2017 SMART BRFSS MMSA Methodology

Overview

The Behavioral Risk Factor Surveillance System (BRFSS) Selected Metropolitan/Micropolitan Area Risk Trends (SMART) is a documented and verified subset of the 2017 BRFSS that has been produced to provide some local area estimates. These local areas are identified as metropolitan or micropolitan statistical areas (MMSAs), as defined by the Office of Management and Budget (OMB). The data set was produced by adding new raking weights designed to correspond to the 2017 population estimates for each eligible MMSA.

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 US Census Bureau. On June 6, 2003, OMB issued new definitions for MMSA and metropolitan divisions. OMB periodically updates the list of MMSAs. The list of areas used for this analysis can be found here: https://www.census.gov/geographies/reference-files/time-series/demo/metro-micro/delineation-files.html.

County and MMSA Identifiers

A county name was collected from the respondent during the demographics section of the interview. The name of the county was used to determine the corresponding American National Standards Institute (ANSI) county code; this code was retained as a variable in the data set. The data record from an interview with a respondent was assigned to an MMSA on the basis of the county code.

Landline telephone data records resulting in an entry with a missing county variable value had an imputed county value assigned. The imputed county value represents the county most likely associated with the telephone number and was determined from the purchased telephone sample.

Cellular telephone data records resulting in entries with a missing county variable had an imputed county value assigned from one of three sources:

1. An open-end text response provided by the respondent, or
2. Information derived from the zip code provided by the respondent, or
3. The record was assigned to the largest county population by age and race/ethnicity.

MMSAs were selected in the SMART BRFSS MMSA data if there were 500 or more respondents in the 2017 BRFSS combined landline telephone and cellular telephone data.

Weighting Methodology

The BRFSS raking method used to generate the 2017 final weight is described in the documentation available with the annual aggregate data release. For the details of the description of the raking methodology, refer to the BRFSS 2017 Survey Data and Documentation web page. The MMSA weight was generated from additional raking, beginning with the BRFSS raked data set. The combined landline telephone and cellular telephone weight variable was raked to five margins that include age group, gender, race and ethnicity group, gender by age group, and gender by race and ethnicity group at the MMSA level.

The variable _**MMSA** is the code of metropolitan or micropolitan statistical area where the respondent lives. The variable _**MMSANAM** is the MMSA name. The variable _**MMSAWT** is the MMSA-level weight that is used when generating MMSA-level estimates for variables in the data set.

Appendix A lists the MMSAs that are in 2017 SMART BRFSS MMSA data; 136 MMSAs met the criteria.

Appendix B includes examples of SAS code and SUDAAN code used for analysis of the MMSA data set.

Appendix A:
List of the 136 MMSAs Having MMSA-level Weights in 2017 BRFSS Data

Metropolitan/Micropolitan Statistical Area or Metropolitan Division Codes and Names

MMSA Number	MMSA Name
10100	Aberdeen, SD, Micropolitan Statistical Area
10580	Albany-Schenectady-Troy, NY, Metropolitan Statistical Area
10740	Albuquerque, NM, Metropolitan Statistical Area
10900	Allentown-Bethlehem-Easton, PA-NJ, Metropolitan Statistical Area
11260	Anchorage, AK, Metropolitan Statistical Area
12060	Atlanta-Sandy Springs-Roswell, GA, Metropolitan Statistical Area
12260	Augusta-Richmond County, GA-SC, Metropolitan Statistical Area
12420	Austin-Round Rock, TX, Metropolitan Statistical Area
12580	Baltimore-Columbia-Towson, MD, Metropolitan Statistical Area
12940	Baton Rouge, LA, Metropolitan Statistical Area
13740	Billings, MT, Metropolitan Statistical Area
13820	Birmingham-Hoover, AL, Metropolitan Statistical Area
13900	Bismarck, ND, Metropolitan Statistical Area
14260	Boise City, ID, Metropolitan Statistical Area
14454	Boston, MA, Metropolitan Division
15380	Buffalo-Cheektowaga-Niagara Falls, NY, Metropolitan Statistical Area
15540	Burlington-South Burlington, VT, Metropolitan Statistical Area
15764	Cambridge-Newton-Framingham, MA, Metropolitan Division
15804	Camden, NJ, Metropolitan Division
16300	Cedar Rapids, IA, Metropolitan Statistical Area
16620	Charleston, WV, Metropolitan Statistical Area
16700	Charleston-North Charleston, SC, Metropolitan Statistical Area
16740	Charlotte-Concord-Gastonia, NC-SC, Metropolitan Statistical Area
16980	Chicago-Naperville-Elgin, IL-IN-WI, Metropolitan Statistical Area
17140	Cincinnati, OH-KY-IN, Metropolitan Statistical Area
17200	Claremont-Lebanon, NH-VT, Micropolitan Statistical Area
17460	Cleveland-Elyria, OH, Metropolitan Statistical Area
17780	College Station-Bryan, TX, Metropolitan Statistical Area
17820	Colorado Springs, CO, Metropolitan Statistical Area
17900	Columbia, SC, Metropolitan Statistical Area
18140	Columbus, OH, Metropolitan Statistical Area
18580	Corpus Christi, TX, Metropolitan Statistical Area
18880	Crestview-Fort Walton Beach-Destin, FL, Metropolitan Statistical Area
19124	Dallas-Plano-Irving, TX, Metropolitan Division

19380 Dayton, OH, Metropolitan Statistical Area
19660 Deltona-Daytona Beach-Ormond Beach, FL, Metropolitan Statistical Area
19740 Denver-Aurora-Lakewood, CO, Metropolitan Statistical Area
19780 Des Moines-West Des Moines, IA, Metropolitan Statistical Area
20260 Duluth, MN-WI, Metropolitan Statistical Area
21340 El Paso, TX, Metropolitan Statistical Area
21780 Evansville, IN-KY, Metropolitan Statistical Area
22020 Fargo, ND-MN, Metropolitan Statistical Area
22220 Fayetteville-Springdale-Rogers, AR-MO, Metropolitan Statistical Area
22500 Florence, SC, Metropolitan Statistical Area
23060 Fort Wayne, IN, Metropolitan Statistical Area
23104 Fort Worth-Arlington, TX, Metropolitan Division
23540 Gainesville, FL, Metropolitan Statistical Area
24220 Grand Forks, ND-MN, Metropolitan Statistical Area
24260 Grand Island, NE, Metropolitan Statistical Area
24340 Grand Rapids-Wyoming, MI, Metropolitan Statistical Area
24860 Greenville-Anderson-Mauldin, SC, Metropolitan Statistical Area
25180 Hagerstown-Martinsburg, MD-WV, Metropolitan Statistical Area
25540 Hartford-West Hartford-East Hartford, CT, Metropolitan Statistical Area
25940 Hilton Head Island-Bluffton-Beaufort, SC, Metropolitan Statistical Area
26420 Houston-The Woodlands-Sugar Land, TX, Metropolitan Statistical Area
26580 Huntington-Ashland, WV-KY-OH, Metropolitan Statistical Area
26900 Indianapolis-Carmel-Anderson, IN, Metropolitan Statistical Area
27140 Jackson, MS, Metropolitan Statistical Area
27260 Jacksonville, FL, Metropolitan Statistical Area
27980 Kahului-Wailuku-Lahaina, HI, Metropolitan Statistical Area
28140 Kansas City, MO-KS, Metropolitan Statistical Area
28700 Kingsport-Bristol-Bristol, TN-VA, Metropolitan Statistical Area
28940 Knoxville, TN, Metropolitan Statistical Area
29620 Lansing-East Lansing, MI, Metropolitan Statistical Area
30460 Lexington-Fayette, KY, Metropolitan Statistical Area
30700 Lincoln, NE, Metropolitan Statistical Area
30780 Little Rock-North Little Rock-Conway, AR, Metropolitan Statistical Area
31080 Los Angeles-Long Beach-Anaheim, CA, Metropolitan Statistical Area
31140 Louisville/Jefferson County, KY-IN, Metropolitan Statistical Area
31740 Manhattan, KS, Metropolitan Statistical Area
32820 Memphis, TN-MS-AR, Metropolitan Statistical Area
33100 Miami-Fort Lauderdale-West Palm Beach, FL, Metropolitan Statistical Area
33340 Milwaukee-Waukesha-West Allis, WI, Metropolitan Statistical Area
33460 Minneapolis-St. Paul-Bloomington, MN-WI, Metropolitan Statistical Area
33500 Minot, ND, Micropolitan Statistical Area

33874 Montgomery County-Bucks County-Chester County, PA, Metropolitan Division
34820 Myrtle Beach-Conway-North Myrtle Beach, SC-NC, Metropolitan Statistical Area
34980 Nashville-Davidson--Murfreesboro--Franklin, TN, Metropolitan Statistical Area
35004 Nassau County-Suffolk County, NY, Metropolitan Division
35084 Newark, NJ-PA, Metropolitan Division
35380 New Orleans-Metairie, LA, Metropolitan Statistical Area
35614 New York-Jersey City-White Plains, NY-NJ, Metropolitan Division
35820 North Platte, NE, Micropolitan Statistical Area
35840 North Port-Sarasota-Bradenton, FL, Metropolitan Statistical Area
36084 Oakland-Hayward-Berkeley, CA, Metropolitan Division
36260 Ogden-Clearfield, UT, Metropolitan Statistical Area
36420 Oklahoma City, OK, Metropolitan Statistical Area
36540 Omaha-Council Bluffs, NE-IA, Metropolitan Statistical Area
36740 Orlando-Kissimmee-Sanford, FL, Metropolitan Statistical Area
37460 Panama City, FL, Metropolitan Statistical Area
37860 Pensacola-Ferry Pass-Brent, FL, Metropolitan Statistical Area
37964 Philadelphia, PA, Metropolitan Division
38060 Phoenix-Mesa-Scottsdale, AZ, Metropolitan Statistical Area
38300 Pittsburgh, PA, Metropolitan Statistical Area
38860 Portland-South Portland, ME, Metropolitan Statistical Area
38900 Portland-Vancouver-Hillsboro, OR-WA, Metropolitan Statistical Area
38940 Port St. Lucie, FL, Metropolitan Statistical Area
39300 Providence-Warwick, RI-MA, Metropolitan Statistical Area
39340 Provo-Orem, UT, Metropolitan Statistical Area
39660 Rapid City, SD, Metropolitan Statistical Area
39900 Reno, NV, Metropolitan Statistical Area
40060 Richmond, VA, Metropolitan Statistical Area
40140 Riverside-San Bernardino-Ontario, CA, Metropolitan Statistical Area
40340 Rochester, MN, Metropolitan Statistical Area
40380 Rochester, NY, Metropolitan Statistical Area
40484 Rockingham County-Strafford County, NH, Metropolitan Division
40900 Sacramento--Roseville--Arden-Arcade, CA, Metropolitan Statistical Area
41060 St. Cloud, MN, Metropolitan Statistical Area
41180 St. Louis, MO-IL, Metropolitan Statistical Area
41460 Salina, KS, Micropolitan Statistical Area
41540 Salisbury, MD-DE, Metropolitan Statistical Area
41620 Salt Lake City, UT, Metropolitan Statistical Area
41700 San Antonio-New Braunfels, TX, Metropolitan Statistical Area
41980 San Juan-Carolina-Caguas, PR, Metropolitan Statistical Area
42420 Scottsbluff, NE, Micropolitan Statistical Area
42644 Seattle-Bellevue-Everett, WA, Metropolitan Division

43524	Silver Spring-Frederick-Rockville, MD, Metropolitan Division
43580	Sioux City, IA-NE-SD, Metropolitan Statistical Area
43620	Sioux Falls, SD, Metropolitan Statistical Area
43780	South Bend-Mishawaka, IN-MI, Metropolitan Statistical Area
43900	Spartanburg, SC, Metropolitan Statistical Area
44060	Spokane-Spokane Valley, WA, Metropolitan Statistical Area
44140	Springfield, MA, Metropolitan Statistical Area
45220	Tallahassee, FL, Metropolitan Statistical Area
45300	Tampa-St. Petersburg-Clearwater, FL, Metropolitan Statistical Area
45780	Toledo, OH, Metropolitan Statistical Area
45820	Topeka, KS, Metropolitan Statistical Area
46140	Tulsa, OK, Metropolitan Statistical Area
46220	Tuscaloosa, AL, Metropolitan Statistical Area
47260	Virginia Beach-Norfolk-Newport News, VA-NC, Metropolitan Statistical Area
47664	Warren-Troy-Farmington Hills, MI, Metropolitan Division
47894	Washington-Arlington-Alexandria, DC-VA-MD-WV, Metropolitan Division
48620	Wichita, KS, Metropolitan Statistical Area
48660	Wichita Falls, TX, Metropolitan Statistical Area
48864	Wilmington, DE-MD-NJ, Metropolitan Division
49340	Worcester, MA-CT, Metropolitan Statistical Area

Appendix B: Sample Codes for Analysis

SUDAAN Code Example:
Generating an estimate for the Atlanta-Sandy Springs-Roswell, GA, Metropolitan Statistical Area (MMSA code = 12060).

```
proc sort data=xxxx;
by _STSTR _SEQNO;
run;

proc descript data=xxxx filetype=sas design=wr;
nest _STSTR _SEQNO / missunit;
weight _MMSAWT;
subpopn _MMSA=12060 / name=" Atlanta-Sandy Springs-Roswell, GA";
var (your analysis variable);
catlevel (the level of your analysis variable for which you want an estimate);
run;
```

SAS Code Example:

```
proc surveymeans data=xxxx nobs mean stderr sum sumwgt;
strata _ststr;
weight _mmsawt;
var (your analysis variable);
class (your analysis variable);
```

```
domain _mmsa;
run;
```