2002 SMART BRFSS County Methodology

2002 Selected Metropolitan/Micropolitan Area Risk Trends from the BRFSS Creation of Metropolitan-level weights

This documentation describing the Behavioral Risk Factor Surveillance System (BRFSS) Selected Metropolitan/Micropolitan Area Risk Trends (SMART) project is based on a report produced for CDC by RTI International. A documented and verified subset of the 2002 BRFSS has been produced to provide some local area estimates. These local areas are identified as counties within metropolitan or micropolitan statistical areas (MMSA) as defined by the Office of Management and Budget. The data set was produced by adding new analysis weights designed to correspond to the 2002 population estimates for each eligible county within a selected MMSA. The additional weights were post-stratified to the county-level. The process by which these new weights were obtained is detailed in Appendix C, "Weight Class Collapsing Rules."

Selected Areas

Typically, BRFSS data are used to produce state-level estimates. However, for the SMART project, BRFSS data were used to produce small area-level estimates for MMSAs as defined by the Bureau of the Census. On June 6, 2003, the Office of Management and Budget (OMB) issued new definitions for metropolitan statistical areas, micropolitan statistical areas, and metropolitan divisions (http://www.whitehouse.gov/omb/bulletins/b03-04_attach.pdf). A respondent was associated with a particular MMSA on the basis of their county code. Missing county codes were imputed from a value included in the purchased telephone sample that represents the county most likely associated with the telephone number. There were 98 MMSA that met the analysis criteria for the 2002 data year. From within the 98 MMSA, county-level estimates have been produced from the BRFSS data for 146 counties that have met the analysis criteria for the 2002 data year.

Appendix A: List of Variables added to (2002 Data)

Data Documentation for the 15 New Variables Added to the 2002 BRFSS Data

ADJCNTY – County-level post-stratification weight. This factor is multiplied by the design weight (_WT2) to get the final County-level weight (_CNTYWT).

ADJCN_SS – County-level post-stratification split-sample weight. This factor is multiplied by the design weight (_WT2) to get the final county-level split sample weight (_CNTWTSS). This variable is missing for respondents who do not live in Cook County, IL area, the only county within a metropolitan division with adequate sample size to provide a split sample weight.

AGE_CNTY– age categories used to set up the initial weighting classes for the county-level weights.

1 – 18-24
2 – 25-34
3 – 35-44
4 – 45-54
5 – 55-64
6 – 65+

AGE_C_F – age categories used in the final weighting classes for the county-level weights.

1 – 18-24
2 – 25-34
3 – 35-44
4 – 45-54
5 – 55-64
6 – 65+
7 – 18-34
8 – 35-54
9 – 55+

AGE_FSSC – age categories used in the final weighting classes for the split-sample county-level weights. This variable is missing for respondents who do not live in the Cook County, IL.

1 – 18-24
2 – 25-34
3 – 35-44
4 – 45-54
5 – 55-64
6 – 65+
9 – 55+

ANLCNTY – indicates whether a respondent lives in a county that was included in the reweighting.

0 – not in a county that got reweighted
1 – in a county that got reweighted

ANLCN_SS – indicates whether a respondent lives in a county that was included in the split-sample reweighting (Cook County, IL only).

0 – not in Cook County, IL
1 – in Cook County, IL

RACE_CNT – race categories used to set up the initial weighting classes for the county-level weights.

0 – Race not used
1 – White, non-Hispanic
2 – Nonwhite or Hispanic

RACE_C_F – race categories used in the final weighting classes for the county-level weights.

0 – Race not used
1 – White, non-Hispanic
2 – Nonwhite or Hispanic

RAC_FSSC – race categories used in the final weighting classes for the split-sample county-level weights. This variable is missing for respondents who do not live in the Cook County, IL.

1 – White, non-Hispanic
2 – Nonwhite or Hispanic

SEX_CNTY – sex categories used to set up the initial and final weighting classes for the county-level weights (weight classes are never collapsed across sex).

1 – Male
2 – Female

_CNTY – FIPS county code of the county where the respondent lives. This variable is equivalent to CTYCODE, except for respondents with a CTYCODE of “777” or “999”. The county code for these respondents was imputed based on information provided by BSB.

_CNTYNAM – County name of the county where the respondent lives.

_CNTYWT – the new county-level weight. This is the weight to use when generating county-level estimates for questions that were asked of the whole sample.

_CNTWTSS – the new county-level weight for the split-sample questions. This is the weight to use when generating county-level estimates for the split-sample questions. This variable is missing for respondents who do not live in Cook County, IL.

Appendix B: List of the 98 counties that have COUNTY-level Weights in 2002 BRFSS Data Metropolitan/Micropolitan Statistical Area or Metropolitan Division Codes and Names

State Name	FIPS State	FIPS County	County Name
Alabama	1	73	Jefferson County
Alaska	2	20	Anchorage Municipality
Arizona	4	13	Maricopa County
Arizona	4	19	Pima County
Arkansas	5	119	Pulaski County
California	6	37	Los Angeles County
Colorado	8	1	Adams County
Colorado	8	5	Arapahoe County
Colorado	8	31	Denver County
Colorado	8	59	Jefferson County
Connecticut	9	1	Fairfield County
Connecticut	9	3	Hartford County
Connecticut	9	7	Middlesex County
Connecticut	9	9	New Haven County
Connecticut	9	11	New London County
Connecticut	9	13	Tolland County
Connecticut	9	15	Windham County
Delaware	10	1	Kent County
Delaware	10	3	New Castle County
Delaware	10	5	Sussex County
District of Columbia	11	1	District of Columbia
Florida	12	31	Duval County
Florida	12	57	Hillsborough County
Florida	12	86	Miami-Dade County
Florida	12	95	Orange County
Florida	12	103	Pinellas County
Georgia	13	67	Cobb County
Georgia	13	89	DeKalb County
Georgia	13	121	Fulton County
Hawaii	15	1	Hawaii County
Hawaii	15	3	Honolulu County
Hawaii	15	7	Kauai County
Hawaii	15	9	Maui County
Idaho	16	1	Ada County
Idaho	16	27	Canyon County
Illinois	17	31	Cook County
Illinois	17	43	DuPage County
Indiana	18	97	Marion County
Iowa	19	153	Polk County
Kansas	20	91	Johnson County
Kansas	20	173	Sedgwick County
Kansas	20	177	Shawnee County

Kentucky	21	111	Jefferson County
Louisiana	22	33	East Baton Rouge Parish
Louisiana	22	51	Jefferson Parish
Louisiana	22	71	Orleans Parish
Louisiana	22	103	St. Tammany Parish
Maine	23	5	Cumberland County
Maine	23	31	York County
Maryland	24	3	Anne Arundel County
Maryland	24	5	Baltimore County
Maryland	24	21	Frederick County
Maryland	24	31	Montgomery County
Maryland	24	510	Baltimore city
Massachusetts	25	5	Bristol County
Massachusetts	25	9	Essex County
Massachusetts	25	13	Hampden County
Massachusetts	25	17	Middlesex County
Massachusetts	25	21	Norfolk County
Massachusetts	25	23	Plymouth County
Massachusetts	25	25	Suffolk County
Massachusetts	25	27	Worcester County
Michigan	26	99	Macomb County
Michigan	26	125	Oakland County
Michigan	26	163	Wayne County
Minnesota	27	3	Anoka County
Minnesota	27	37	Dakota County
Minnesota	27	53	Hennepin County
Minnesota	27	123	Ramsey County
Mississippi	28	49	Hinds County
Missouri	29	95	Jackson County
Missouri	29	189	St. Louis County
Nebraska	31	55	Douglas County
Nebraska	31	109	Lancaster County
Nebraska	31	153	Sarpy County
Nevada	32	3	Clark County
Nevada	32	31	Washoe County
New Hampshire	33	9	Grafton County
New Hampshire	33	11	Hillsborough County
New Hampshire	33	13	Merrimack County
New Hampshire	33	15	Rockingham County
New Hampshire	33	17	Strafford County
New Jersey	34	3	Bergen County
New Jersey	34	13	Essex County
New Jersey	34	25	Monmouth County
New Jersey	34	27	Morris County
New Jersey	34	35	Somerset County
New Mexico	35	1	Bernalillo County

New Mexico	35	43	Sandoval County
New York	36	47	Kings County
New York	36	81	Queens County
New York	36	103	Suffolk County
North Carolina	37	21	Buncombe County
North Carolina	37	67	Forsyth County
North Carolina	37	81	Guilford County
North Carolina	37	89	Henderson County
North Carolina	37	135	Orange County
North Carolina	37	151	Randolph County
North Dakota	38	17	Cass County
Ohio	39	95	Lucas County
Ohio	39	99	Mahoning County
Ohio	39	113	Montgomery County
Ohio	39	153	Summit County
Oklahoma	40	27	Cleveland County
Oklahoma	40	109	Oklahoma County
Oklahoma	40	143	Tulsa County
Oregon	41	5	Clackamas County
Oregon	41	51	Multnomah County
Oregon	41	67	Washington County
Pennsylvania	42	3	Allegheny County
Pennsylvania	42	5	Armstrong County
Pennsylvania	42	17	Bucks County
Pennsylvania	42	29	Chester County
Pennsylvania	42	45	Delaware County
Pennsylvania	42	55	Franklin County
Pennsylvania	42	71	Lancaster County
Pennsylvania	42	91	Montgomery County
Pennsylvania	42	101	Philadelphia County
Pennsylvania	42	129	Westmoreland County
Rhode Island	44	3	Kent County
Rhode Island	44	7	Providence County
Rhode Island	44	9	Washington County
South Carolina	45	31	Darlington County
South Carolina	45	41	Florence County
South Carolina	45	79	Richland County
South Dakota	46	99	Minnehaha County
South Dakota	46	103	Pennington County
Tennessee	47	37	Davidson County
Tennessee	47	157	Shelby County
Texas	48	113	Dallas County
Texas	48	201	Harris County
Utah	49	11	Davis County
Utah	49	35	Salt Lake County
Utah	49	45	Tooele County

Utah	49	57	Weber County
Vermont	50	7	Chittenden County
Vermont	50	11	Franklin County
Vermont	50	17	Orange County
Vermont	50	27	Windsor County
Washington	53	11	Clark County
Washington	53	33	King County
Washington	53	53	Pierce County
Washington	53	61	Snohomish County
West Virginia	54	39	Kanawha County
Wisconsin	55	79	Milwaukee County
Wyoming	56	21	Laramie County

Appendix C: Weight Class Collapsing Rules

County-level Weighting Methodology

Respondents were assigned to a county on the basis of their FIPS county codes. Missing county codes were imputed from a value included in the purchased telephone sample that represents the county most likely associated with the telephone number before the respondent identifies a county during data collection.

All respondents in counties were then assigned to age, race, and sex categories. If a respondent's age was missing, it was imputed by using the variable _IMPAGE available in the BRFSS public-use 2002 data file. If a respondent's race was missing, it was imputed by using the majority race for the county in which the respondent lives. The six age categories were 18-24, 25-34, 35-44, 45-54, 55-64, and 65+. The two race categories were White, non-Hispanic, and Nonwhite or Hispanic.

Within each county, respondents were assigned to weighting classes on the basis of the age, race, and sex categories described above. Some states do not use race in post-stratification. For the counties in states that do not use race, only the age and sex groups were used to set up weighting classes. For the counties in states that do use race, all three groups were used to set up weighting classes. Thus counties that use race had 24 initial weighting classes and counties that do not use race had 12 initial weighting classes.

Weighting classes with fewer than 19 sample members were collapsed in accordance with the following rules:

1. For those counties that used race in post-stratification, the race categories within a sex category collapse if at least 80% of the age categories in that race /sex cross-classification (*i.e.* 5 out of 6 the age categories) have fewer than 19 members. In counties that used race to create the initial weighting classes, the number of weighting classes was thus reduced from 24 to 12 if race was collapsed for both sexes and from 24 to 18 if race was collapsed for only one sex.

2. Collapse the two youngest age categories in any age/sex or age/sex/race weighing class if either contains fewer than 19 members. Do the same for the two middle and the two oldest age categories in each remaining weighting class.

3. Do not collapse weighting classes across sex.

4. Do not include a county in the reweighting that still has weighting classes with fewer than 19 sample members after all collapsing rules have been applied.

There were 98 MMSA that had at least 500 respondents in the 2002 BRFSS and at least 19 sample members in all final weighting classes. There are 146 counties within the 98 MMSA that had at least 19 sample members in all final weighting classes. See Appendix B in the Data

Documentation for a list of these counties. Only the respondents in these counties were given a county-level weight. To calculate the new county-level weight, we applied a post-stratification adjustment factor to the design weight (_WT2) and created the adjustment factor by taking the ratio of the total population over the sum of the design weights for each weighting class within each county. The new county-level weight (_CNTYWT) should be used to generate estimates in these 146 counties.

Example SUDAAN Code:
For example, to estimate for DeKalb County, GA (_STATE=13, _CNTY=89). The following SAS/SUDAAN code that could be used to do this:

```
data xxxx;
set yyyy;

if (_STATE=13 & _CNTY=89) then DUMMY=1;
run;

proc sort data=xxxx;
by _STSTR SEQNO;
run;

proc descript data=xxxx filetype=sas design=wr;
nest _STSTR SEQNO / missunit;
weight _CNTYWT;
subpopn DUMMY=1 / name="DeKalb County, GA";
var (your analysis variable);
catlevel (the level of your analysis variable for which you want an estimate);
run;
```

Couty-Level Split-Sample Weighting Methodology

In 2002, Illinois used a split sample. This means they divided their sample in half to ask two different versions of their questionnaire. One version of their questionnaire was asked of half the sample and the second version was asked of the other half of the sample. The _CNTYWT is appropriate to use for analysis of the questions asked on both versions of their questionnaire. An additional weight was created to use with questions that were asked on only one version of their questionnaire. The county-level split-sample weight (_CNTWTSS was created using the same methodology described above. The only difference was that respondents in the Illinois county were separated according to what questionnaire version they received. Weighting classes were created for each questionnaire version within each county. Adjustment factors were applied to the design weight (_WT2) that forced the sum of the weights for each half of the sample to sum to population totals. Cook County, IL was the only county with adequate split-sample sizes to provide county-level split-sample weight.

Example SUDAAN Code:

For example, suppose we want an estimate for a split-sample question for Cook County, IL (_STATE=17, _CNTY=31). Assume the question comes from questionnaire version 1 (_QSTVER). Here's SAS/SUDAAN code that could be used to do this:

```
data xxxx;
set yyyy;

if (_STATE=17 & _CNTY=31 & _QSTVER=1) then DUMMY = 1;
run;

proc sort data=xxxx;
by _STSTR SEQNO;
run;

proc descript data=xxxx filetype=sas design=wr;
nest _STSTR SEQNO / missunit;
weight _CNTWTSS;
subpopn DUMMY=1 / name="Cook County, IL – questionnaire version 1";
var (your analysis variable);
catlevel (the level of your analysis variable for which you want an estimate);
run;
```