Medicaid Under-reporting in the Current Population Survey and One Approach for a Partial Correction

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Survey estimates of public health insurance program enrollment tend to be lower than those compiled from administrative enrollment data for those same programs. This discordance is particularly apparent for Medicaid and has become known as the “Medicaid undercount”. The crude Medicaid undercount in the Current Population Survey’s Annual Social and Economic Supplement (CPS), the most prominently used survey for policy research that measures health insurance coverage, was 32 percent in both 2000 and 2001.ii

Given the important uses of the CPS data, improved understanding of the undercount in the CPS is crucial. Towards that end, this paper reports preliminary results from an interagency project (funded by the Robert Wood Johnson Foundation and the Offices of the Assistant Secretary for Planning and Evaluation) that involves researchers from the State Health Access Data Assistance Center (SHADAC), The National Center for Health Statistics (NCHS), Office of the Assistant Secretary for Planning and Evaluation (ASPE), the Center for Medicare and Medicaid Services (CMS), and the US Census Bureau (Census) (taking the first letter of each abbreviation lead to the acronym “SNACC”).

This paper presents parameters from two logistic regression models. These parameters can be used to predict the probability that the Medicaid administrative data imply that a CPS sample member actually had Medicaid. We report the coefficients from two logistic regression models that can be used to adjust CPS responses towards their Medicaid status in the prior calendar year. Finally, we present a sample STATA program using the parameters and what we refer to as "partially corrected" estimates of the number of uninsured Americans based on these parameters. With caveats we discuss below, these models will help researchers better understand the magnitude of the underlying survey response error, and their implications for policy research using the CPS.

Data Linking:

For the SNACC project, CMS provided the Census Bureau with a Social Security Number (SSN)-identified version of its MSIS files for 2000, 2001, and 2002. To protect confidentiality, Census replaced the SSNs on the MSIS files with the PIKs/Personal Identification Keys that Census maintains on its internal CPS file (in place of the SSN). Census then used these PIKs to
match the MSIS data to the corresponding CPS records for survey years 2001 and 2002 (corresponding to health insurance coverage in calendar year 2000 and 2001). Twenty-four percent of the CPS records were missing PIKs (18 percent refused to let the Census Bureau link their data and for an additional 6 percent the Census Bureau as unable to identify a unique PIK). To make the resulting analysis file representative of the full CPS survey, we reweight the 76 percent of CPS cases with SSNs to align with the full population of the CPS. Specifically, we post-stratify to adjust for age, race, sex, Hispanic ethnicity, and poverty status.

In addition, after we dropped MSIS records that we identified as duplicates, living in institutional group quarters, or partial benefit Medicaid enrollees, about 6 percent of the remaining MSIS Medicaid full benefits enrollees were missing PIKs. The analysis reported here makes no attempt to correct for these missing MSIS full benefit cases that were missing PIKs (i.e., SSNs). Below, we discuss the implications of that feature of this analysis.

**Logistic Regression Models:**

Using the pooled data set for the CPS years of 2001 and 2002 (covering the health insurance coverage calendar years of 2000 and 2001), we predict the probability that any given CPS record was successfully matched to the MSIS and had at least one day of “full benefit Medicaid” enrollment during the survey reference period. Our approach explicitly treats the CPS response as corresponding to the question as asked--i.e., referring to Medicaid at any time in the previous calendar year; this is unlike some other analyses that have treated the CPS responses as though they referred to insurance status of the interview date.

We estimate two logistic regression models. For people who are coded as not having Medicaid in the CPS (Model 1), one regression models the probability that the MSIS implies that they have Medicaid. For people who are coded in the CPS as having Medicaid in the CPS (Model 2), the other regression models the probability that the MSIS implies that they do not have Medicaid. The predictors in these models all come from the CPS public use file. They are coded in the following fashion:

**Medicaid Coded on the CPS**

This variable is used to separate Model 1 from Model 2. Being coded as having Medicaid is determined by using a combination of several variables in the CPS. First, if the person is coded as having Medicaid in the CPS variable asking explicitly about Medicaid are considered to have Medicaid, or if they were coded as having “Medicaid” in the “other please specify” sections of the other public health insurance survey item or the verification survey item in the CPS.iii Model 2 is estimated on those people coded in the CPS to have Medicaid. Model 1 includes everyone else not coded to have Medicaid.

**Age**

An independent ordinal variable recoded into six categories from the CPS age variable.
Health Insurance Allocation Status
This variable is used in Model 1 to separate those people with reported health insurance coverage from those with imputed coverage. In model 2 there is an additional variable entered for whether people coded to have Medicaid in the survey were edited to have Medicaid. This information was derived from the allocation flag variables in the CPS.

CPS Health Insurance Codes
Only another Public Insurance are those people coded to have public insurance but do not have Medicaid and do not have some other type of private coverage. People coded to have only private health insurance coverage were not coded to have any type of public coverage. People who were coded as being uninsured in the CPS were given the uninsured variable. People who were recorded to only have Medicaid and not other type of coverage are in the only Medicaid Reported on the CPS variable (this variable's reference category is having Medicaid and at least one other type of coverage recorded on the CPS).

Race/Hispanicity
An independent nominal variable constructed from the CPS items for race and ethnic origin. Categories include: Hispanic of any race, non-Hispanic black, non-Hispanic American Indian/Aleut Eskimo, non-Hispanic Asian or Pacific Islander and non-Hispanic white. This variable was mutually exclusive in 2001 and 2002 CPS and did not use the new Office of Management and Budget's new race and ethnicity coding scheme. To use this data on more recent CPS files requires a change in coding.

Male
An independent dummy variable indicating that the CPS person is male. Females are the reference category.

Relationship to Survey Reference Person
An ordinal independent variable from CPS indicating the person's relationship to the survey reference person (usually the respondent). Categories include: Child, Self, Parent, Spouse, and Other. Odds ratios are the effect for the given category relative to average.

Income and Poverty
An ordinal independent variable representing the ratio of the CPS person's family income to the federal poverty level. There are eight categories ranging from 0-49 percent of the poverty level (for the person's family size) to greater than 200 percent of the level. An independent dummy variable indicating that the CPS shows the person's family with zero income. CPS persons with positive family income are the reference category.
State

A nominal independent variable from CPS state of residence. For each CPS person this variable comes from the CPS coefficients are the effect of being in a given state relative to average.

**Table 1**: Logistic Regression Coefficients for Those CPS Cases Without Medicaid Reported on the CPS (Model 1) and Those Cases Without Medicaid Reported (Model 2) Predicting the Probability of Being Linked to the Medicaid Statistical Information System (MSIS)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
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<tr>
<td>Wyoming</td>
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<td>-0.0526</td>
</tr>
</tbody>
</table>

Source: 2001 and 2002 Expanded Sample CPS ASEC data files Linked to the 2000 and 2001 MSIS
Note: Effect coding (as opposed to dummy coding) was used for all categorical variables except for “Sex” (reference category for sex is female), “Only Medicaid Reported on the CPS” recorded on the CPS (the reference category was Medicaid and at least one other type of coverage reported on the CPS) and the Variable “Zero Family Income Reported” (the reference category was having at least some income —or loss of income reported).
How to Use Coefficients:

These coefficients can be used by researchers to predict the probability that each person in the CPS sample can be linked to an MSIS administrative data that shows him/her receiving full benefit Medicaid for at least one day in the CPS survey reference period (the preceding calendar year). These probabilities can then be used to impute a new estimate of Medicaid coverage that partially corrects for misreporting. See Appendix A for two tables showing results from worked example using the 2005 and 2006 CPS data files as well as the example Stata code for generating the numbers.

Caveats:

This information sheet reports intermediate results from ongoing research. This new estimate of Medicaid coverage is likely to be an improvement over using only the self-reported Medicaid coverage variable. However, this analysis is also likely to be far from perfect. Among the outstanding issues is that this analysis uses data from Calendar Year 2000 and 2001 (CPS survey years 2001 and 2002). Response error patterns in those years may be substantially different from those in more recent CPS survey years. For example CPS coding of race and ethnicity changed substantially in the mid-2000s. We will continue to address this issue using current MSIS data as it becomes available (MSIS fiscal year 2005 data is expected to become available September 2007).

In addition, for several reasons we are more confident about the models for those who, according to the CPS, do not have Medicaid, than for the models for those who according to the CPS do have Medicaid. First, because we could not link MSIS records without an SSN to the corresponding CPS record (and because these models do not otherwise adjust for such missing MSIS SSNs), the imputational model implicitly treats these people’s CPS reports that they have Medicaid as response errors. This is clearly incorrect and yields an estimate of the number of people with Medicaid that is too small. The magnitude of the bias will depend on the extent to which MSIS records without an PIK (i.e., SSN) do not also appear in the file as individuals with an PIK (where due to the lack of an PIK, we could not unduplicate the records).

Second and relatedly, some of the people who in the CPS report that they have Medicaid, but do not appear in the MSIS files as having Medicaid, may be in combined Medicaid/SCHIP programs. For the purposes of MSIS (and therefore for the purposes of our imputation model), these individuals are not classified as in Medicaid.

Third, there is considerable evidence that many of the people who report having Medicaid in the CPS but are not found in the MSIS actually have some other form of health insurance (e.g., a Separate SCHIP program). Failure to adjust for the fact that some of these people probably have other (non-Medicaid) insurance will upwardly bias the estimate of the number of uninsured Americans.

Fourth, our analysis only considers response errors in the Medicaid variables. Just as our linked analysis has found response errors in the Medicaid variables, it seems clear that there are also response errors in the other health insurance variables (i.e., Medicare, other public health
insurance programs, private health insurance). Our linked data files provide no direct information on non-Medicaid errors. For example, it is possible that people without health insurance coverage at all incorrectly report that they have some type of coverage in the CPS (falsely claim to have private coverage for example when they are uninsured). We are unable to correct for this problem through the current SNACC project and it remains an unknown issue that should be investigated.

Ongoing analyses as part of the SNACC effort are investigating each of these issues. In particular, as part of our broader project, we are building more complicated statistical models to explore the implications of our findings for estimates of the uninsured and the sensitivity of such inferences to auxiliary assumptions. These models use all of the data (including those unidentified in the CPS and those with imputed or allocated responses) and explicitly model the effects of non-identification in the MSIS data.

For more information on the SNACC effort please contact Michael Davern at the University of Minnesota/SHADAC. daver004@umn.edu or by phone 612-624-4802.
Notes

This analysis was made possible by the efforts of a great team of Census Bureau employees (especially Dean Resnick and Victoria Lynch), Office of the Assistant Secretary for Planning and Evaluation (ASPE) employees (George Greenberg and Rob Stewart), and the Center for Medicare and Medicaid Services (CMS) employees (Dave Baugh and Gary Ciborowski). The work was funded by the Robert Wood Johnson Foundation and the Office of the Assistant Secretary for Planning and Evaluation (ASPE) and headed by the State Health Access Data Assistance Center (SHADAC). Special thanks to Karen Soderberg at SHADAC for her help in editing and formatting this paper. All remaining errors and the opinions expressed are the solely the possession of the authors only.

Based on CPS estimates of the number of people with Medicaid and MSIS administrative data counts tabulated in the second phase of our research project. Our revised MSIS estimates for 2000 indicated that 38.2 million people had full benefits Medicaid compared with 26.1 million estimated by the CPS. In 2001 our revised MSIS estimates indicated that 40.5 million people were enrolled in full benefits Medicaid versus 27.7 million in the CPS.

A Person has Medicaid if CPS variable CAID=1 or othstyp(1-6)=2 or ahityp(1-6)=2.
### Table A-1: Comparing Medicaid Enrollment Estimates from our Partially Corrected Model to the Regular CPS Estimates by Selected Characteristics and State: Calendar Year 2004 and 2005 Average

<table>
<thead>
<tr>
<th>State</th>
<th>Medicaid Enrollment Estimate - CPS</th>
<th>Medicaid Enrollment Estimate - Model Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
<td>Number</td>
</tr>
<tr>
<td>Alabama</td>
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<td>136,833</td>
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<td>New Mexico</td>
<td>16.5%</td>
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<td>New York</td>
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<td>Pennsylvania</td>
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<td>South Dakota</td>
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<td>Tennessee</td>
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<td>10.7%</td>
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<td>Utah</td>
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<tr>
<td>Vermont</td>
<td>18.5%</td>
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<td>Virginia</td>
<td>6.5%</td>
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<td>Washington</td>
<td>10.2%</td>
<td>627,965</td>
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<td>West Virginia</td>
<td>12.1%</td>
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<tr>
<td>Wisconsin</td>
<td>11.1%</td>
<td>606,197</td>
</tr>
<tr>
<td>Wyoming</td>
<td>9.1%</td>
<td>46,095</td>
</tr>
<tr>
<td>Total - United States</td>
<td>11.5%</td>
<td>33,543,900</td>
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</tbody>
</table>
### Table A-2: Comparing Uninsured Rates Based on our Partially Corrected Model to the Regular CPS Estimates by Selected Characteristics and State: Calendar Year 2004 and 2005 Average

<table>
<thead>
<tr>
<th>State</th>
<th>Percent</th>
<th>Number</th>
<th>Percent</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>13.5%</td>
<td>609,652</td>
<td>11.6%</td>
<td>522,544</td>
</tr>
<tr>
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<td>16.9%</td>
<td>110,235</td>
<td>14.9%</td>
<td>97,457</td>
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<tr>
<td>Arizona</td>
<td>18.1%</td>
<td>1,071,869</td>
<td>14.8%</td>
<td>875,279</td>
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<td>16.8%</td>
<td>461,939</td>
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<td>6,598,937</td>
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<td>5,599,237</td>
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<td>16.3%</td>
<td>745,308</td>
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<td>Connecticut</td>
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<td>380,711</td>
<td>9.5%</td>
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<td>12.7%</td>
<td>106,123</td>
<td>10.5%</td>
<td>87,833</td>
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<td>12.8%</td>
<td>69,328</td>
<td>10.3%</td>
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<td>11.8%</td>
<td>669,149</td>
<td>9.6%</td>
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<td>16.9%</td>
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<tr>
<td>Nevada</td>
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<td>16.2%</td>
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<tr>
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<td>2,438,112</td>
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<td>644,016</td>
<td>15.9%</td>
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<td>13.9%</td>
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<td>21.0%</td>
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<td>Utah</td>
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<td>968,774</td>
<td>11.8%</td>
<td>875,925</td>
</tr>
<tr>
<td>Washington</td>
<td>12.8%</td>
<td>793,502</td>
<td>10.5%</td>
<td>649,271</td>
</tr>
<tr>
<td>West Virginia</td>
<td>16.5%</td>
<td>296,477</td>
<td>14.4%</td>
<td>258,822</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>9.7%</td>
<td>530,106</td>
<td>8.6%</td>
<td>466,926</td>
</tr>
<tr>
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<td>13.7%</td>
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<td>12.4%</td>
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<tr>
<td><strong>Total - United States</strong></td>
<td><strong>15.1%</strong></td>
<td><strong>44,156,084</strong></td>
<td><strong>12.9%</strong></td>
<td><strong>37,708,243</strong></td>
</tr>
</tbody>
</table>
Example Stata Code for Creating Variables Used in Model Using 2006 and 2007 CPS Data

*** Medicaid Under-reporting in the
*** Current Population Survey and
*** One Approach for a Partial Correction

* October 2007
* Updated November 2008 – see model2 variable creation

** Combine 2005 and 2006 CPS

use "P:\CPS Stata files\cpsmar06.dta", clear
append using "P:\CPS Stata files\cpsmar05.dta"
save "C:\CPS\cps05_06.dta"

**** Generate CPS weights
gen geocode=.
replace geocode = gtcbsa if gtcbsa>0
replace geocode = (gestfips*100000) if geocode==.
svyset [w=marsupwt], psu (h_seq) strata (geocode)

** Health insurance recode

** first designate which model individuals are in
** In model2 if state medicaid (or imputed or edited to medicaid), else in model1

gen model2 = .
# d;
replace model2 = 1 if caid == 1 | othstyp1 == 2|othstyp2 == 2|othstyp3 ==2|othstyp4 == 2|
othstyp5 == 2|othstyp6 == 2 |ahityp1 == 2|ahityp2 ==2|ahityp3 ==2|ahityp4 == 2|
ahityp5 ==2|ahityp6 ==2;
# d cr
replace model2 = 0 if model2 == .

gen model1 = .
replace model1 = 1 if model2 == 0
replace model1 = 0 if model2 == 1

gen caidplus = model2
label var caidplus "caid and othstyp and ahityp"

*************************************************
*****         *****
***** INSURANCE STATUS VARIABLES      *****
*****         *****
*************************************************

gen insurance = .
replace insurance = 1 if mcaid == 2 & mcare == 2 & cov_hi == 2 & champ == 2
replace insurance = 2 if (mcare == 1 | (mcaid == 1 & caidplus == 0)) & (cov_hi == 2 & champ == 2)
replace insurance = 3 if (cov_hi == 1 | champ == 1) & (mcaid == 2 & mcare == 2)
replace insurance = 4 if caidplus == 1 & (champ == 2 & cov_hi == 2 & insurance != 2)
replace insurance = 5 if insurance == .
label define insurance 1 "uninsured" 2 "public_nocaid" 3 "private_only" 4 "medicaid_only" 5 "public_private"
label values insurance insurance
tab insurance, gen(ins)

rename ins1 uninsured
rename ins2 public_nocaid
rename ins3 private_only
rename ins4 medicaid_only
rename ins5 public_private
/* Dummy variable for Medicaid imputation status */

THE VARIABLE "i-caid" imputation flag has three values:
0 - NO
1 - ALLOCATED
2 - LOGICAL IMPUTED */

tab i_caid, gen(medicaid_flag)
rename medicaid_flag1 medicaid_explicit
rename medicaid_flag2 medicaid_imputed
rename medicaid_flag3 medicaid_edited

*** Add additional code for imputed from fl_665, othstyp, or ahityp

replace medicaid_imputed = 1 if (fl_665==2 | fl_665 == 3) | i_oth == 1 | iahityp == 1
replace medicaid_edited = 0 if medicaid_imputed == 1
replace medicaid_explicit = 0 if medicaid_imputed == 1

/* Race variables */

* Make as consistent with earlier years as possible - hisp, white only, then any American Indian,
any black, and any Asian
* the non-identified multiple races are assigned the modal category - white

gen race = .
replace race = 1 if pehsp == 1
replace race = 2 if (prdtrace == 1 | prdtrace == 20 | prdtrace == 21) & race == .
replace race = 3 if (prdtrace == 3 | prdtrace == 7 | prdtrace == 10 | prdtrace == 13 | prdtrace == 15 | prdtrace == 17 | prdtrace == 19) & race == .
replace race = 4 if (prdtrace == 2 | prdtrace == 6 | prdtrace == 11 | prdtrace == 12 | prdtrace == 16) & race == .
replace race = 5 if (prdtrace == 4 | prdtrace == 5 | prdtrace == 8 | prdtrace == 9 | prdtrace == 14 | prdtrace == 18) & race == .

#d
label define race
3 "American Indian"
4 "Black"
5 "Asian/Pacific Islander"
2 "White Only"
1 "Hispanic", modify;
#d cr

label values race race

tab race, gen(race_cat)
rename race_cat1 phispanic
rename race_cat2 pwhite
rename race_cat3 pai
rename race_cat4 pblack
rename race_cat5 papi

/* Gender Indicator variable */

gen male = .
replace male = 1 if a_sex == 1
replace male = 0 if a_sex == 2
label define male 1 "Male" 0 "Female"
label val male male

/* Age categories */

gen age_cat = .
replace age_cat = 1 if a_age < 6
replace age_cat = 2 if a_age >= 6 & a_age < 15
replace age_cat = 3 if a_age >= 15 & a_age < 18
replace age_cat = 4 if a_age >= 18 & a_age < 45
replace age_cat = 5 if a_age >= 45 & a_age < 65
replace age_cat = 6 if a_age >= 65

tab age_cat, generate(cat_ages)
rename cat_ages1 age_005
rename cat_ages2 age_614
rename cat_ages3 age_1517
rename cat_ages4 age_1844
rename cat_ages5 age_4564
rename cat_ages6 age_65up

********************
/* INCOME VARIABLE */
********************
generate ZERO = .
replace ZERO = 1 if ftotval <= 0
replace ZERO = 0 if ftotval > 0

*** dummy indicator variables for poverty ratios ***
generate rpl = .
replace rpl = 1 if povll == 1
replace rpl = 2 if povll == 2
replace rpl = 3 if povll == 3
replace rpl = 4 if povll == 4
replace rpl = 5 if povll == 5
replace rpl = 6 if povll == 6
replace rpl = 7 if povll == 7
replace rpl = 8 if povll >= 8

tab rpl, gen(rpl)

*************************
/* RELATIONSHIP VARIABLES */
*************************
gen rel = .
replace rel = 1 if a_exprrp == 3 | a_exprrp == 4
replace rel = 2 if a_exprrp == 5
replace rel = 3 if a_exprrp == 6 | a_exprrp == 7 | (a_exprrp > 8 & a_exprrp <= 14)
replace rel = 5 if a_exprrp == 1 | a_exprrp == 2

tab rel, gen(rel)
rename rel1 rel_spouse
rename rel2 rel_child
rename rel3 rel_parent
rename rel4 rel_other
rename rel5 rel_self

********************
*** States *****
********************
# d;
label define state
  1 "Alabama"
  2 "Alaska"
  4 "Arizona"
  5 "Arkansas"
  6 "California"
  8 "Colorado"
  9 "Connecticut"
 10 "Delaware"
 11 "District of Columbia"
 12 "Florida"
 13 "Georgia"
 15 "Hawaii"
 16 "Idaho"
 17 "Illinois"
 18 "Indiana"
 19 "Iowa"
 20 "Kansas"
 21 "Kentucky"
"Louisiana"
"Maine"
"Maryland"
"Massachusetts"
"Michigan"
"Minnesota"
"Missouri"
"Montana"
"Nebraska"
"Nevada"
"New Hampshire"
"New Jersey"
"New Mexico"
"New York"
"North Carolina"
"North Dakota"
"Ohio"
"Oklahoma"
"Oregon"
"Pennsylvania"
"Rhode Island"
"South Carolina"
"South Dakota"
"Tennessee"
"Texas"
"Utah"
"Vermont"
"Virginia"
"Washington"
"West Virginia"
"Wisconsin"
"Wyoming";

label values gestfips state
* indicator variables for the states
dummieslab gestfips

***************
****** Prepare for models
***************
**** create constant variables that will save the coeff values for each model (from Table 1)
**** call each one varname1 or varname2 dependent on the model from which they are from

gen constant = 1

gen  constant1 = -0.6089

gen  ZERO1 = 0.2475

gen  age_0051 = 1.3364

gen  age_6141 = 0.8797

gen  age_15171 = 0.6517

gen  age_18441 = -0.0311

gen  age_45641 = -1.0515

gen  age_65up1 = -1.7853

gen  medicaid_edited1 = .

gen  medicaid_imputed1 = 0.3617

gen  medicaid_explicit1 = -0.3617

gen  public_nocaid1 = 1.1714

gen  private_only1 = -1.0714

gen  public_private1 = -0.0936

gen  uninsured1 = -0.1936

gen  medicaid_only1 = .

gen  phispanic1 = 0.1155

gen  pblack1 = 0.5177

gen  pai1 = 0.1917

gen  papi1 = -0.2467

gen  pwhite1 = -0.5782

gen  male1 = -0.5109

gen  rel_parent1 = 0.888
gen rel_spouse1 = -0.5062
gen rel_child1 = -0.2866
gen rel_other1 = 0.1965
gen rel_self1 = -0.2917
gen rpl11 = 0.3891
gen rpl31 = 0.6237
gen rpl131 = 0.45
gen rpl141 = 0.1944
gen rpl151 = 0.0504
gen rpl161 = -0.1552
gen rpl171 = -0.2717
gen rpl181 = -1.2808
gen Alabama1 = -0.1379
gen Alaska1 = -0.1272
gen Arizona1 = 0.0813
gen Arkansas1 = 0.1515
gen Californial = -0.124
gen Colorad01 = -0.3486
gen Connecticut1 = -0.1982
gen Delaware1 = 0.2252
gen DistrictofColumbia1 = 0.0206
gen Florida1 = -0.1452
gen Georgia1 = -0.3799
gen Hawaii1 = 0.2828
gen Idaho1 = -0.2137
gen Illinois1 = 0.1144
gen Indiana1 = 0.1683
gen Iowa1 = 0.0545
gen Kansas1 = -0.3241
gen Kentucky1 = 0.0305
gen Louisiana1 = -0.1636
gen Maine1 = 1.18
gen Maryland1 = -0.4281
gen Massachusetts1 = 0.2211
gen Michigan1 = -0.1803
gen Minnesota1 = 0.223
gen Mississippi1 = -0.3619
gen Missouri1 = 0.4235
gen Montana1 = -1.0005
gen Nebraska1 = 0.159
gen Nevada1 = -0.6962
gen NewHampshire1 = -0.1836
gen NewJersey1 = -0.3858
gen NewMexico1 = 0.1199
gen NewYork1 = -0.1396
gen NorthCarolina1 = 0.2104
gen NorthDakota1 = -0.0914
gen Ohio1 = -0.0658
gen Oklahoma1 = 0.08
gen Oregon1 = -0.0195
gen Pennsylvania1 = 0.3005
gen RhodeIsland1 = 0.3507
gen SouthCarolina1 = 0.174
gen SouthDakota1 = -0.1485
gen Tennessee1 = 0.9171
gen Texas1 = -0.6106
gen Utah1 = -0.3107
gen Vermont1 = 1.1751
gen Virginial = -0.5826
gen Washington1 = 0.6428
gen WestVirginia1 = 0.3519
gen Wisconsin1 = -0.0958
gen Wyoming1 = -0.1949

gen constant2 = 0.7521
gen ZERO2 = -0.2862
gen age_0052 = 0.396
gen age_6142 = 0.4068
gen age_15172 = 0.1538
gen age_18442 = 0.1553
gen age_45642 = -0.2539
* Create interaction terms for all variables * coefficients, as defined above.

```stata
foreach i of varlist constant ZERO age_005 age_1517 age_4564 age_614 age_65up age_1844 medicaid_edited medicaid_imputed medicaid_explicit public_nocaid private_only public_private uninsured medicaid_only phispanic pblack pai pwhite male rel_parent rel_spouse rel_child rel_other rel_self rpl1 rpl2 rpl3 rpl4 rpl5 rpl6 rpl7 rpl8 Alabama Delaware DistrictofColumbia Florida Georgia Hawaii Idaho Illinois Indiana Iowa Alaska Kansas Kentucky Louisiana Maine Maryland Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada NewHampshire NewJersey NewMexico NewYork NorthCarolina NorthDakota Ohio Arizona Oklahoma Oregon Pennsylvania RhodeIsland SouthCarolina SouthDakota Tennessee Texas Utah Arkansas Vermont Virginia Washington WestVirginia Wisconsin Wyoming California Colorado Connecticut {
    gen pr1_`i' = `i'*`i'1
}`
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*** Create tables - table 1 is medicaid response by state and US - use caidplus

***************************************************
******** Table One ********************************
***************************************************

* 1.A) unadjusted medicaid rate, national and by state
quietly svy, subpop(y2005):mean caidplus
   estat size, obs size
quietly svy, subpop(y2006):mean caidplus
   estat size, obs size
quietly svy, subpop(y2005):mean caidplus, over(gestfips)
   estat size, obs size
quietly svy, subpop(y2006):mean caidplus, over(gestfips)
   estat size, obs size

* 1.B) adjusted medicaid rate - apply preprob to total population
quietly svy, subpop(y2005):mean preprob
   estat size, obs size
quietly svy, subpop(y2006):mean preprob
   estat size, obs size
quietly svy, subpop(y2005):mean preprob, over(gestfips)
   estat size, obs size
quietly svy, subpop(y2006):mean preprob, over(gestfips)
   estat size, obs size

***************************************************
******** Table Two ********************************
***************************************************

* 2.A) unadjusted uninsured rate
quietly svy, subpop(y2005):mean uninsured
   estat size, obs size
quietly svy, subpop(y2006):mean uninsured
   estat size, obs size
quietly svy, subpop(y2005):mean uninsured, over(gestfips)
   estat size, obs size
quietly svy, subpop(y2006):mean uninsured, over(gestfips)
   estat size, obs size

* 2.B) updated uninsured rate - Uninsured rate minus the number of uninsured who were switched to medicaid (preprob_un)

***** preprob for unin
   gen preprob_un = preprob * uninsured
quietly svy, subpop(if y2005 == 1):mean preprob_un
   estat size, obs size
quietly svy, subpop(if y2006 == 1):mean preprob_un
   estat size, obs size
quietly svy, subpop(if y2005 == 1):mean preprob_un, over(gestfips)
   estat size, obs size
quietly svy, subpop(if y2006 == 1):mean preprob_un, over(gestfips)
   estat size, obs size