

# 2009 SMART BRFSS County Methodology

## 2009 Selected Metropolitan/Micropolitan Area Risk Trends From the BRFSS Creation of Metropolitan-Level Weights

The Behavioral Risk Factor Surveillance System (BRFSS) Selected Metropolitan/Micropolitan Area Risk Trends (SMART) is a documented and verified subset of the 2009 BRFSS, which has been produced to provide some local area estimates. These local areas are identified counties within metropolitan or micropolitan statistical areas (MMSA) as defined by the Office of Management and Budget (OMB). The data set was produced by adding new analysis weights designed to correspond to the 2009 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 OMB issued new definitions for metropolitan statistical areas, micropolitan statistical areas, and metropolitan divisions. OMB periodically updates the list of MMSAs. The list of areas used for this analysis can be found at [http://www.whitehouse.gov/omb/bulletins/fy05/b05-02\\_appendix.pdf](http://www.whitehouse.gov/omb/bulletins/fy05/b05-02_appendix.pdf). For more information about MMSAs, please visit <http://www.census.gov/population/www/estimates/metroarea.html>. 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 180 MMSAs that met the analysis criteria for the 2009 data year. From within the 180 MMSAs, county-level estimates have been produced from the BRFSS data for 283 counties that have met the weighting criteria (Appendix C) for the 2009 data year.

## Appendix A: List of Variables added to the 2009 Data

### Data Documentation for the 13 Variables Added to the 2009 BRFSS Data

<b>ADJCNTY</b>	County-level post-stratification weight. This factor is multiplied by the design weight (_WT2) to get the final County-level weight (_CNTYWT).
<b>AGE_CNTY</b>	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+
<b>AGE_C_F</b>	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+ 10 – 18–44 11 – 45+ 12 – 18–54 14 – 45–65
<b>RACE_CNT</b>	Race categories used to set up the initial weighting classes for the county-level weights. 0 – Race not used 1 – Non-Hispanic white 2 – Hispanic or non-white
<b>RACE_C_F</b>	Race categories used in the final weighting classes for the county-level weights. 0 – Race not used 1 – Non-Hispanic white 2 – Hispanic or non-white
<b>SEX_CNTY</b>	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
<b>_CNTY</b>	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.
<b>_CNTYNAM</b>	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.

**Appendix B: List of the 283 Counties That Have COUNTY-Level Weights in 2009 BRFSS Data**

State Name	FIPS State	FIPS County	County Name
Alabama	1	73	Jefferson County
Alabama	1	97	Mobile County
Alaska	2	20	Anchorage Municipality
Arizona	4	13	Maricopa County
Arizona	4	19	Pima County
Arizona	4	21	Pinal County
Arkansas	5	7	Benton County
Arkansas	5	119	Pulaski County
Arkansas	5	143	Washington County
California	6	1	Alameda County
California	6	13	Contra Costa County
California	6	37	Los Angeles County
California	6	59	Orange County
California	6	65	Riverside County
California	6	67	Sacramento County
California	6	71	San Bernardino County
California	6	73	San Diego County
California	6	75	San Francisco County
California	6	81	San Mateo County
California	6	85	Santa Clara County
Colorado	8	1	Adams County
Colorado	8	5	Arapahoe County
Colorado	8	31	Denver County
Colorado	8	35	Douglas County
Colorado	8	41	El Paso County
Colorado	8	59	Jefferson County
Colorado	8	69	Larimer County
Colorado	8	123	Weld County
Connecticut	9	1	Fairfield County
Connecticut	9	3	Hartford County
Connecticut	9	7	Middlesex County

State Name	FIPS State	FIPS County	County Name
Connecticut	9	9	New Haven County
Connecticut	9	13	Tolland 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	11	Broward County
Florida	12	31	Duval County
Florida	12	57	Hillsborough County
Florida	12	86	Miami-Dade County
Florida	12	95	Orange County
Florida	12	97	Osceola County
Florida	12	99	Palm Beach County
Florida	12	103	Pinellas County
Georgia	13	63	Clayton 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	19	Bonneville County
Idaho	16	27	Canyon County
Idaho	16	69	Nez Perce County
Illinois	17	31	Cook County
Illinois	17	43	DuPage County
Illinois	17	97	Lake County
Illinois	17	197	Will County
Indiana	18	3	Allen County
Indiana	18	89	Lake County
Indiana	18	97	Marion County
Indiana	18	163	Vanderburgh County

State Name	FIPS State	FIPS County	County Name
Iowa	19	113	Linn County
Iowa	19	153	Polk County
Iowa	19	163	Scott County
Kansas	20	15	Butler County
Kansas	20	45	Douglas County
Kansas	20	91	Johnson County
Kansas	20	103	Leavenworth County
Kansas	20	161	Riley County
Kansas	20	173	Sedgwick County
Kansas	20	177	Shawnee County
Kansas	20	209	Wyandotte County
Kentucky	21	111	Jefferson County
Louisiana	22	17	Caddo Parish
Louisiana	22	19	Calcasieu Parish
Louisiana	22	33	East Baton Rouge Parish
Louisiana	22	51	Jefferson Parish
Louisiana	22	71	Orleans Parish
Louisiana	22	79	Rapides Parish
Louisiana	22	103	St. Tammany Parish
Louisiana	22	109	Terrebonne Parish
Maine	23	5	Cumberland County
Maine	23	11	Kennebec County
Maine	23	19	Penobscot County
Maine	23	23	Sagadahoc County
Maine	23	31	York County
Maryland	24	3	Anne Arundel County
Maryland	24	5	Baltimore County
Maryland	24	15	Cecil County
Maryland	24	17	Charles County
Maryland	24	21	Frederick County
Maryland	24	25	Harford County
Maryland	24	27	Howard County
Maryland	24	31	Montgomery County
Maryland	24	33	Prince George's County

State Name	FIPS State	FIPS County	County Name
Maryland	24	35	Queen Anne's County
Maryland	24	43	Washington County
Maryland	24	510	Baltimore city
Massachusetts	25	5	Bristol County
Massachusetts	25	9	Essex County
Massachusetts	25	13	Hampden County
Massachusetts	25	15	Hampshire 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	81	Kent 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	33	DeSoto County
Mississippi	28	39	George County
Mississippi	28	45	Hancock County
Mississippi	28	47	Harrison County
Mississippi	28	49	Hinds County
Mississippi	28	59	Jackson County
Mississippi	28	121	Rankin County
Mississippi	28	131	Stone County
Missouri	29	95	Jackson County
Missouri	29	189	St. Louis County
Missouri	29	510	St. Louis city
Montana	30	29	Flathead County
Montana	30	31	Gallatin County
Montana	30	93	Silver Bow County

State Name	FIPS State	FIPS County	County Name
Montana	30	111	Yellowstone County
Nebraska	31	1	Adams County
Nebraska	31	43	Dakota County
Nebraska	31	55	Douglas County
Nebraska	31	79	Hall County
Nebraska	31	109	Lancaster County
Nebraska	31	111	Lincoln County
Nebraska	31	119	Madison County
Nebraska	31	153	Sarpy County
Nebraska	31	157	Scotts Bluff County
Nebraska	31	159	Seward 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	1	Atlantic County
New Jersey	34	3	Bergen County
New Jersey	34	5	Burlington County
New Jersey	34	7	Camden County
New Jersey	34	9	Cape May County
New Jersey	34	13	Essex County
New Jersey	34	15	Gloucester County
New Jersey	34	17	Hudson County
New Jersey	34	19	Hunterdon County
New Jersey	34	21	Mercer County
New Jersey	34	23	Middlesex County
New Jersey	34	25	Monmouth County
New Jersey	34	27	Morris County
New Jersey	34	29	Ocean County
New Jersey	34	31	Passaic County
New Jersey	34	35	Somerset County



State Name	FIPS State	FIPS County	County Name
New Jersey	34	37	Sussex County
New Jersey	34	39	Union County
New Jersey	34	41	Warren County
New Mexico	35	1	Bernalillo County
New Mexico	35	13	Dona Ana County
New Mexico	35	31	McKinley County
New Mexico	35	43	Sandoval County
New Mexico	35	45	San Juan County
New Mexico	35	49	Santa Fe County
New Mexico	35	61	Valencia County
New York	36	29	Erie County
New York	36	47	Kings County
New York	36	55	Monroe County
New York	36	59	Nassau County
New York	36	61	New York County
New York	36	81	Queens County
New York	36	103	Suffolk County
New York	36	119	Westchester County
North Carolina	37	21	Buncombe County
North Carolina	37	25	Cabarrus County
North Carolina	37	35	Catawba County
North Carolina	37	51	Cumberland County
North Carolina	37	63	Durham County
North Carolina	37	71	Gaston County
North Carolina	37	81	Guilford County
North Carolina	37	89	Henderson County
North Carolina	37	101	Johnston County
North Carolina	37	119	Mecklenburg County
North Carolina	37	129	New Hanover County
North Carolina	37	135	Orange County
North Carolina	37	151	Randolph County
North Carolina	37	179	Union County
North Carolina	37	183	Wake County
North Dakota	38	15	Burleigh County

State Name	FIPS State	FIPS County	County Name
North Dakota	38	17	Cass County
North Dakota	38	101	Ward County
Ohio	39	35	Cuyahoga County
Ohio	39	49	Franklin County
Ohio	39	61	Hamilton County
Ohio	39	95	Lucas County
Ohio	39	99	Mahoning County
Ohio	39	113	Montgomery County
Ohio	39	151	Stark County
Ohio	39	153	Summit County
Oklahoma	40	17	Canadian 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	17	Bucks County
Pennsylvania	42	45	Delaware County
Pennsylvania	42	51	Fayette County
Pennsylvania	42	79	Luzerne 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	5	Newport County
Rhode Island	44	7	Providence County
Rhode Island	44	9	Washington County
South Carolina	45	3	Aiken County
South Carolina	45	13	Beaufort County
South Carolina	45	15	Berkeley County
South Carolina	45	19	Charleston County
South Carolina	45	45	Greenville County

State Name	FIPS State	FIPS County	County Name
South Carolina	45	51	Horry 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	65	Hamilton County
Tennessee	47	157	Shelby County
Tennessee	47	163	Sullivan County
Texas	48	29	Bexar County
Texas	48	113	Dallas County
Texas	48	141	El Paso County
Texas	48	157	Fort Bend County
Texas	48	201	Harris County
Texas	48	215	Hidalgo County
Texas	48	303	Lubbock County
Texas	48	439	Tarrant County
Texas	48	453	Travis County
Texas	48	491	Williamson County
Utah	49	11	Davis County
Utah	49	35	Salt Lake County
Utah	49	43	Summit County
Utah	49	45	Tooele County
Utah	49	49	Utah County
Utah	49	51	Wasatch County
Utah	49	57	Weber County
Vermont	50	7	Chittenden County
Vermont	50	11	Franklin County
Vermont	50	17	Orange County
Vermont	50	21	Rutland County
Vermont	50	23	Washington County
Vermont	50	27	Windsor County
Washington	53	5	Benton County
Washington	53	7	Chelan County
Washington	53	11	Clark County

State Name	FIPS State	FIPS County	County Name
Washington	53	17	Douglas County
Washington	53	33	King County
Washington	53	35	Kitsap County
Washington	53	53	Pierce County
Washington	53	59	Skamania County
Washington	53	61	Snohomish County
Washington	53	63	Spokane County
Washington	53	67	Thurston County
Washington	53	77	Yakima County
West Virginia	54	39	Kanawha County
Wisconsin	55	79	Milwaukee County
Wyoming	56	13	Fremont County
Wyoming	56	21	Laramie County
Wyoming	56	25	Natrona 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 2009 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 non-Hispanic white, and Hispanic or non-white.

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 county in states that do not use race, only the age and sex groups were used to set up weighting classes. For the county in states that do use race, all three groups were used to set up weighting classes. Thus, the 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 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. If either of the age/sex or age/sex/race categories have fewer than 19 members, then the age categories were collapsed until there were 19 members in some combination of the age categories listed in the variable `AGE_C_F`.
4. Do not collapse weighting classes across sex.
5. 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. These counties will be excluded from the 2009 SMART BRFSS.

There were 180 MMSAs that had at least 500 respondents in the 2009 BRFSS and at least 19 sample members in all final weighting classes. There are 283 counties within the 180 MMSAs 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 283 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;
```