%	32.5%
Health Insurance Type	Direct Purchase Only	5,035	44.1%	10.9%	51.5%	93.8%
	Employer Only	86,627	9.3%	4.7%	17.0%	24.6%
	Combination of Government	4,365	11.7%	6.1%	21.6%	31.3%
	Medicaid Only	19,973	7.4%	1.6%	14.4%	24.3%
	Medicare Only	7,530	16.9%	10.7%	29.1%	41.3%
	Military Only	2,348	6.8%	1.1%	11.3%	21.2%
	Employer and Direct	5,398	14.7%	4.7%	20.2%	34.8%
	Private and Government	19,283	18.8%	10.7%	36.0%	50.1%
	Uninsured	23,616	7.8%	1.0%	12.7%	23.6%
Race/Ethnicity	Asian, not Hispanic	8,975	9.5%	3.7%	17.8%	28.8%
	Black, not Hispanic	19,917	10.5%	3.8%	20.3%	32.3%
	Hispanic	31,132	8.6%	2.8%	16.9%	26.6%
	Other, not Hispanic	6,440	12.4%	4.1%	20.3%	35.1%
	White, not Hispanic	107,711	12.8%	5.2%	22.4%	33.9%
Disability Status	No Disability	159,466	10.6%	4.2%	19.5%	30.0%
	Disability	14,709	21.1%	9.6%	34.3%	52.0%
Nativity Status	Native	152,173	11.9%	4.7%	21.3%	32.8%
	Not Native	22,002	9.5%	3.3%	19.0%	30.1%
Marital Status (Age>=15)	Single	64,703	12.8%	3.7%	21.7%	35.5%
	Married	68,860	11.6%	5.5%	22.2%	32.7%
Age Group	0-18	51,693	9.4%	4.1%	17.8%	26.3%
	19-25	13,462	12.1%	1.6%	18.1%	38.5%
	26-64	88,922	10.7%	3.9%	17.9%	27.4%
	65+	20,098	19.1%	11.8%	34.5%	48.0%
HHS Poverty Guidelines	< 1.38 of poverty line	44,368	23.0%	3.8%	37.8%	67.2%
	>= 1.38, <2	22,017	11.4%	6.6%	28.4%	38.6%
	>= 2, <2.5	15,636	10.5%	6.9%	23.6%	30.4%
	>= 2.5, <3	13,770	9.3%	6.3%	21.6%	28.1%
	>= 3, <4	22,061	7.8%	5.7%	17.1%	22.2%
	>= 4	56,323	5.1%	3.6%	11.1%	14.9%

Source: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)

Exhibit 3: Correlates of High Burden: Regression Estimates

In percentage point units	Average Marginal Effect	Delta-method Std. Err.
Health Insurance Type, mutually exclusive (Omitted = Uninsured)		
Direct Purchase Only	42.28***	0.8782
Employer Only	24.31***	0.5323
Combination of Government	5.03***	0.9521
Medicaid Only	-1.5**	0.6823
Medicare Only	15.16***	0.7378
Military Only	0.58	1.5584
Combination of Employer and Direct	27.2***	1.0004
Combination of Private and Government	27.25***	0.6503
Number in Household (Omitted = Single Unit)		
>Single Unit	2.82***	0.4996
Race/Ethnicity (Omitted = White, not Hispanic)		
Asian, not Hispanic	-1.97**	0.8051
Black, not Hispanic	-3.48***	0.5334
Hispanic	-6.46***	0.5854
Other, not Hispanic	-2.45**	0.9745
Region (Omitted = West)		
Midwest	-0.73	0.5053
Northeast	-2.19***	0.5220
South	-0.11	0.5134
Metropolitan Status (Omitted = Not in a CBSA/MSA)		
Inside Principal City	-2.5***	0.5248
Outside Principal City	-0.67	0.4393
HHS Poverty Guidelines (Omitted = >=4)		
< 1.38	41.09***	0.5137
>= 1.38, <2	33.94***	0.5668
>= 2, <2.5	29.26***	0.6077
>= 2.5, <3	24.86***	0.6174
>= 3, <4	16.99***	0.5182
Disability (Omitted = Disability)		
No Disability	-7.35***	0.4434
Nativity (Omitted = Not Native)		
Native	2.84***	0.5179
Marital Status (Omitted = Married)		
Single	-8.2***	0.4508
Age Group (Omitted = 65+)		
0-18	-15.02***	0.7338
19-25	-29.95***	0.7834
26-64	-17.25***	0.5864

Source: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC**)**

Exhibit 4: Correlates of Falling below the Medicaid Eligibility Cutoff: Regression Estimates

	After Premiums - Private Only		After MOOP (Excluding Premiums)		After MOOP (Including Premiums)	
In percentage point units	Average Marginal Effect	Delta-method Std. Err.	Average Marginal Effect	Delta-method Std. Err.	Average Marginal Effect	Delta-method Std. Err.
Health Insurance Type (Omitted (Premiums) = Private and Government; Omitted (MOOP) = Uninsured)						
Direct Purchase Only	2.73***	0.3258	0.89**	0.3693	7.75***	0.4780
Employer Only	-0.21	0.2479	0.2	0.1807	3.54***	0.2666
Combination of Government			-0.44	0.3454	1.15**	0.5290
Medicaid Only			-0.11	0.2441	1.08***	0.3612
Medicare Only			0.31	0.2564	2.48***	0.3840
Military Only			-1.04	0.7760	-1.07	1.1504
Both Employer and Direct	-0.01	0.4178	0.19	0.3788	3.53***	0.4759
Both Private and Government			0.74***	0.2236	4.29***	0.3422
Family Size (Omitted = Single Unit)						
Two or More People	-0.29	0.2656	-0.28	0.2047	-0.16	0.3293
Race/Ethnicity (Omitted = White, not Hispanic)						
Asian, not Hispanic	-0.05	0.4494	-0.67*	0.3965	-0.49	0.4945
Black, not Hispanic	-0.5**	0.2291	-0.2	0.2108	-0.93***	0.2647
Hispanic	-0.59**	0.2496	-0.86***	0.2184	-1.32***	0.2802
Other, not Hispanic	-0.75	0.4768	0.04	0.3528	-0.24	0.5274
Region (Omitted = West)						
Midwest	0.2	0.2230	-0.43**	0.2019	-0.09	0.2868
Northeast	0.02	0.2530	-0.89***	0.2061	-0.57**	0.2543
South	0.06	0.2146	-0.42**	0.1674	-0.24	0.2604
Metropolitan Status (Omitted = Not in a CBSA/MSA)						
Inside Principal City	0.02	0.2376	-0.19	0.1738	-0.21	0.2349
Outside Principal City	-0.01	0.2164	-0.03	0.1715	-0.05	0.2422
HHS Poverty Guidelines (Omitted = >=4)						
>= 1.38, <2	12.99***	0.9134	11.94***	1.0527	23***	0.9718
>= 2, <2.5	6.38***	0.9648	6.68***	1.0614	13.39***	1.0080
>= 2.5, <3	4.55***	1.0879	4.06***	1.1926	9.17***	1.1021
>= 3, <4	-0.38	2.0296	2.54*	1.3179	3.78***	1.3454
Disability (Omitted = Disability)						
No Disability	-0.45***	0.1628	-0.88***	0.1635	-1.34***	0.2131
Nativity (Omitted = Not Native)						
Native	0.03	0.2323	0.07	0.2080	0.32	0.2608
Marital Status (Omitted = Married)						
Single	-0.69***	0.2574	-0.66***	0.1986	-1.52***	0.3282
Age Group (Omitted = 65+)						
0-18	-2.25***	0.3227	-0.29	0.2586	-3.22***	0.3444
19-25	-3.17***	0.3392	-0.92***	0.2630	-5.11***	0.3747
26-64	-2.04***	0.2654	-0.14	0.2162	-3.07***	0.2621

Source: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)

Appendix 1: Alternative Definitions of the Family Unit

In other papers examining burden, the analysis was performed at the individual level with burden calculated at the family level. Since we posit that the most appropriate level of analysis for calculating burden should be based on the units sharing medical expenditures, for this analysis, the family is defined as the health insurance unit following the criteria outlined by the State Health Access Data Assistance Center. To determine how alternative specifications of the unit at which burden was calculated could yield different results, we estimate mean MOOP for the full sample and by age group and estimate the percentage with high burden for the full sample using the analysis sample and alternative units for calculating burden. The definitions of the family considered include: families as defined previously with unmarried childless children younger than 19 linked to their parents, which was used for the main analysis; families with unmarried childless children younger than 26 linked to their parents; and families as defined in the CPS ASEC. The estimates are presented in Appendix Exhibit A - 1.

Appendix Exhibit A - 1: MOOP Comparison across Alternate Samples

Sample	Families including Unmarried Childless Children <19	Families including Unmarried Childless Children <26	Census Family Units
Age Group: All			
N	174,175	175,418	178,035
Mean Family MOOP	3,819	4,052	4,691
Standard Error	23.87	25.87	34.40
Percent with High Burden	26.9%	27.0%	26.9%
Age Group: 0-18			
N	51,693	51,702	52,914
Mean Family MOOP	3,976	4,023	4,450
Standard Error	39.62	40.56	46.00
Percent with High Burden	22.6%	22.5%	22.6%
Age Group: 19-25			
N	13,462	14,725	15,070
Mean Family MOOP	1,010	3,188	3,978
Standard Error	25.44	56.30	64.36
Percent with High Burden	17.8%	19.9%	20.2%
Age Group: 26-64			
N	88,922	88,892	89,935
Mean Family MOOP	3,867	3,936	4,649
Standard Error	28.97	29.23	39.03
Percent with High Burden	22.4%	22.2%	22.7%
Age Group: 65+			
N	20,098	20,099	20,116
Mean Family MOOP	5,120	5,133	5,805
Standard Error	61.93	61.88	72.22
Percent with High Burden	57.6%	57.6%	55.1%

Source: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC**)**

Here we find that the analysis definition of the family yields the most restrictive sample, while the CPS family definition of the unit yields the most inclusive sample. While the alternative definitions of the unit for calculating burden do not largely affect the sample size, they do yield very different estimates of mean family MOOP for the 19-25 age group. In the analysis sample, 19-25 year-olds are generally treated as independent units if they are not married. Since this group is also likely to have zero or close to zero income, they are also more likely to be excluded from the analysis. However, in the analysis sample, since they are considered as independent units and generally have low individual MOOP, their inclusion in the sample allows the estimates of burden to reflect only their MOOP and not that of their parents and other family members. Including these individuals in the units of their parents in the other sample definitions causes their mean family MOOP to increase as there are more individuals in a unit and fewer units. Furthermore, mean family MOOP is consistently higher across age groups using the CPS

family definition rather than the other definitions of the family since more individuals are included in each family unit.

Looking at the percentage of individuals with high burden, we see that using alternative definitions of the unit at which burden is calculated in general does not yield very different results.

Appendix 2: Supplemental Tables

Appendix Exhibit A - 2: Burden Results by Additional Characteristics

		N	Mean	50th Percentile	90th Percentile	95th Percentile
Region	Midwest	33,783	11.1%	5.0%	22.0%	33.8%
	Northeast	39,388	12.0%	4.1%	19.9%	30.7%
	South	55,753	11.8%	4.7%	21.4%	32.9%
	West	45,251	11.5%	4.1%	20.6%	32.0%
Metropolitan Status	Inside Principal City	55,492	10.4%	3.8%	19.5%	30.1%
	Outside Principal City	85,267	12.2%	4.7%	21.0%	32.7%
	Not in a CBSA/MSA	33,416	12.5%	5.8%	24.3%	36.1%
Nativity Status	Native	152,173	11.9%	4.7%	21.3%	32.8%
	Not Native	22,002	9.5%	3.3%	19.0%	30.1%
Family Size	Two People or More	129,978	10.8%	4.9%	20.5%	30.7%
	Single Unit	44,197	13.6%	3.5%	23.0%	37.6%
Census Poverty Thresholds	< 1.38 of threshold	44,573	22.7%	3.7%	36.9%	66.7%
	>= 1.38, <2	21,324	11.2%	6.4%	27.5%	38.4%
	>= 2, <2.5	15,574	10.8%	7.0%	24.7%	33.1%
	>= 2.5, <3	13,655	9.3%	6.4%	21.5%	27.6%
	>= 3, <4	22,217	7.8%	5.7%	17.5%	23.0%
	>= 4	56,832	5.2%	3.6%	11.4%	15.5%

Source: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)

Appendix Exhibit A - 3: Percent with High Burden

Sample	N	Mean Including Premiums	Mean Excluding Premiums	Comparison Estimate
Full Sample	174,175	26.9%	9.4%	-
Age <65	154,077	22.0%	8.2%	18.8%
Age 19-64	102,384	21.7%	8.2%	17.6%
Age 65+	20,098	57.6%	16.3%	-

Source: 2011 Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC)