SGMAP Procedure Tip Sheet

This tip sheet is a quick reference guide for frequently used information on the SGMAP procedure introduced in SAS 9.4M5.

SGMAP is the latest addition to the 5G procedures in Base and is available in the SAS University Edition.

The SGMAP procedure allows you to easily plot data onto a map. The base map can be polygons from a SAS map data set or a background map from Esri™ or OpenStreetMap (OSM).

You can also overlay SAS map polygons onto an OSM or Esri background map. The polygons can be outlines or display response values.

Example: Polygons with Response Data

The MAPDATA= option references the MAPS library downloaded from SAS Maps Online.

```
proc sgmap mapdata=maps.world maprespdata=sashelp.demographics;
  chormap popUrban / mapid=id id=id; run;
```

For complete information, refer to the SAS 9.4M5 documentation at support.sas.com/documentation.

SGMAP is also on the Graphically Speaking blog: blogs.sas.com/content/graphicallyspeaking

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**SGMAP Procedure**

**Common Plot Options**

- **DATALABEL=** specifies the variable in the plot data set containing label data for each bubble
- **DATALABELATRGS=** control the appearance of bubble labels by specifying a style element or any of the options COLOR=, FAMILY=, SIZE=, STYLE= and WEIGHT=
- **DATALABELPOS=** specifies the location of labels about the bubbles with TOPLEFT, TOPRIGHT, LEFT, CENTER, RIGHT, BOTTOMLEFT, BOTTOM or BOTTOMRIGHT
- **LEGENDLABEL=** specifies a label for the legend, requires that the NAME option be used

**Example:** Polygons with Response Data

The MAPDATA= option references the MAPS library downloaded from SAS Maps Online.

```
proc sgmap mapdata=maps.world maprespdata=sashelp.demographics;
  chormap popUrban / mapid=id id=id; run;
```

**SGMAP Procedure Notes**

- Map features are drawn in the order of the statements. A CHOROMAP, ESRI MAP or OPENSTREETMAP statement should precede BUBBLE, SCATTER and TEXT statements.
- Map polygons drawn with CHOROMAP can be overlaid on Open Street Map and Esri background maps. Submit the CHOROMAP statement second to draw it on top.
- The CHOROMAP statement always uses the variables named X and Y in the map data set to draw the map polygons.
- All plot and map data locations must be in the same coordinate system.
- Both OPENSTREETMAP and ESRI MAP require unprojected latitude/longitude point locations in the plot data set. The map is sized to contain all the point data.
- If the SAS/GRAPH MAPSGFK library is not installed at your site, you can download the older MAPS library from SAS Maps Online. The MAPDATA= option and CHOROMAP can draw polygon maps with those.
- The MAPIMPORT procedure can import shapesfile for use with MAPDATA= and CHOROMAP to draw polygonal maps.
- The GEOCODE procedure can determine latitude/longitude for mailing addresses and IP addresses which can then be plotted on a map.
- The CHOROMAP statement is pre-production for the SAS 9.4M5 release.

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**Scatter Points on Open Street Map**

```
proc sgmap plotdata=sashelp.springs;
  title b=2 'Scatter Points on Open Street Map';
  openstreetmap;
  scatter x=longitude y=latitude / markerattrs=(color=red size=3)
    symbol=circlefilled);
  run;
```
Opal Maps

PROC SGMAP Syntax

<MAPDATA= map-data-set>
<ATTLEMBLATE= plot-data-set>
<MAPRESPDATA= response-data-set>
<DESCRIPTION= text-string>
[<OPAQUE | NOOPAQUE>

DESCRIPTION= description for the map

PLOTDATA= data set containing points to plot

MAPRESPDATA= data set containing response values associated with CHOROMAP polygon areas

DESCRIPTION= description for the map

OPAQUE | NOOPAQUE
sets background to opaque or transparent

Plots

SCATTER Syntax

X= variable
Y= variable
<NAME= text-string>

MARKERATTRS= style-element / options>
<DATALABEL= variable>
<DATALABELATTRS= style-element / options>
<LEGENDLABEL= text-string>
<GROUP= variable>
<NOMISSINGGROUP>*

X= horizontal position variable in plot data set
Y= vertical position variable in plot data set

SIZE= a numeric variable in the plot data set that controls the diameter of plotted bubbles

NAME= a reference name for the legend

FILL | NOFILL
indicates if bubbles are filled or empty

OUTLINE | NOOUTLINE
indicates whether bubble outlines are drawn

FILLATTRS= controls the look of bubbles with a style element or COLOR= and TRANSPARENCY=

TRANSPARENCY= the amount of transparency for bubbles from 0 (fully opaque) to 1 (fully transparent)

BRADUSMIN= / BRADUSMAX= specify an ODS measurement for the min and max bubble size

GROUP= a variable use to designate a group

NOMISSINGGROUP*

See "Common Plot Options" for DATALABEL, DATALABELATTRS, DATALABELPOS, LEGENDLABEL description.

* - new in 9.4M6

BUBBLE Syntax

X= variable
Y= variable

SIZE= numeric-variable /
<NAME= text-string>

FILL | NOFILL

OUTLINE | NOOUTLINE

FILLATTRS= style-element / options>
<bradusmin=measurement>
<bradusmax=measurement>

GROUP= variable

NOMISSINGGROUP*

X= horizontal position variable in plot data set
Y= vertical position variable in plot data set

NAME= a reference name for the legend

FILLATTRS= controls the appearance of lines with a style element or COLOR= and TRANSPARENCY=

GROUP= a variable use to designate a group

NOMISSINGGROUP*

Don't show a missing value group

See "Common Plot Options" for DATALABEL, DATALABELATTRS, DATALABELPOS, LEGENDLABEL description.

* - new in 9.4M6

SERIES Syntax

X= variable
Y= variable

<NAME= text-string>

LINEATTRS= style-element / options>
<bradusmin=measurement>
<bradusmax=measurement>

GROUP= variable

NOMISSINGGROUP*

X= horizontal position variable in plot data set
Y= vertical position variable in plot data set

NAME= a reference name for the legend

LINEATTRS= controls the appearance of lines with a style element or COLOR= and TRANSPARENCY=

GROUP= a variable use to designate a group

NOMISSINGGROUP*

Don't show a missing value group

See "Common Plot Options" for LEGENDLABEL description.

* - new in 9.4M6

TEXT Syntax

X= variable
Y= variable

TEXT= variable /
<bradusmin=measurement>
<bradusmax=measurement>

GROUP= variable

NOMISSINGGROUP*

X= horizontal position variable in plot data set
Y= vertical position variable in plot data set

TEXT= the variable in the plot data set containing label data for each point

TEXT= sets appearance of the text labels by specifying a style element or any of the options COLOR=, FAMILY=, SIZE=, STYLE= and WEIGHT=

POSITION= the location of labels about the points with TOPLEFT, TOP, TOPRIGHT, LEFT, CENTER, RIGHT, BOTTOMLEFT, BOTTOM or BOTTOMRIGHT

* - new in 9.4M6

Maps

CHOROMAP Syntax

<response-variable>

<MAPID= variable>

<NAME= text-string>

<DENSITY=0…6 | LOW | MEDIUM | HIGH>

<DISCRETE>*

<LINEATTRS= style-element / options>
<LEGENDLABEL= text-string>*

response-variable
a variable in the response data set containing attribute values for polygonal areas

MAPID= a variable in the map data set that defines the polygonal map areas

ID= the variable in the map response data set that links to the MAPID variable in the map data

NAME= a reference name for the legend

DENSITY= for map data sets with a DENSITY variable, specifies the point density for polygon boundaries

DISCRETE* -- treat numeric values discretely.

LINEATTRS= controls the appearance of lines with a style element or COLOR= and TRANSPARENCY=

See "Common Plot Options" for LEGENDLABEL options

ESRIMAP Syntax

URL= 'map-service'

URL= a network address for an Esri background map to display beneath plotted features

OPENSTREETMAP Syntax

OPENSTREETMAP uses an Open Street Map background

* - new in 9.4M6