Statistical Brief on the Health Care Access Module, 2013 and 2014

October 2015

Table of Contents

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Introduction

The purpose of this document is to provide guidance for Behavioral Risk Factor Surveillance System (BRFSS) coordinators and researchers who would like to conduct analyses of the data collected from the Health Care Access (HCA) Module in 2013 and 2014. Because there are unique aspects with the weighting and analysis that are associated with the module in each of the respective survey years, the goal for this guidance is to enable consistency in analytic methods and among results reported. BRFSS coordinators and researchers can contact the Center for Disease Control and Prevention's (CDC's) Population Health Surveillance Branch (PHSB) at info@cdc.gov for technical assistance.

Background and Rationale

Recognizing the importance of monitoring health care access, affordability, and use at the state level in an era of health system transformation, the CDC's PHSB established a work group consisting of BRFSS coordinators and personnel from across CDC. The work group developed a nine question BRFSS module to address health care access, affordability, and use (Appendix A). This module, in conjunction with the four core health care access measures (i.e., health insurance coverage; usual place of care; unmet care due to cost; and receipt of a routine checkup) increased the utility of the BRFSS to monitor health system transformation at the state level.

Reasons for using the HCA Module include the following:

- The data can be used for surveillance of health system change and for comparison across states. For example, these data can be used to monitor many of the measures and objectives of:
    - Vital Signs,[1] a 2015 report from the Institutes of Medicine, proposes a set of 15 core measures and 39 associated priority measures for health and health care.

    - Healthy People 2020[2] includes several objectives to increase access to comprehensive health care services for the achievement of health equity and for increasing the quality of a healthy life for everyone.
- The data can be used with other data in the BRFSS (e.g., demographics; clinical preventive services; risk behaviors; chronic disease status; disability status; self-rated health) and can also be subset by age (i.e., adults aged 18 to 64 years and adults aged 65 years or older).
- The data can be used with other data sources to monitor the effect of statewide and state-supported interventions (e.g., Medicaid expansion) to increase health care access, use of clinical preventive services, overall physical, social, and mental health status.
- The data can be used to identify, guide, and take action about disparities in health care access, affordability, and use. States can use these data to identify characteristics of adults who are uninsured, experience gaps in health insurance coverage, or have barriers to receipt of needed health care; and to develop targeted interventions.

HCA Module

The HCA Module was offered for the first time in 2013 after extensive cognitive testing. The module contains nine questions that assess type of health insurance coverage(s) (n = 2); health insurance coverage status (n = 2); non-cost barriers to needed health care (n = 1); number of health care visits (n = 1); cost barrier to prescribed medication (n = 1); satisfaction with received health care (n = 1); and medical debt (n = 1) (Appendix A). In 2013, the type of health insurance coverage question (M04.02) assessed all sources of current health insurance coverage (i.e., multiple response – select all that apply). However, in 2014 the question was modified to ask the respondent to select their primary source of health care coverage (i.e., single response); and this change was made to improve its analyzability. In addition, interviewer notes were added to the type of health insurance coverage question and the medical debt question in 2014 (see Table 1 and Appendix A). As a result of the revisions to the type of insurance question, it may not be feasible to compare or combine 2013 and 2014 data on this survey question.

Table 1. Comparison of the 2013 and 2014 BRFSS Health Care Access Module Questions and Number of States/Territories Fielding the Module

Health Care Access Module Questions and Variable Names	No. of States/Territories*	
	2013†	2014¶
Do you have Medicare? [MEDICARE]§	40	43
Are you CURRENTLY covered by any of the following types of health insurance or health coverage plans? Your employer; someone else's employer; a plan that you or someone else buys on your own; Medicaid or Medical Assistance [or substitute state program name]; the military, CHAMPUS, or the VA [or CHAMP-VA]; the Indian Health Service [or the Alaska Native Health Service]; some other source; none? [HLTHCVRG]§	40	N/A
What is the <u>primary</u> source of your health care coverage? Is it…A plan purchased through an employer or union **(includes plans purchased through another person's employer); a** plan that you or another family member buys on your own; Medicare; Medicaid or other state program; TRICARE (formerly CHAMPUS), VA, or Military; Alaska Native, Indian Health Service, Tribal Health Services; or some other source; none (no coverage)? [HLTHCVR1]§ INTERVIEWER NOTE: If the respondent indicates that they purchased health insurance through the Health Insurance Marketplace (name of state Marketplace), ask if it was a private health insurance plan purchased on their own or by a family member (private) or if they received Medicaid (state plan)? If purchased on their own (or by a family member), select 02 (A plan that you or another family member buys on your own), if Medicaid select 04 (Medicaid or other state program).	N/A	43
Other than cost, there are many other reasons people delay getting needed medical care. Have you delayed getting needed medical care for any of the following reasons in the past 12 months? Select the most important reason. You couldn't get through on the telephone; you couldn't get an appointment soon enough; once you got there, you had to wait too long to see the doctor; the (clinic/doctor's) office wasn't open when you got there; or you didn't have transportation [DELAYMED]§	40	43
If respondent has health care coverage, ask: In the PAST 12 MONTHS was there any time when you did NOT have ANY health insurance or coverage? [NOCOV121]§	40	43
If respondent does not have health care coverage, doesn't know, or refused to answer, ask: About how long has it been since you last had health care coverage? [LSTCOVRG]§	40	43
How many times have you been to a doctor, nurse, or other health professional in the past 12 months? [DRVISITS]§	40	43
Was there a time in the past 12 months when you did not take your medication as prescribed because of cost? Do not include over-the-counter (OTC) medication. [MEDSCOST]§	40	43
In general, how satisfied are you with the health care you received? Would you say — very satisfied, somewhat satisfied, or not at all satisfied? [CARERCVD]§	40	43
Do you currently have any medical bills that are being paid off over time? [MEDBILLS]§	40	N/A

Health Care Access Module Questions and Variable Names	No. of States/Territories*	
	2013†	2014¶
INTERVIEWER NOTE: This could include medical bills being paid off with a credit card, through personal loans, or bill paying arrangements with hospitals or other providers. The bills can be from earlier years as well as this year.		
Do you currently have any medical bills that are being paid off over time? [MEDBILL1]§ INTERVIEWER NOTE: This could include medical bills being paid off with a credit card, through personal loans, or bill paying arrangements with hospitals or other providers. The bills can be from earlier years as well as this year. INTERVIEWER NOTE: Health care bills can include medical, dental, physical therapy and/or chiropractic cost.	N/A	43

N/A, not available.
*Thirty-six states, the District of Columbia (DC), and Puerto Rico (PR) asked module in both 2013 and 2014.
†Thirty-eight states, DC, and PR submitted data for the Health Care Access module. Of these, two states (Colorado and Oklahoma) used a split sample design.
¶Forty-one states, DC, and PR submitted data for the Health Care Access module. Of these, four states (Colorado, Indiana, Maine, and Oklahoma) used a split sample design.
§BRFSS variable name.

Thirty-eight (38) states, the District of Columbia (DC), and Puerto Rico (PR) used the HCA Module in 2013 and 41 states, DC, and PR used the HCA Module in 2014. Thirty-six (36) states, DC, and PR used the module in both 2013 and 2014. All states used both landline telephone and cellular telephone surveys to collect these data. However, in 2013, two states (Colorado and Oklahoma) used a split sample design and in 2014, four states (Colorado, Indiana, Maine, and Oklahoma) used a split sample design. The incorporation of the split sample design makes it imperative that the data analyst create an analysis data set that incorporates the respective split sample survey weights (see Appendix B). The Statistical Analysis Software (SAS)® programs to create HCA Module analysis datasets for each of the respective survey years are provided in Appendix B. BRFSS guidance documents which provide technical assistance on the creation of an analysis data set for optional modules selected by states are available at http://www.cdc.gov/brfss/annual_data/2013/pdf/analysisofmodules_2013.pdf for the 2013 BRFSS and http://www.cdc.gov/brfss/annual_data/2014/pdf/2014moduleanalysis.pdf for the 2014 BRFSS.

Calculated Variables

To assist in analyses of these data, CDC's PHSB staff have created calculated variables for the HCA Module (see Table 2 and Appendix C). These variables are calculated from responses to questions in the BRFSS instrument. Calculated variable names with a _year (i.e., _2013 or

_2014) notation are specific to that survey year only. All other calculated variables are available for both survey years. Appendix C provides additional information on the calculated variables and the SAS® code used to create these variables. The syntax of the code, as given, may or may not work in all versions of SAS®. Additional information on the 2013 and 2014 BRFSS can be found at http://www.cdc.gov/brfss/.

Table 2. HCA Calculated Variables

Description and Calculated Variable Name	Comments and Values
Health care coverage status in the past 12 months, 3 categories (_COV3STAT)	1 = Continuously insured for the past 12 months 2 = Uninsured for part or all past 12 months 3 = Uninsured for more than 1 year
Health care coverage status in the past 12 months, 2 categories (_COV2STAT)	1 = Continuously insured for the past 12 months 2 = Uninsured for part or all past 12 months
Number of visits to health care professionals in the past 12 months (_NUMVST)	1= None 2 = 1-2 3 = 3-5 4 = ≥ 6 . = Missing
Current health insurance coverage: Medicaid or Medical Assistance (_MEDICAID_2013)	1 = Yes 2 = No . = Missing
Current health insurance coverage: employer (i.e., employer or someone else's employer) (_EMPLOYER_2013)	1 = Yes 2 = No . = Missing
Current health insurance coverage: self-purchase (_SP_2013)	1 = Yes 2 = No . = Missing
Current health insurance coverage: public (i.e., composite variable: Medicaid, military, or Indian Health Service) (_PUBLIC_2013)	1 = Yes 2 = No . = Missing
Current health insurance coverage: other public (i.e., composite variable: military or Indian Health Service) (_OPUBLIC_2013)	1 = Yes 2 = No . = Missing
Current health insurance coverage: private (i.e., composite variable: employer; someone else's employer; or self-purchase) (_PRIVATE_2013)	1 = Yes 2 = No . = Missing
'Simplified' Federal Poverty Level (_FPL_2014)	Note: This variable is created for respondents who reported an annual household income range, 1-14 adults in the household, and the number of children in the household (≥0). >0 .= Missing

These calculated variables may be useful in the production of fact sheets and other information materials that aim to present estimates by insurance status in the past year (e.g., continuously insured versus uninsured period), insurance type (e.g., public versus private), or by federal poverty level (FPL) (e.g., <100%, 100-<400%, and ≥400%). For example, CDC's National Center for Health Statistics,[3] has released estimates on the percentages of adults aged 18 to 64 years in selected states who lacked health insurance coverage, had public health plan coverage, or had private health insurance coverage at the time of interview. To establish a baseline for receipt of preventive services covered with no cost-sharing by the Affordable Care Act, Fox and Shaw[4] examined the prevalence of six preventive services by health insurance status, source of health insurance, and family income level. Using one of the calculated variables in the document, unadjusted or adjusted prevalence estimates can be produced by demographic subgroups such as sex, race/ethnicity, and education. In addition, age-standardized prevalence estimates by state can be produced as well (for examples, see Appendix D).

Analysis and Limitations

Analysis

For all analyses, data analysts should use software that handles the complex survey design of the BRFSS, such as SAS®, SAS-callable SUDAAN, or SPSS. For analyses that compare prevalence estimates for different geographic areas, such as between states, the use of direct age adjustment should be considered.[5] In particular, if differences exist in the age distribution of the populations that are being compared or if the outcome is age sensitive, such as mobility disability or smoking. BRFSS estimates are considered statistically reliable if they are based on a denominator of at least 50 sample cases and have a relative standard error (RSE) less than or equal to 30%. Specific BRFSS standards for data suppression are:

- Denominator <50 sample cases – Estimates are considered unreliable and should be suppressed. Provide a notation that estimates are not presented due to considerations of sample size and precision.
- RSE of 20-30% – Notate estimates (e.g., '*') and provide footnote to indicate that the estimates have a RSE greater than 20% and less than or equal to 30% and should be used with caution as they do not meet standards of reliability or precision.

- RSE >30% – Do not report estimates, standard errors or confidence intervals. Notate estimates (e.g., '*') and provide footnote that estimates with a RSE greater than 30% are considered unreliable and are not shown.

State BRFSS coordinators and other researchers have used the HCA data to create fact sheets and other information products for state policy-makers, public health professionals, and the general public.[6, 7] Additionally, researchers have used BRFSS data to produce baseline estimates, to examine health systems change, and to evaluate interventions. [4, 5, 8-21]

HCA Module data can be used with other data sources to monitor the effect of statewide and state-supported interventions. Appendix E provides selected data sources for state-level and across state comparisons.

Limitations

There are limitations that a data analyst should be aware of when using HCA Module data from the BRFSS. First, like all BRFSS data, the HCA data are self-reported, which could result in recall and social desirability response biases. Second, in 2014 the type of insurance question was modified — its question text, its question type, its response set, and its interviewer notes. Therefore, it may not be feasible to compare or merge data from this question between 2013 and 2014. Third, in 2014 an additional interviewer note was added to the question used to assess medical debt. The impact of this change cannot be ascertained. Fourth, the 2014 FPL calculated variable (_FPL_2014) is not provided for respondents who did not respond to the income question (~14%) or number of children in the household question, or those who had greater than 14 adults in the household. Additionally, the BRFSS question used to assess household income asks respondents to indicate whether their household income falls within specific income ranges; thus, we used the mean of each range to estimate FPL. For the top-end income level, $\geq$ $75,000, we used weighted mean of income from census data. Data analysts may consider various imputation methods to enhance the quality of this calculated variable. It should be noted that a 2013 FPL calculated variable could not be provided because the number of adults in the household was not obtained from cellular telephone respondents during that survey year. Lastly, because this is a cross-sectional survey, when examining the association between HCA measures and risk behaviors, health conditions, or use of clinical preventive services, causality cannot be assessed.

Conclusions

This document provides guidance for BRFSS coordinators and researchers interested in analyzing data from the 2013 and 2014 HCA Module and provides SAS® code to create the respective analysis datasets and calculated variables. There are additional BRFSS guidance documents available on the BRFSS website for the 2013 and 2014 BRFSS data (http://www.cdc.gov/brfss/). The HCA Module provides valuable data that can be used for baseline estimates, surveillance of health system change, and intervention evaluation.

Appendix A. BRFSS Health Care Access Module Questions

2013 BRFSS OPTIONAL MODULE 4: HEALTH CARE ACCESS

CATI Note: If PPHP State and Q3.1 = 1 (Yes) continue

1. Do you have Medicare?
(298)

1 Yes
2 No
7 Don't know/Not sure
9 Refused

Note: Medicare is a coverage plan for people age 65 or over and for certain disabled people.

2. Are you CURRENTLY covered by any of the following types of health insurance or health coverage plans?
(299-312)

(Select all that apply)

Please Read:

01 Your employer
02 Someone else's employer
03 A plan that you or someone else buys on your own
04 Medicaid or Medical Assistance [or substitute state program name]
05 The military, CHAMPUS, or the VA [or CHAMP-VA]
06 The Indian Health Service [or the Alaska Native Health Service]
07 Some other source
88 None
77 Don't know/Not sure
99 Refused

CATI Note: If PPHF State go to core 3.2

3. Other than cost, there are many other reasons people delay getting needed medical care.

Have you delayed getting needed medical care for any of the following reasons in the past 12 months? Select the most important reason
(313)

Please read

1 You couldn't get through on the telephone.
2 You couldn't get an appointment soon enough.
3 Once you got there, you had to wait too long to see the doctor.
4 The (clinic/doctor's) office wasn't open when you got there.
5 You didn't have transportation.

Do not read:

6 Other _____ (314-338)
specify
8 No, I did not delay getting medical care/did not need medical care
7 Don't know/Not sure
9 Refused

CATI Note: If PPHF State, go to core 3.4

CATI Note: If Q3.1 = 1 (Yes) continue, else go to Q4b

4a. In the PAST 12 MONTHS was there any time when you did NOT have ANY health insurance or coverage?
(339)

1 Yes **[Go to Q5]**
2 No **[Go to Q5]**
7 Don't know/Not sure **[Go to Q5]**
9 Refused **[Go to Q5]**

CATI Note: If Q3.1 = 2, 7, or 9 continue, else go to next question (Q5)

4b. About how long has it been since you last had health care coverage?
(340)

1 6 months or less
2 More than 6 months, but not more than 1 year ago
3 More than 1 year, but not more than 3 years ago
4 More than 3 years
5 Never
7 Don't know/Not sure
9 Refused

5. How many times have you been to a doctor, nurse, or other health professional in the past 12 months?
(341-342)

__ Number of times
88 None
77 Don't know/Not sure
99 Refused

6. Was there a time in the past 12 months when you did not take your medication as prescribed because of cost? Do not include over-the-counter (OTC) medication.
(343)

1 Yes
2 No

Do not read:

3 No medication was prescribed.
7 Don't know/Not sure
9 Refused

7. In general, how satisfied are you with the health care you received? Would you say—
(344)

1 Very satisfied
2 Somewhat satisfied
3 Not at all satisfied

Do not read

8 Not applicable
7 Don't know/Not sure
9 Refused

8 Do you currently have any medical bills that are being paid off over time?
(345)

INTERVIEWER NOTE:
This could include medical bills being paid off with a credit card, through personal loans, or bill paying arrangements with hospitals or other providers. The bills can be from earlier years as well as this year.

1 Yes
2 No
7 Don't know/Not sure
9 Refused

2014 BRFSS OPTIONAL MODULE 4: HEALTH CARE ACCESS

1. Do you have Medicare?
(281)

3 Yes
4 No
7 Don't know/Not sure
9 Refused

Note: Medicare is a coverage plan for people age 65 or over and for certain disabled people.

2. What is the primary source of your health care coverage? Is it…
(282-283)

Please Read

01 A plan purchased through an employer or union **(includes plans purchased through another person's employer)**
02 A plan that you or another family member buys on your own
03 Medicare
04 Medicaid or other state program
05 TRICARE (formerly CHAMPUS), VA, or Military
06 Alaska Native, Indian Health Service, Tribal Health Services
Or
07 Some other source
08 None (no coverage)

Do not read:

77 Don't know/Not sure

99 Refused

INTERVIEWER NOTE: If the respondent indicates that they purchased health insurance through the Health Insurance Marketplace (name of state Marketplace), ask if it was a private health insurance plan purchased on their own or by a family member (private) or if they received Medicaid (state plan)? If purchased on their own (or by a family member), select 02, if Medicaid select 04.

CATI NOTE: If PPHF State, go to Core Q3.2.

3. Other than cost, there are many other reasons people delay getting needed medical care.

Have you delayed getting needed medical care for any of the following reasons in the past 12 months? Select the most important reason.
(284)

Please read

1 You couldn't get through on the telephone.
2 You couldn't get an appointment soon enough.
3 Once you got there, you had to wait too long to see the doctor.
4 The (clinic/doctor's) office wasn't open when you got there.
5 You didn't have transportation.

Do not read:

7 Other _____ (specify)
(285-309)

8 No, I did not delay getting medical care/did not need medical care
7 Don't know/Not sure
9 Refused

CATI NOTE: If PPHF State, go to Core Q3.4.

CATI NOTE: If Q3.1 = 1 (Yes) continue, else go to Q4b.

4a. In the PAST 12 MONTHS was there any time when you did NOT have ANY health insurance or coverage?
(310)

1 Yes **[Go to Q5]**
2 No **[Go to Q5]**
7 Don't know/Not sure **[Go to Q5]**
9 Refused **[Go to Q5]**

CATI Note: If Q3.1 = 2, 7, or 9 continue, else go to next question (Q5).

4b. About how long has it been since you last had health care coverage?
(311)

1 6 months or less
2 More than 6 months, but not more than 1 year ago
3 More than 1 year, but not more than 3 years ago
4 More than 3 years
5 Never
7 Don't know/Not sure
9 Refused

5. How many times have you been to a doctor, nurse, or other health professional in the past 12 months?
(312-313)

_ _	Number of times
8 8	None
7 7	Don't know/Not sure
9 9	Refused

6. Was there a time in the past 12 months when you did not take your medication as prescribed because of cost? Do not include over-the-counter (OTC) medication.
(314)

1	Yes
2	No

Do not read:

3	No medication was prescribed.
7	Don't know/Not sure
9	Refused

7. In general, how satisfied are you with the health care you received? Would you say—
(315)

Please read:

1	Very satisfied
2	Somewhat satisfied
3	Not at all satisfied

Do not read:

8	Not applicable
7	Don't know/Not sure
9	Refused

8. Do you currently have any health care bills that are being paid off over time?
(316)

INTERVIEWER NOTE:
This could include medical bills being paid off with a credit card, through personal loans, or bill paying arrangements with hospitals or other providers. The bills can be from earlier years as well as this year.

INTERVIEWER NOTE: Health care bills can include medical, dental, physical therapy and/or chiropractic cost.

1	Yes
2	No
7	Don't know/Not sure
9	Refused

Appendix B. SAS® Code to Create HCA Module Analysis Data Sets

CREATE 2013 HCA MODULE ANALYSIS DATA SET

SAS Code:

```
*extract states from landline and cell phone combined data;
data llcp;
*originally downloaded data selecting states that collected data using
the HCA module from combined landline and cell phone data for
common module;
 set brfss.llcp2013 (where=(_state in
(1,2,4,6,9,10,11,12,13,16,18,19,21,22,24,25,26,27,30,31,32,34,35,36
,37,38,39,41,44,45,47,49,50,51,53,54,55,72)));
*state FIPS code:
1(AL),2(AK),4(AZ),6(CA),9(CT),10(DE),11(DC),12(FL),
13(GA),16(ID),18(IN),19(IA),21(KY),22(LA),24(MD),25(MA),26(
MI),27(MN),30(MT),31(NE),32(NV),34(NJ),35(NM),36(NY),37(N
C),38(ND),39(OH),41(OR),44(RI),45(SC),47(TN),49(UT),50(VT),5
1(VA),53(WA),54(WV),55(WI),72(PR); *36 states, DC, & PR;
*rename final weight variable to be consistent across new data sets;
_finalwt = _llcpwt;
drop _llcpwt;
run;

*extract states from combined landline and cell phone data, multiple
versions;
*multiple version 2;
data llcpv2;
*originally downloaded data selecting states that collected data for
the HCA module from combined landline and cell phone data,
multiple versions;
 set brfss.llcp13v2 (where=(_state in (8,40)));
 *state FIPS code: 8(Colorado),40(Oklahoma);*2 states;
*rename final weight variable to be consistent across new data sets;
  _finalwt=_lcpwtv2;
  drop _lcpwtv2;
run;

*combine all data sets together - 38 states, DC, and PR;
data HCAModule2013;  set llcp llcpv2; run;
  *Use _finalwt for all HCA 2013 analyses;
```

CREATE 2014 HCA MODULE ANALYSIS DATA SET

SAS Code:

```
*extract states from landline and cell phone combined data;
data llcp;
*originally downloaded data selecting states that collected data using
the HCA module from combined landline and cell phone data for
common module;
  set brfss.llcp2014 (where=(_state in
(1,2,4,9,10,11,13,16,17,19,21,22,24,25,26,27,28,30,31,32,33,34,35,3
6,37,38,39,41,42,44,45,47,49,50,51,53,54,55,72)));
*state FIPS code:
1(AL),2(AK),4(AZ),9(CT),10(DE),11(DC),13(GA),16(ID),17(IL),1
9(IA),21(KY),22(LA),24(MD),25(MA),26(MI),27(MN),28(MS),30(
MT),31(NE),32(NV),33(NH),34(NJ),35(NM),36(NY),37(NC),38(N
D),39(OH),41(OR),42(PA),44(RI),45(SC),47(TN),49(UT),50(VT),5
1(VA),53(WA),54(WV),55(WI),72(PR);*37 states, DC, & PR;
*rename final weight variable to be consistent across new data sets;
_finalwt = _llcpwt;
drop _llcpwt;
run;

*extract states from combined landline and cell phone data, multiple
versions;
*multiple version 1;
data llcpv1;
*originally downloaded data selecting states that collected data for
the HCA module from combined landline and cell phone data,
multiple versions;
set brfss.llcp14v1 (where=(_state in (8,18,23,40)));
*State FIPS code: 8(CO), 18(IN), 23(ME), 40(OK);*4 states;
*rename final weight variable to be consistent across new data sets;
 _finalwt=_lcpwtv1;
  drop _lcpwtv1;
run;

*combine all data sets together - 41 states, DC, & PR;
data HCAModule2014; set llcp llcpv1; run;
 *Use _finalwt for all HCA 2014 analyses;
```

Appendix C. Description and SAS® Code for Calculated Variables

NOTE: Variable names with _year (i.e., _2013 or _2014) notation are specific for that survey year only. All other variables are available in both survey years.

_COV3STAT *Calculated variable for health care coverage status in the past 12 months, 3 categories.*

_COV3STAT is derived from HLTHPLN1, NOCOV121, and LSTCOVRG

1 Continuously insured for the past 12 months (HLTHPLN1=1 and NOCOV121=2)
2 Uninsured for part or all past 12 months (NOCOV121=1 or LSTCOVRG in (1,2))
3 Uninsured for more than 1 year (HLTHPLN1 in (2,7,9) and LSTCOVRG in (3,4,5))

SAS Code:

```
if HLTHPLN1=1 and NOCOV121=2 then _COV3STAT=1; else
if (HLTHPLN1=1 and NOCOV121=1) or (HLTHPLN1 in (2,7,9) and
   LSTCOVRG in (1,2)) then _COV3STAT =2; else
if HLTHPLN1 in (2,7,9) and LSTCOVRG in (3,4,5) then
   _COV3STAT =3;
```

_COV2STAT *Calculated variable for health care coverage status in the past 12 months, 2 categories.*

_COV2STAT is derived from _COV3STAT

1 Continuously insured for the past 12 months (_COV3STAT = 1)
2 Uninsured for part ~~of~~ or all past 12 months (_COV3STAT in (2,3))

SAS Code:

```
if _COV3STAT = 1 then _COV2STAT =1; else
if _COV3STAT in (2,3) then _COV2STAT =2;
```

_NUMVST *Calculated variable of number of visits to health care professionals in the past 12 months.*

_NUMVST is derived from DRVISITS.

1	None
2	1-2
3	3-5
4	≥ 6
.	Missing

SAS Code:

```
if DRVISITS=88 then _NUMVST = 1; else
if DRVISITS in (77,99) then _NUMVST = .; else
if 1<=DRVISITS<=2 then _NUMVST = 2; else
if 3<=DRVISITS<=5 then _NUMVST = 3; else
if DRVISITS>=6 then _NUMVST = 4;
```

_MEDICAID_2013 *Calculated variable for adults who are insured through Medicaid or Medical Assistance.*

_MEDICAID_2013 is derived from HLTHPLN1 and HLTHCVRG

1	Yes
2	No
.	Missing

SAS Code:

```
if HLTHPLN1=1 then do;
  VAR=compress(HLTHCVRG, '0');
   if index(VAR,'4') ^= 0 then _MEDICAID_2013 = 1; else
   if VAR in ('77','88','99','999','') then _MEDICAID_2013 = .;
else
   if index(VAR,'4') = 0 then _MEDICAID_2013 = 2;
end;
```

_EMPLOYER_2013

Calculated variable for adults who are insured through employer (Own or someone else's employer).

_EMPLOYER_2013 is derived from HLTHPLN1 and HLTHCVRG

1 Yes
2 No
. Missing

SAS Code:

```
if HLTHPLN1=1 then do;
 VAR = compress(HLTHCVRG, '0');
  if index(VAR,'1') ^= 0 or index(VAR,'2') ^= 0 then
    _EMPLOYER_2013 = 1; else
  if VAR in ('77','88','99','999','') then _EMPLOYER_2013 = .;
else
  if index(VAR,'1') = 0 and index(VAR,'2') = 0 then
    _EMPLOYER_2013 = 2;
end;
```

_SP_2013

Calculated variable for adults who are insured through self-purchase.

_SP_2013 is derived from HLTHPLN1, HLTHCVRG

1 Yes
2 No
. Missing

SAS Code:

```
if HLTHPLN1=1 then do;
VAR = compress(HLTHCVRG, '0');
  if index(VAR,'3') ^=0 then _SP_2013 = 1; else
  if VAR in ('77','88','99','999','') then _SP_2013 = .; else
  if index(VAR,'3')=0 then _SP_2013 = 2;
end;
```

_PUBLIC_2013

Calculated variable for adults who are insured through public (Medicaid, Military, Indian Health Service).

_PUBLIC_2013 is derived from HLTHPLN1 and HLTHCVRG

1 Yes
2 No
. Missing

SAS Code:

```
if HLTHPLN1=1 then do;
var=compress(HLTHCVRG, '0');
 if index(VAR,'4') ^= 0 or index(VAR,'5') ^= 0 or
index(VAR,'6') ^= 0 then _PUBLIC_2013=1; else
 if VAR in ('77','88','99','999','') then _PUBLIC_2013 =.; else
 if index(VAR,'4') = 0 and index(VAR,'5') = 0 and
   index(VAR,'6') =  0 then _PUBLIC_2013 =2;
end;
```

_OPUBLIC_2013

Calculated variable for adults who are insured through other public (Military, Indian Health Service).

_OPUBLIC_2013 is derived from HLTHPLN1 and HLTHCVRG

1 Yes
2 No
. Missing

SAS Code:

```
if HLTHPLN1=1 then do;
VAR=compress(HLTHCVRG, '0');
 if index(VAR,'5') ^= 0 or index(VAR,'6') ^= 0 then
   _OPUBLIC_2013 = 1; else
 if VAR in ('77','88','99','999','') then _OPUBLIC_2013 = .;
else
 if index(VAR,'5') = 0 and index(VAR,'6') = 0 then
   _OPUBLIC_2013 = 2;
end;
```

_PRIVATE_2013

Calculated variable for adults who are insured through private insurance (Employer, Someone else's employer, self-purchase).

_PRIVATE_2013 is derived from HLTHPLN1 and HLTHCVRG

1 Yes
2 No
. Missing

SAS Code:

```
if HLTHPLN1=1 then do;
VAR=compress(HLTHCVRG, '0');
  if index(VAR,'1') ^= 0 or index(VAR,'2') ^= 0 or
index(VAR,'3') ^= 0 then _PRIVATE_2013 = 1; else
  if VAR in ('77','88','99','999','') then _PRIVATE_2013 = .;
else
  if index(VAR,'1') = 0 and index(VAR,'2') = 0 and
index(VAR,'3') = 0 then _PRIVATE_2013 = 2;
end;
```

_FPL_2014k Calculated variable for 2014 *'Simplified'* F*ederal Poverty Level*.

FPL_2014 is derived from INCOME2, NUMADULT, HHADULT, and CHILDREN.

SAS Code:

```
*no missing income;
 if income2 not in (., 77,99) then do;

 *imputed income = mean value for each BRFSS income range and
weighted mean from census for the top-end income level – i.e., income2=8
(≥ $75,000);

 if income2 = 1 then income = 7500; else
 if income2 = 2 then income = 12500; else
 if income2 = 3 then income = 17500; else
 if income2 = 4 then income = 22500; else
 if income2 = 5 then income = 30000; else
 if income2 = 6 then income = 42500; else
 if income2 = 7 then income = 62500; else
 if income2 = 8 then income = 155000;

 *# of persons in household, hhs = # of adult + children;

 *restrict to those who reported # of adults <= 14;
 if 1<= numadult <= 14 or 1<= hhadult <= 14 then do;
   *set none or missing children to numerical value;
 if children=88 then children=0; else
 if children in (77,99) then children=.;
 *hhs = adult+children;
   *hhadult is from cell phone survey, numadult is from landline survey;
 if numadult=. then hhs=hhadult+children;
 if hhadult=. then hhs=numadult+children;
 end; else hhs=.;

*2013 FPL threshold 100% based on 8 (=simplified) categories;
 *http://obamacarefacts.com/federal-poverty-level/;
 if hhs = 1 then FPL100 = 11490; else
 if hhs = 2 then FPL100 = 15510; else
 if hhs = 3 then FPL100 = 19530; else
 if hhs = 4 then FPL100 = 23550; else
 if hhs = 5 then FPL100 = 27570; else
 if hhs = 6 then FPL100 = 31590; else
 if hhs = 7 then FPL100 = 35610; else
 if hhs = 8 then FPL100 = 39630; else
```

```
 if hhs > 8 then FPL100 = 39630 + (hhs-8)*4020;
   *If your family size was more than 8 people, add $4,020 for each
additional
     person;
 *calculation of poverty level;
 _FPL_2014 = 100*(income/FPL100);
 label _FPL_2014 =’FPL: Federal Poverty Level, Continuous’;

end;
```

Appendix D. SAS® Code for Unadjusted or Age-Adjusted Prevalence Estimates of Medicaid by Sex, and Age-Standardized Prevalence Estimates of Medicaid by State

```
data dat;
set HCAModule2013;

*Medicaid yes no in percentage scale;
if _medicaid_2013=1 then medicaid=100*_medicaid_2013; else
if _medicaid_2013=0 then medicaid=0;

*age group from numeric to character;
_age = put(_age_g, 7.);

*age 18-24, 25-44, 45-64;
 if _age_g = 1 then agegrp="1"; else
 if _age_g in (2,3) then agegrp="2"; else
 if _age_g in (4,5) then agegrp="3";

run;

*unadjusted prevalence of Medicaid by sex;
proc surveymeans data=dat nomcar;
cluster _psu;
strata _ststr;
weight _finalwt;
domain sex;
var medicaid;
run;

*age-adjusted prevalence of Medicaid for those aged 18-24 by sex;
proc surveyreg data= dat nomcar;
cluster _psu;
strata _ststr;
weight _finalwt;
class _age;
domain sex;
model medicaid = _age/noint solution;
estimate 'Prevalence(%) of Medicaid for those aged 18-24 by sex' _age 1 0 0 0 0 0;
run;
   *for age 25-34, code '_age 0 1 0 0 0 0';
```

```
   *for age 35-44, code '_age 0 0 1 0 0 0';

*age-standardized prevalence of Medicaid by state
*standardized by Healthy People 2010 age distribution #8,

18-24, a=0.128810,
25-44, b=0.401725,
45-64, c=0.299194

a/(a+b+c)= 0.1552
b/(a+b+c)= 0.4842
c/(a+b+c)= 0.3606;

proc surveyreg data=dat nomcar;
cluster _psu;
strata _ststr;
weight _finalwt;
class _state agegrp;
domain _state;
model medicaid= agegrp /noint solution;
estimate 'Prev(%) of Medicaid by state' agegrp 0.1552 0.4842 0.3606;
ods output estimates=medicaid;
run;
 *open 'medicaid' table in work directory;
```

Appendix E. Data Sources for State-Level & Across State Comparisons

- American Community Survey (ACS; https://www.census.gov/programs-surveys/acs/) – Since 2008 the ACS has included a question about health insurance coverage. The ACS has a larger sample size and may yield more accurate estimates of health insurance coverage than the Current Population Survey (CPS). However, because there are only six years of data from the ACS, for health insurance time trend analyses the CPS may have a greater historical perspective.
- The Commonwealth Fund (http://www.commonwealthfund.org/) – The Commonwealth Fund is a private foundation that aims to promote a high performing health care system that achieves better access, improved quality, and greater efficiency, particularly for society's most vulnerable, including low-income people, the uninsured, minority Americans, young children, and elderly adults.
- The Community Health Status Indicators (http://wwwn.cdc.gov/CommunityHealth/info/HowtoUseReport) – Since its establishment in 2000, the Community Health Status Indicators tool has provided peer county groupings that allow the health status of individual counties to be compared to those of "peer" counties across the U.S.
- Current Population Survey (CPS; http://www.census.gov/cps/) – This survey, conducted annually by the U.S. Census Bureau, is the most commonly used source of state-level estimates of the uninsured when cross-state or national comparisons are necessary. US Census Bureau recommends that if you are looking at trend data that you use two- or three-year estimates because the CPS does have a smaller sample size.
- The Henry J. Kaiser Family Foundation (http://www.kff.org/statedata/) – This site, sponsored by the Henry J. Kaiser Family Foundation, is a compilation of state-level data related to health care on a wide range of topics from many different sources.
- Medical Expenditure Panel Survey Insurance Component (MEPS) – This survey of employers, conducted annually by the Agency for Healthcare Research and Quality, provides state-level data on the market for employment-based health insurance. While this can be a useful source for cross-state comparisons, the estimates should be used with caution because some of the estimates have a large margin of error – in other words, differences between states (or between a state estimate and the national average, or differences over time) may appear large even though they are not statistically different. Attention: Non-MDH link.
- Small Area Health Insurance Estimates (SAHIE; http://www.census.gov/did/www/sahie/) – County-level estimates provided by the U.S. Census Bureau. These are model-based estimates by age, poverty-level, and race/ethnicity.
- The University of Minnesota's (State Health Access Data Assistance Center (SHADAC) (http://www.shadac.org/) – Data Warehouse that uses various data sources — ACS, BRFSS, CPS, MEPS-Insurance Component, National Health Interview Survey — to:
  - Examine state-level estimates
  - Compare estimates across states & over time
  - Explore within a state with data visualization tool

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