Non-response Bias in the 2013 CPS ASEC Content Test

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Abstract

In March 2013, the Census Bureau fielded a content test to evaluate new income and health insurance questions for the Current Population Survey (CPS) Annual Social and Economic Supplement. The response rate to the survey was 43.1 percent, which raised questions about bias in key estimates. The design of the Content Test was similar to that of the American Time Use Survey (ATUS), which also suffered from low response. However, research exploiting the sample design showed that non-response did not greatly bias key ATUS estimates (Abraham, Maitland, and Bianchi 2006). Using the ATUS analysis as a framework, I modeled survey response, contact, and cooperation rates from sample characteristics obtained during households' last CPS interview. Results suggest that age, educational attainment, and household size appear to have the greatest effect on response. Non-response appears to bias uninsurance in general; employer-sponsored insurance and Medicare specifically; and wage, retirement, and interest income recipiency, but has little effect on mean income amounts. For instance, non-response exerted a 2.8 percentage point downward bias on the percentage of households with a person uninsured for the full year.

Introduction

Rising levels of non-response in national surveys present a growing potential problem for producing unbiased estimates about the nation's social and economic characteristics (Singer 2006, Groves 2006, Brick and Williams 2013). While much has been written about non-response in production surveys, less has been discussed in the context of content tests. Non-response in field tests is a threat to prudent risk management because decisions to move forward with questionnaire design changes may be based on biased estimates. For surveys that produce official economic indicators, content tests often use the magnitude of the estimates as criteria for whether to move forward with changes to questions.

Non-response contributes to the bias of estimates when the characteristics of non-respondents differ from those of respondents in ways correlated with the desired measure (Groves 2006). The amount of bias is a function of both the size of the difference between respondents and non-respondents and the level of non-response in the survey. Because the difference between respondents and non-respondents may not always be known, non-response rates have historically been viewed as the standard indicator for bias. Along these lines, the Office of Management and Budget established standards for statistical surveys, requiring an analysis of non-response bias when the unit response rate is below 80 percent (Office of Management and Budget 2006). While this threshold is relatively arbitrary, it forces agencies to conduct necessary analyses. Furthermore, simply publishing a response rate as the indicator of data quality can be misleading as there is low correlation between response rates and non-response bias (Davern 2013, Skalland 2011).

This paper examines the impact of non-response on measures of health insurance coverage and income from the 2013 Current Population Survey Annual Social and Economic Supplement (CPS ASEC) Content Test[1]. Because

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[1] Data are subject to error arising from a variety of sources. For information on confidentiality protection, sampling error, non-sampling error, and definitions, see the documents available at http://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=201211-0607-002.

criteria for adopting the new questions involve the magnitude of estimates about income sources and coverage types, non-response bias is of particular concern. Levels of non-response in the test were higher than initially expected, which will likely affect the efficiency of key estimates. While little can be done *ex post* to address the problems of small sample size, weighting adjustment can be done to minimize the effect of non-response bias.

Data

The 2013 CPS ASEC Content Test was a field test conducted to analyze proposed revisions to questions about income and health insurance coverage in the CPS ASEC. The design of the Content Test, however, was analogous to how the American Time Use Survey (ATUS) is conducted: using retired sample from the Basic Monthly Current Population Survey (CPS). The Content Test sample was constructed from retired CPS samples that were not selected for the ATUS or eligible for selection for the production CPS ASEC survey.

Non-ATUS-selected Hispanic households from 8 months (Aug.-Oct. 2010, Aug.-Oct. 2011, and Aug.-Sept. 2012) and non-Hispanic households from 5 months (Nov.-Dec. 2010, and Nov. 2011 - Jan 2012) of outgoing rotations from the CPS were selected to build a sample of 22,508 housing units. The size of the sample was chosen in order to obtain an estimated 15,000 completed interviews, the size sufficient to detect a 0.5 percentage point difference in the uninsured rate (Clement 2012). Units were contacted via Computer-assisted Telephone Interviews (CATI) by Census Bureau field representatives from the Tucson, AZ, Jeffersonville, IN, and Hagerstown, MD call centers.

Of the 22,508 sample cases, 9,195 complete interviews were conducted, 12,145 cases were deemed eligible for collection but were not completed, and 1,168 were deemed non-eligible (Table 1). The unweighted response rate was 43.1 percent. The telephone call centers were able to contact 59.2 percent of sample units and obtained completed interviews from 72.8 percent of those contacted.

An advantage to using the retired CPS sample to construct this test is that each housing unit's information from its last CPS interview is available to help determine the characteristics of those who did not respond to the Content Test. The characteristics of the eligible sample are shown in Table 2. Overall, the eligible sample tended to look like households overall. For example, households with a reference person aged 65 or older made up 23.3 percent of the sample, not statistically different from the 22.9 percent of households that had a householder aged 65 or older from the 2012 American Community Survey.[2]

Methods

When dealing with non-response, it is appropriate to define how response is calculated. The American Association for Public Opinion Research provides various standards for calculation. In this paper, response rates reflect the AAPOR RR2 standard: the percentage of complete and sufficient partial interviews divided by the sum of completes, refusals, noncontacts, unknown eligibles, and other situations (The American Association for Public Opinion Research 2011). Contact rates reflect the AAPOR CON1 standard, and cooperation rates reflect the AAPOR COOP2 standard. The RR2 rate is the product of the CON1 and COOP2 rates.

Because the Content Test used a similar sample design as the ATUS, lessons can be learned from studies about non-response in that survey. A paper from Abraham, Maitland, and Bianchi (2006) looking at the impact of non-response bias on ATUS estimates used previous CPS interview characteristics to model response, contact, and cooperation to the survey. I use that paper as a framework for structuring this analysis. Accordingly, I use a logit model to predict response, contact, and cooperation to the Content Test. Also like Abraham, et al., I use propensities from the model to adjust estimates to assess the impact of non-response on key estimates.

All direct estimates and model parameters are estimated using sample weights. The sample weights are derived from each unit's base weight (inverse probability of selection) adjusted for the 8:5 ratio of months with Hispanic/Non-Hispanic households and for the removal of the ATUS sample.[3] Variances are calculated using the successive differences replication method.

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[2] The comparison here and all other comparisons made in this paper have been tested for statistical significance at the 90 percent confidence level.
[3] 8 households (5 eligible and 3 ineligible) had zero weights and thus were excluded from weighted analyses.

For household characteristics -- like presence of children or number of people in household -- the linkage from the Content Test to the CPS is straightforward. For person-level characteristics – like age, sex, race, etc. – I use the characteristics of the individual listed as "reference person" for the household, if valid. If not valid, I use the characteristics of the adult in the household whose person-weight is equal to the household-weight. From these values, I identify characteristics for each sample unit that include age, sex, race/origin, citizenship status, marital status, presence of children, disability status, educational attainment, employment status, family income, and size of household.

Households with different demographic and family characteristics are known to have different levels of income and health insurance coverage. Consequently, to the extent that these demographic and family characteristics are correlated with non-response, estimates of income and health insurance coverage would be biased. For instance, households with people aged 65 and over are more likely to have income from Social Security and retirement sources while being covered by Medicare (DeNavas-Walt, Proctor and Smith 2013). In addition, this age group frequently has higher response rates to surveys (Voigt, Koepsell and Dalling 2003).

Differences in characteristics can affect response through two pathways. First is the contact pathway, which reflects those household characteristics that make it difficult for organizations like the Census Bureau to contact them (i.e. pick up the phone, answer the door, etc.). For phone surveys, the existence of caller ID has increasingly changed the characteristics of those less likely to answer the phone as households are able to implicitly "refuse" the survey. These refusals often cannot be distinguished from noncontacts because of unavailability. The second pathway of non-response is the explicit refusal. In this pathway, the household answers the phone but then does not participate, either before the survey begins or after a few questions are asked (i.e. insufficient partials). The factors that lead to noncontacts may not be the same as the ones that lead to nonparticipation. For example, households with individuals who travel extensively for work may not be home resulting in lower contact propensity, but may not be any more or less likely to participate if contact is made. Because of this, I model contact and participation rates separately and combine the predicted propensities to form a likelihood of response.

Key estimates from the Content Test are estimated at the household level because that is the unit of analysis for the response models. Generally, if any member of a household has a particular characteristic (is uninsured, has Medicare, earns wage income) then the household is considered to possess the characteristic.

Results

Table 3 presents weighted response rates, contact rates, and cooperation rates for households by various characteristics. Overall, 41.3 percent of households responded. Contact was made with 57.9 percent of households and 71.4 percent of those with whom contact was made cooperated with the survey. These differed for households of various characteristics.

The response rate for younger households – those with a reference person under age 30 – was 28.1 percent and the response rate rose with each successive age group. For those 30 to 44 years, 45 to 54 years, and 55 to 64 years, the response rates were 32.8 percent, 37.7 percent, and 48.3 percent, respectively. Households with a reference person age 65 or older had the highest response rate at 54.0 percent. The 25.9 percentage point difference between the oldest and youngest groups was driven by the contact rates for these households. The difference in the contact rates for the 65 and older and 30 and under groups was 32.6 percentage points while the difference in cooperation rates was 5.0 percentage points (Table 3).

On other demographic characteristics, households with male, non-Hispanic White, and Native born citizen reference persons were more likely to respond than females, other race/origin groups, and foreign born noncitizens[4], respectively. Households with widowed reference persons were more likely to respond than other marital statuses, however, that may be reflecting the older population of this group. Likewise, households without children, those with a reference person with a disability, and those not in the labor force were more likely to respond than the other statuses within each category.

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[4] The response rate for native citizens was not different from that of naturalized citizens.

Table 4 shows the average marginal effects from logit models on response, contact, and cooperation. After controlling for other specified characteristics, households with a reference person aged 65 or older were 23.4 percentage points more likely to respond than those with a reference person aged 30 or younger. The older group was also 27.5 percentage points more likely to make contact and 8.0 percentage points more likely to cooperate.

With regard to other demographic characteristics, female households were 2.3 percentage points less likely to respond than male households, although there was no statistically significant difference in cooperation. Non-Hispanic Black households were 11.0 percentage points less likely to respond than non-Hispanic White households. Hispanics were 3.9 percentage points less likely to respond than non-Hispanic Whites. Marginal differences in the response rates for race/origin groups appear attributable to the rates of contact, considering that marginal differences in cooperation were not significant or marginally significant for most groups.

Furthermore, households with more education had with greater rates of response, contact, and cooperation than the less educated reference groups. Households with family income above $40,000 were more likely to respond than those with less income or those who did not report income. There was no statistically significant difference in the response of households with incomes of $40,000 to $74,999 and those with $75,000 or more. Households with a reference person not in the labor force were marginally more likely to respond than employed households, driven by an increased likelihood of contact. They were not any more or less likely to cooperate if contacted.

Married couple households were the most likely to respond of the marital statuses, not different from widowed households, after controlling for other factors. Households with a reference person who reported being separated were the least likely to respond. These response propensities were driven by differences in the likelihood of contact. There were no statistically significant differences in cooperation.

After controlling for marital status, large households – those with 5 or more people – were less likely to respond than single person households. There were no statistical differences on contacts; rather, the size of households impacted the propensity to cooperate. Five or more person households were 8.6 percentage points less likely to cooperate once contact is made than single person households.

Using the predicted propensities for contact and cooperation as adjustment factors for non-response, I reweight the Content Test data and present household-level estimates of health insurance and income. Figure 1 shows that after adjusting for non-response, the percentage of households with a full-year uninsured person was 2.8 percentage points higher than the estimate before adjusting. This may be driven by the decrease in the percentage of households with a Medicare beneficiary and the small decrease in the percentage with a person covered by employer-sponsored insurance.

Figures 2 and 3 show the effect of non-response on estimates of income. The model based adjustment does little to the means of reported household wage income, retirement income, and interest income (Figure 2). Each unadjusted mean was within the 90 percent confidence interval of the adjusted mean.[5] However, the adjusted percentage of households with wage income was 2.6 percentage points higher than the estimate without the adjustment. The percentage with retirement income dropped from 14.2 to 10.9 percent and the percentage with interest income fell 2.0 percentage points.

Discussion

Non-response bias in content tests is particularly problematic for managing the risks associated with moving forward with a set of new questions in a survey. The CPS ASEC provides important economic data about income, poverty, and health insurance coverage of people and households in the United States. Therefore any changes to that survey must be made carefully as so not to misrepresent the nature of those characteristics. Based on the results presented here, there does appear to be significant differences between the populations of households that responded to the 2013 Content Test and those that did not. These differences, combined with the sizeable rate of non-response, result in non-ignorable bias in the estimates of the percentage of households with specific types of health insurance (and coverage overall) and those with specific sources of income.

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[5] Because the adjusted and unadjusted estimates use the same underlying sample, estimates are statistically different from each other. This statement is one way to suggest that there is no meaningful difference resulting from the weighting adjustment.

Of the various factors that contribute to this bias, age, educational attainment, and household size appear to be the driving factors. Older populations are more likely to have Social Security income, receive retirement income, and have coverage through Medicare. Those with more education are more likely to have earnings, earn more, receive earnings from assets, and be covered by private sources of health insurance. Large households are more likely to have multiple income sources, which would affect household income.

Of these factors, age may, in practice, be the least worrisome. While the non-response adjustment did not take age into account, the Content Test final weights used age-based controls (CPS second stage controls) to make adjustments. These adjustments would diminish the impact that age-based differentials on response might have on key measures. Further analysis would be needed to determine whether the final weights do in fact sufficiently make the adjustment.

Lastly, the analysis presented here is only a limited examination of the impact of non-response on income and health insurance estimates. There may be many other factors not included here that are correlated with response and the key measures which would contribute to bias. Likewise, I only looked at a few income and health insurance measures; a more complete examination of income sources and the aggregate amounts is needed, as is an examination for other health insurance coverage types.

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Table 1. Outcome codes, categorized

Outcome Description	Number of sample units (Households)	Percentage (of eligible cases)
Completed responses	9,195	43.1
Type A non-interviews	12,145	56.9
Contacts	3,435	16.1
Refusals	3,366	15.8
Other contacts	69	0.3
Noncontacts	8,710	40.8
Eligible noncontacts	3,456	16.2
Unknown eligibility	5,254	24.6
Type B non-interviews (ineligible)	1,168	--

Source: U.S. Census Bureau, 2013 CPS ASEC Content Test

Table 2. Characteristics of the sample (weighted)

Characteristic	Percentage of Households	SE
Age[1]		
Under 30 years	10.7	0.27
30 to 44 years	25.6	0.35
45 to 54 years	21.0	0.33
55 to 64 years	19.4	0.31
65 years or older	23.3	0.33
Sex		
Male	50.0	0.36
Female	50.0	0.36
Race/Origin		
Non-Hispanic White	76.1	0.38
Non-Hispanic Black	8.2	0.27
Hispanic or Latino	9.7	0.29
Other non-Hispanic	6.0	0.21
Citizenship Status		
Native citizen	88.1	0.30
Naturalized citizen	6.1	0.20
Not a citizen	5.8	0.22
Marital Status		
Married	54.6	0.43
Widowed	10.0	0.21
Divorced	14.3	0.29
Separated	2.6	0.13
Never married	18.5	0.30
Presence of Children		
Children present	29.2	0.40
Child under 6 years present	11.9	0.30
Child 6 to 17 years present	23.1	0.37
No children present	70.8	0.40
Disability Status		
With a disability	13.2	0.27
No disability	86.8	0.27
Educational Attainment		
Less than HS Diploma	10.4	0.27
HS Diploma or equivalent	29.2	0.37
Some College/Associate's Degree	28.7	0.39
Bachelor's degree	19.8	0.35
Master's degree or higher	11.8	0.28
Employment Status		
Employed	60.2	0.40
Unemployed	4.6	0.17
Not in labor force	35.2	0.39
Family Income		
Income not reported	22.1	0.41
Under $20,000	15.1	0.33
$20,000 to $39,999	19.4	0.32
$40,000 to $74,999	21.5	0.33
$75,000 or more	21.8	0.36
Number of People in Household		
1	25.0	0.33
2	35.9	0.39
3	15.7	0.32
4	13.4	0.30
5 or more	10.0	0.28

[1] Person characteristics are that of the household reference person, if eligible.

Source: U.S. Census Bureau, 2013 CPS ASEC Content Test

Table 3. Direct Estimates of Response, Contact and Cooperation Rates

Characteristic	Total Unweighted Households	Weighted Estimates					
		Response Rate	SE	Contact Rate	SE	Cooperation Rate	SE
Total	22,508	41.3	0.4	57.9	0.4	71.4	0.5
Age[1]							
Under 30 years	2,693	28.1	1.1	41.2	1.1	68.2	1.7
30 to 44 years	5,240	32.8	0.8	46.9	0.8	70.0	1.2
45 to 54 years	4,502	37.7	0.9	54.6	0.9	69.0	1.2
55 to 64 years	4,528	48.3	0.9	65.8	0.8	73.4	1.0
65 years or older	5,545	54.0	0.8	73.8	0.7	73.2	0.8
Sex							
Male	11,315	43.2	0.5	59.7	0.5	72.3	0.6
Female	11,193	39.4	0.5	56.0	0.5	70.3	0.7
Race/Origin							
Non-Hispanic White	17,575	44.7	0.5	61.7	0.4	72.4	0.5
Non-Hispanic Black	1,530	26.3	1.3	40.4	1.4	65.0	2.2
Hispanic or Latino	2,009	30.7	1.3	45.8	1.3	66.9	1.9
Other non-Hispanic	1,394	35.8	1.6	52.4	1.6	68.3	2.1
Citizenship Status							
Native citizen	20,184	41.9	0.4	58.3	0.4	71.9	0.5
Naturalized citizen	1,165	39.7	1.8	59.2	1.6	67.0	2.0
Not a citizen	1,159	33.0	1.7	49.3	1.7	66.9	2.3
Marital Status							
Married	11,653	43.3	0.5	61.4	0.5	70.5	0.6
Widowed	2,346	48.4	1.2	67.9	1.2	71.3	1.3
Divorced	3,422	41.0	1.0	55.3	1.0	74.1	1.3
Separated	559	26.5	2.3	38.6	2.4	68.8	3.9
Never married	4,528	33.7	0.9	46.5	0.9	72.6	1.3
Presence of Children							
Children present	5,269	32.2	0.8	48.0	0.9	67.0	1.2
Child under 6 years present	2,248	31.0	1.3	45.9	1.4	67.5	1.8
Child 6 to 17 years present	4,087	32.3	0.9	48.9	1.0	66.1	1.4
No children present	17,239	45.0	0.4	61.9	0.4	72.8	0.5
Disability Status							
With a disability	3,194	44.7	1.1	61.2	1.1	73.0	1.2
No disability	19,314	40.8	0.4	57.3	0.4	71.1	0.5
Educational Attainment							
Less than HS Diploma	2,313	34.1	1.2	52.3	1.2	65.3	1.8
HS Diploma or equivalent	6,618	38.6	0.7	56.7	0.7	68.0	0.9
Some College/Associate's Degree	6,451	39.8	0.7	55.9	0.8	71.2	0.8
Bachelor's degree	4,483	45.4	0.9	60.8	1.0	74.6	1.0
Master's degree or higher	2,643	51.1	1.2	65.4	1.1	78.1	1.3
Employment Status							
Employed	13,589	39.0	0.5	54.3	0.5	71.8	0.6
Unemployed	951	33.2	1.7	48.5	1.8	68.5	2.6
Not in labor force	7,968	46.3	0.7	65.2	0.6	71.0	0.8
Family Income							
Income not reported	5,040	36.5	0.8	59.5	0.8	61.3	1.1
Under $20,000	3,514	34.2	1.0	48.3	1.0	70.8	1.5
$20,000 to $39,999	4,462	41.4	0.9	57.0	0.9	72.8	1.1
$40,000 to $74,999	4,854	44.8	0.8	59.5	0.8	75.2	0.9
$75,000 or more	4,638	47.5	0.9	61.9	0.9	76.7	1.0
Number of People in Household							
1	6,378	44.4	0.7	59.4	0.7	74.7	0.9
2	8,585	45.7	0.6	63.1	0.5	72.4	0.6
3	3,184	37.9	1.0	53.4	0.9	71.0	1.4
4	2,520	34.8	1.2	51.9	1.2	67.0	1.6
5 or more	1,841	31.6	1.4	50.0	1.3	63.1	2.0

[1] Person characteristics are that of the household reference person, if eligible.
Source: U.S. Census Bureau, 2013 CPS ASEC Content Test

Table 4. Average Marginal Effects on Response, Contact, and Cooperation Propensities

Characteristics	Response	Contact	Cooperation
Age (ref. group: under 30 years)			
30 to 44 years	0.0390***	0.0311**	0.0421*
	(0.0139)	(0.0144)	(0.0215)
45 to 54 years	0.0813***	0.1003***	0.0325
	(0.0157)	(0.0169)	(0.0230)
55 to 64 years	0.1633***	0.1942***	0.0569**
	(0.0174)	(0.0175)	(0.0232)
65 years or older	0.2342***	0.2747***	0.0801***
	(0.0182)	(0.0172)	(0.0233)
Race/Hispanic origin (ref. group: White, non-Hispanic)			
Non-Hispanic Black	-0.1095***	-0.1221***	-0.0433*
	(0.0159)	(0.0157)	(0.0229)
Hispanic or Latino	-0.0386**	-0.0640***	0.0149
	(0.0165)	(0.0161)	(0.0193)
Other non-Hispanic	-0.0591***	-0.0698***	-0.0179
	(0.0172)	(0.0177)	(0.0202)
Female (=1)	-0.0228***	-0.0206***	-0.0142
	(0.0074)	(0.0080)	(0.0099)
Native born (=1)	-0.0110	-0.0235**	0.0235
	(0.0182)	(0.0177)	(0.0204)
Citizen (=1)	-0.0282	-0.0155	-0.0275
	(0.0258)	(0.0249)	(0.0300)
With a disability (=1)	-0.0082	-0.0313**	0.0201
	(0.0130)	(0.0136)	(0.0147)
Educational Attainment (ref. group: Less than HS Diploma)			
HS Diploma or equivalent	0.0264*	0.0275*	0.0141
	(0.0139)	(0.0152)	(0.0192)
Some College/Associate's Degree	0.0500***	0.0373**	0.0442**
	(0.0155)	(0.0167)	(0.0199)
Bachelor's degree	0.1000***	0.0787***	0.0805***
	(0.0167)	(0.0190)	(0.0212)
Master's degree or higher	0.1263***	0.0952***	0.1034***
	(0.0168)	(0.0196)	(0.0217)
Employment Status (ref. group: Employed)			
Unemployed	-0.0147	-0.0039	-0.0186
	(0.0174)	(0.0168)	(0.0248)
Not in labor force	0.0214*	0.0393***	-0.0060
	(0.0112)	(0.0103)	(0.0129)
Family Income (ref. group: Income not reported)			
Under $20,000	0.0320**	-0.0380***	0.1030***
	(0.0128)	(0.0137)	(0.0175)
$20,000 to $39,999	0.0773***	0.0132	0.1168***
	(0.0114)	(0.0112)	(0.0152)
$40,000 to $74,999	0.1016***	0.0300***	0.1389***
	(0.0113)	(0.0111)	(0.0144)
$75,000 or more	0.1095***	0.0330**	0.1456***
	(0.0135)	(0.0130)	(0.0170)
Marital Status (ref. group: Now married)			
Widowed	-0.0259	-0.0365**	-0.0052
	(0.0161)	(0.0168)	(0.0205)
Divorced	-0.0312**	-0.0588***	0.0175
	(0.0129)	(0.0133)	(0.0158)
Separated	-0.1024***	-0.1371***	-0.0056
	(0.0278)	(0.0259)	(0.0405)
Never married	-0.0242*	-0.0444***	0.0183
	(0.0134)	(0.0128)	(0.0176)
Household size (ref. group: 1 person households)			
2	-0.0217*	-0.0040	-0.0296**
	(0.0114)	(0.0109)	(0.0150)
3	-0.0345**	-0.0210	-0.0307
	(0.0146)	(0.0138)	(0.0200)
4	-0.0483**	-0.0195	-0.0583**
	(0.0193)	(0.0177)	(0.0250)
5 or more	-0.0631***	-0.0198	-0.0855***
	(0.0217)	(0.0185)	(0.0284)
Observations	21,341	21,341	12,636

Other covariates include region, metro status, presence of own children, availability and permission to use telephone for CPS interviews.

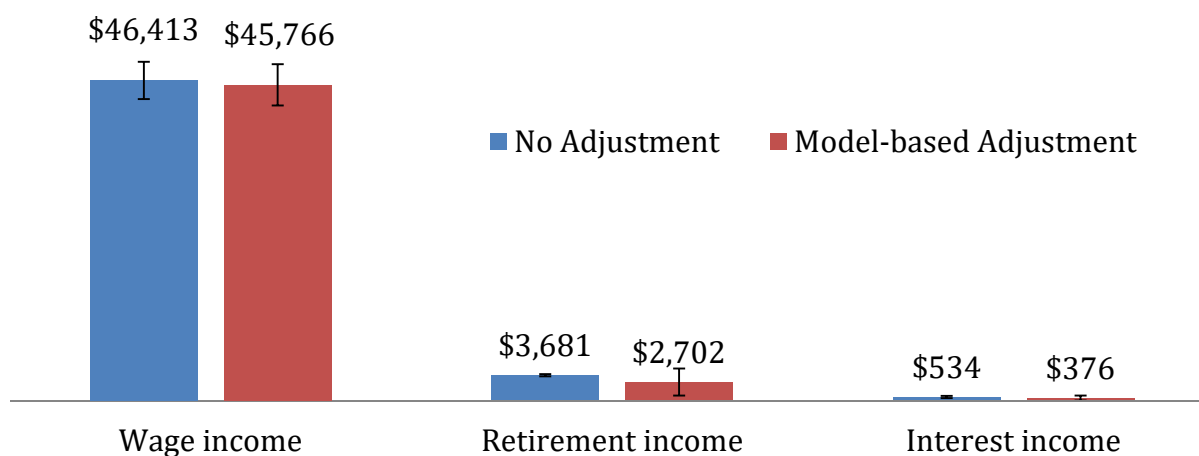Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: U.S. Census Bureau, 2013 CPS ASEC Content Test

Figure 1. Effect of non-response on household-level health insurance estimates.
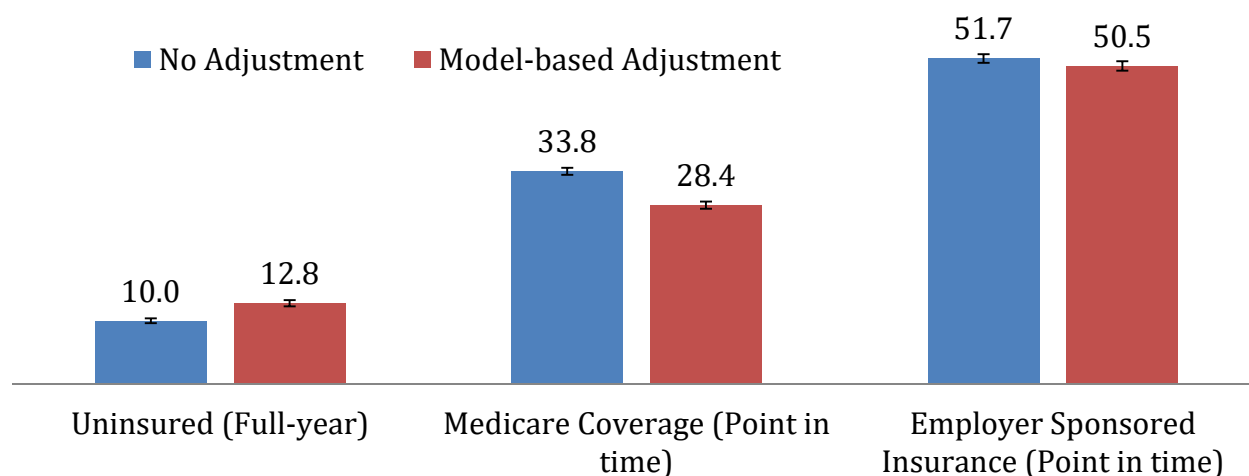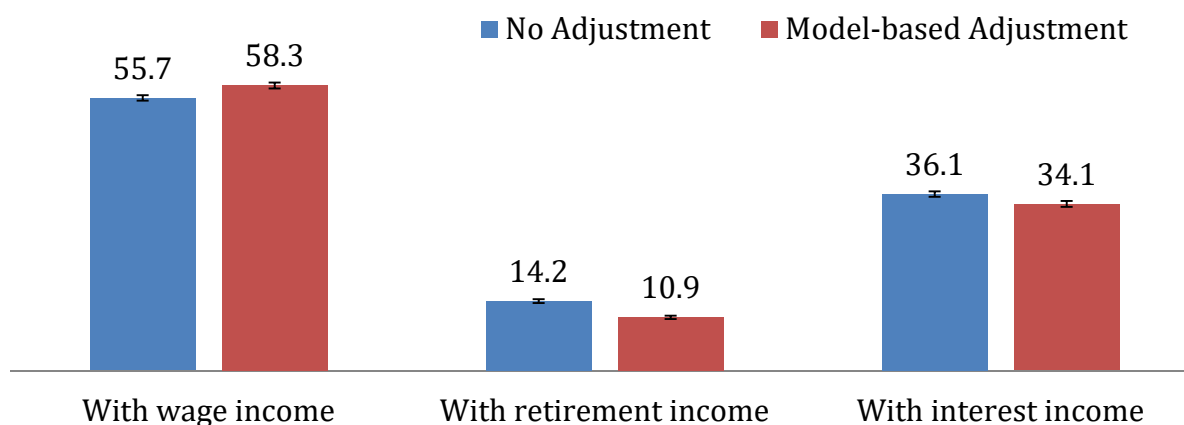

Source: U.S. Census Bureau, 2013 CPS ASEC Content Test

Figure 2. Effect of non-response on household income estimates (means).

Source: U.S. Census Bureau, 2013 CPS ASEC Content Test

Figure 3. Effect of non-response on household income estimates (percentages).

Source: U.S. Census Bureau, 2013 CPS ASEC Content Test