Behavioral Risk Factor Surveillance System (BRFSS)

2019 SMART BRFSS MMSA Methodology

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Overview
The Behavioral Risk Factor Surveillance System (BRFSS) Selected Metropolitan/Micropolitan Area Risk Trends (SMART) is a documented and verified subset of the 2019 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 2019 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. The September 2018 release was used for defining the MMSAs in the 2019 SMART data set.

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 randomly to one of the top three or four largest population counties by age and race/ethnicity.

MMSAs were selected in the SMART BRFSS MMSA data if there were 500 or more respondents in the 2019 BRFSS combined landline telephone and cellular telephone data.

Weighting Methodology
The BRFSS raking method used to generate the 2019 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 2019 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 2019 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 2019 BRFSS Data

Metropolitan/Micropolitan Statistical Area or Metropolitan Division Codes and Names

MMSA Number	MMSA Name
10100	Aberdeen, SD, Micropolitan Statistical Area
10380	Aguadilla-Isabela, PR, Metropolitan Statistical Area
10420	Akron, OH, Metropolitan Statistical Area
10580	Albany-Schenectady-Troy, NY, Metropolitan Statistical Area
10740	Albuquerque, NM, Metropolitan Statistical Area
11260	Anchorage, AK, Metropolitan Statistical Area
12060	Atlanta-Sandy Springs-Alpharetta, GA, Metropolitan Statistical Area
12260	Augusta-Richmond County, GA-SC, Metropolitan Statistical Area
12420	Austin-Round Rock-Georgetown, TX, Metropolitan Statistical Area
12580	Baltimore-Columbia-Towson, MD, Metropolitan Statistical Area
12940	Baton Rouge, LA, Metropolitan Statistical Area
13140	Beaumont-Port Arthur, TX, 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, NY, Metropolitan Statistical Area
15540	Burlington-South Burlington, VT, Metropolitan Statistical Area
15764	Cambridge-Newton-Framingham, MA, 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
16860	Chattanooga, TN-GA, Metropolitan Statistical Area
16980	Chicago-Naperville-Elgin, IL-IN-WI, Metropolitan Statistical Area
17140	Cincinnati, OH-KY-IN, Metropolitan Statistical Area
17460	Cleveland-Elyria, OH, 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
19124	Dallas-Plano-Irving, TX, Metropolitan Division
19430	Dayton-Kettering, 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
22020	Fargo, ND-MN, Metropolitan Statistical Area
22220	Fayetteville-Springdale-Rogers, AR, Metropolitan Statistical Area
23060	Fort Wayne, IN, Metropolitan Statistical Area
23104	Fort Worth-Arlington-Grapevine, TX, Metropolitan Division
23224	Frederick-Gaithersburg-Rockville, MD, Metropolitan Division
23540	Gainesville, FL, Metropolitan Statistical Area
24260	Grand Island, NE, Metropolitan Statistical Area
24340	Grand Rapids-Kentwood, MI, Metropolitan Statistical Area
24860	Greenville-Anderson, SC, Metropolitan Statistical Area
25180	Hagerstown-Martinsburg, MD-WV, Metropolitan Statistical Area
25540	Hartford-East Hartford-Middletown, CT, Metropolitan Statistical Area
25720	Heber, UT, Micropolitan Statistical Area
26420	Houston-The Woodlands-Sugar Land, TX, Metropolitan Statistical Area
26580	Huntington-Ashland, WV-KY-OH, Metropolitan Statistical Area
26820	Idaho Falls, ID, Metropolitan Statistical Area
26900	Indianapolis-Carmel-Anderson, IN, Metropolitan Statistical Area
27140	Jackson, MS, Metropolitan Statistical Area
27260	Jacksonville, FL, Metropolitan Statistical Area
28140	Kansas City, MO-KS, Metropolitan Statistical Area
28700	Kingsport-Bristol, TN-VA, Metropolitan Statistical Area
28940	Knoxville, TN, Metropolitan Statistical Area
29180	Lafayette, LA, Metropolitan Statistical Area
29620	Lansing-East Lansing, MI, Metropolitan Statistical Area
30100	Lebanon, NH-VT, Micropolitan Statistical Area
30700	Lincoln, NE, Metropolitan Statistical Area
30780	Little Rock-North Little Rock-Conway, AR, Metropolitan Statistical Area
30860	Logan, UT-ID, Metropolitan Statistical Area
31080	Los Angeles-Long Beach-Anaheim, CA, Metropolitan Statistical Area
31140	Louisville/Jefferson County, KY-IN, Metropolitan Statistical Area
31540	Madison, WI, Metropolitan Statistical Area
31740	Manhattan, KS, Metropolitan Statistical Area
32820	Memphis, TN-MS-AR, Metropolitan Statistical Area
33100	Miami-Fort Lauderdale-Pompano Beach, FL, Metropolitan Statistical Area
33340	Milwaukee-Waukesha, WI, Metropolitan Statistical Area
33460	Minneapolis-St. Paul-Bloomington, MN-WI, Metropolitan Statistical Area
33500	Minot, ND, Micropolitan Statistical Area
33660	Mobile, AL, Metropolitan 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
35380	New Orleans-Metairie, LA, Metropolitan Statistical Area
35614	New York-Jersey City-White Plains, NY-NJ, Metropolitan Division
35740	Norfolk, NE, Micropolitan Statistical Area
35820	North Platte, NE, Micropolitan Statistical Area
35840	North Port-Sarasota-Bradenton, FL, Metropolitan Statistical Area
36084	Oakland-Berkeley-Livermore, 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
37860	Pensacola-Ferry Pass-Brent, FL, Metropolitan Statistical Area
37964	Philadelphia, PA, Metropolitan Division
38060	Phoenix-Mesa-Chandler, 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
39100	Poughkeepsie-Newburgh-Middletown, NY, Metropolitan Statistical Area
39300	Providence-Warwick, RI-MA, Metropolitan Statistical Area
39340	Provo-Orem, UT, Metropolitan Statistical Area
39580	Raleigh-Cary, NC, 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-Folsom, CA, Metropolitan Statistical Area
41060	St. Cloud, MN, Metropolitan Statistical Area
41180	St. Louis, MO-IL, Metropolitan Statistical Area
41420	Salem, OR, Metropolitan 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
41940	San Jose-Sunnyvale-Santa Clara, CA, Metropolitan Statistical Area
41980	San Juan-Bayamón-Caguas, PR, Metropolitan Statistical Area
42644	Seattle-Bellevue-Kent, WA, Metropolitan Division
43580	Sioux City, IA-NE-SD, Metropolitan Statistical Area

43620	Sioux Falls, SD, Metropolitan Statistical Area
44060	Spokane-Spokane Valley, WA, Metropolitan Statistical Area
44140	Springfield, MA, Metropolitan Statistical Area
45060	Syracuse, NY, 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
47940	Waterloo-Cedar Falls, IA, Metropolitan Statistical Area
47980	Watertown, SD, Micropolitan Statistical Area
48620	Wichita, KS, Metropolitan Statistical Area
48864	Wilmington, DE-MD-NJ, Metropolitan Division
49340	Worcester, MA-CT, Metropolitan Statistical Area
49660	Youngstown-Warren-Boardman, OH-PA, Metropolitan Statistical Area

Appendix B: Sample Codes for Analysis

SUDAAN Code Example:
Generating an estimate for the Atlanta-Sandy Springs-Alpharetta, 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-Alpharetta, 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;
```