# 2004 SMART BRFSS County Methodology

## 2004 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 2004 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. The data set was produced by adding new analysis weights designed to correspond to the 2004 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. 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. 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 134 MMSAs that met the analysis criteria for the 2004 data year. From within the 134 MMSAs, county-level estimates have been produced from the BRFSS data for 199 counties that have met the weighting criteria (Appendix C) for the 2004 data year.

## Appendix A: List of Variables added to the 2004 Data

**Data Documentation for the 13 Variables Added to the 2004 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).

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+
10 – 18–44
11 – 45+
12 – 18–54
14 – 45–65
19 – 35+

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

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.

## Appendix B: List of the 199 counties that have COUNTY-level Weights in 2004 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 |
| Alaska | 2 | 90 | Fairbanks North Star Borough |
| Arizona | 4 | 13 | Maricopa County |
| Arizona | 4 | 19 | Pima County |
| Arizona | 4 | 21 | Pinal County |
| Arizona | 4 | 27 | Yuma 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 | 41 | El Paso County |
| Colorado | 8 | 59 | Jefferson County |
| Colorado | 8 | 119 | Teller 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 |
| 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 | 57 | Hillsborough County |
| Florida | 12 | 86 | Miami-Dade County |
| Florida | 12 | 95 | Orange County |
| Florida | 12 | 99 | Palm Beach County |
| Idaho | 16 | 1 | Ada County |
| Idaho | 16 | 27 | Canyon County |
| Idaho | 16 | 69 | Nez Perce County |
| Illinois | 17 | 31 | Cook County |
| Illinois | 17 | 43 | DuPage County |
| Indiana | 18 | 89 | Lake 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 |
| 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 |

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| Louisiana | 22 | 71 | Orleans Parish |
| Louisiana | 22 | 73 | Ouachita Parish |
| Louisiana | 22 | 79 | Rapides Parish |
| Louisiana | 22 | 103 | St. Tammany Parish |
| Louisiana | 22 | 109 | Terrebonne 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 | 33 | Prince George's 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 |
| Missouri | 29 | 510 | St. Louis city |
| Montana | 30 | 111 | Yellowstone County |
| Nebraska | 31 | 55 | Douglas County |
| Nebraska | 31 | 109 | Lancaster County |
| Nebraska | 31 | 153 | Sarpy County |
| Nebraska | 31 | 157 | Scotts Bluff 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 | 5 | Burlington County |
| New Jersey | 34 | 7 | Camden County |
| New Jersey | 34 | 13 | Essex County |
| New Jersey | 34 | 15 | Gloucester County |
| New Jersey | 34 | 17 | Hudson County |
| New Jersey | 34 | 21 | Mercer County |
| New Jersey | 34 | 23 | Middlesex County |
| New Jersey | 34 | 25 | Monmouth County |

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|---|---|---|---|
| New Jersey | 34 | 27 | Morris County |
| New Jersey | 34 | 29 | Ocean County |
| New Jersey | 34 | 31 | Passaic County |
| New Jersey | 34 | 35 | Somerset County |
| New Jersey | 34 | 39 | Union County |
| New Mexico | 35 | 1 | Bernalillo County |
| New Mexico | 35 | 13 | Dona Ana 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 | 5 | Bronx County |
| New York | 36 | 47 | Kings 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 | 67 | Forsyth County |
| North Carolina | 37 | 71 | Gaston County |
| North Carolina | 37 | 81 | Guilford 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 | 17 | Cass County |
| Ohio | 39 | 35 | Cuyahoga County |
| Ohio | 39 | 49 | Franklin County |
| Ohio | 39 | 61 | Hamilton County |
| Ohio | 39 | 93 | Lorain 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 | 91 | Montgomery County |
| Pennsylvania | 42 | 101 | Philadelphia County |
| Rhode Island | 44 | 3 | Kent County |
| Rhode Island | 44 | 5 | Newport County |

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| Rhode Island | 44 | 7 | Providence County |
| Rhode Island | 44 | 9 | Washington County |
| South Carolina | 45 | 3 | Aiken County |
| South Carolina | 45 | 19 | Charleston County |
| South Carolina | 45 | 45 | Greenville County |
| South Carolina | 45 | 63 | Lexington County |
| South Carolina | 45 | 79 | Richland County |
| South Carolina | 45 | 91 | York County |
| South Dakota | 46 | 99 | Minnehaha County |
| South Dakota | 46 | 103 | Pennington County |
| Tennessee | 47 | 93 | Knox County |
| Tennessee | 47 | 125 | Montgomery County |
| Tennessee | 47 | 157 | Shelby County |
| Tennessee | 47 | 161 | Stewart County |
| Texas | 48 | 29 | Bexar County |
| Texas | 48 | 113 | Dallas County |
| Texas | 48 | 141 | El Paso County |
| Texas | 48 | 201 | Harris County |
| Texas | 48 | 439 | Tarrant County |
| Texas | 48 | 453 | Travis 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 | 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 |
| Washington | 53 | 33 | King County |
| Washington | 53 | 35 | Kitsap County |
| Washington | 53 | 53 | Pierce 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 | 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 2004 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 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 2004 SMART BRFSS.

There were 134 MMSA that had at least 500 respondents in the 2004 BRFSS and at least 19 sample members in all final weighting classes. There are 199 counties within the 134 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 199 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;
```