Best Practices

Using the US_* data sets

When using the GfK map data sets named US_ALL and US_COUNTRIES, the character identification variable ID uniquely refers to the state and county in the United States as well as other U.S. Territories. Specifying the variable ID instead of STATE ensures that the polygons are drawn correctly. For example:

```sas
proc gmap data=mydata map=mapsgfk.us_all;
  id id;
run;
```

If you want to use the STATE variable, use it in combination with the COUNTY identification variable:

```sas
proc gmap map=mapsgfk.us_counties data=mydata;
  id state county;
choro id1 / nolegend name='Brazil';
footnote 'default resolution';
run;
```

**ANNOTATE Example**

Using WORLD_CITIES and PROJPARM data sets

This example draws a map of Brazil and cities.

```sas
/* combination of data sets - NOT NECESSARY */
/* project the points using the map's projection params. stored in MAPSGFK.PROJPARM */
proc gproject data=ciites out=prj latlon dupok parmin=mapsgfk.projparm parmentry=brazil;
  id id; run;
```

```sas
/****** add annotate variables ****/
data anno_ds;
  retain position '5' xsys ysys '2' hsys '3' when 'a' function 'label' color 'black' size .75 style 'marker';
set prj;
text='M';
run;

/**** display the ALREADY PROJECTED map with annotated city points ****/
proc gmap data=mapsgfk.brazil_attr map=mapsgfk.brazil all anno=anno_ds;
  id id;
choro id1 / nolegend name='brazil';
footnote 'default resolution';
run;
```

The US_CITY and US_CITY_ALL data sets contain data for major cities in the United States. The WORLD_CITIES data set contains data for major cities in each country. These data sets are used by PROC GEOCODE for city-level locations as well. A more comprehensive data set named WORLD_CITIES_ALL can be downloaded from MapOnline at http://support.sas.com/mapsonline/.

The PROJPARM data set contains projection parameters for the GfK/SAS map data sets located in the MAPSGFK library. This data set can be referenced using the PARMIN= option and the PARMENTRY= option of PROC GPROJECT. Where the PARMENTRY value represents a country for which attribute data needs to be projected.

### Mapping Tips

* **RESOLUTION vs DENSITY variables.** The DENSITY variable contains values produced by running PROC GREDUCE with default output. RESOLUTION is a more practical version of DENSITY that is optimized for your desired output display size, as shown in this table:

<table>
<thead>
<tr>
<th>RESOLUTION values</th>
<th>Display size (in pixels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>28800 x 23040</td>
</tr>
<tr>
<td>9</td>
<td>14400 x 11520</td>
</tr>
<tr>
<td>8</td>
<td>6000 x 4800</td>
</tr>
<tr>
<td>7</td>
<td>2400 x 1800</td>
</tr>
<tr>
<td>6</td>
<td>1600 x 1200</td>
</tr>
</tbody>
</table>

* The RESOLUTION= option in GMAP is active by default and is based on the output size. Using the RESOLUTION= option or DENSITY= option allows user control of the detail of the map.

* Variables X and Y are always projected coordinates. Variables LONG and LAT are un-projected coordinates in degrees and are based on the eastern hemisphere and therefore no longer appear “backward” when used as is.

* The ID variable is now character instead of numeric.

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

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GfK Map Data Tip Sheet

This tip sheet places frequently used information in one place, on one sheet of paper, so it's right at your fingertips. This tip sheet covers SAS/Graph mapping using the new GfK map data sets.

When using the GfK data sets, the log will contain:

**NOTE:** The map data sets in library MAPSGFK are based on the digital maps from GfK GeoMarketing and are covered by their Copyright. For additional information, see http://support.sas.com/mapsonline/gfklicense.

There are three libraries relating to maps: MAPSSAS (old library), MAPSGFK and MAPS. MAPSSAS and MAPSGFK are configuration-time-only libraries like SASHELP. MAPS can be assigned in your SAS session to point to either library, with MAPSSAS as the default.

For example,

```sas
libname MAPSSAS /Graph PS MAPS(MAPSGFK); ```
RESOLUTION Example

Displaying a low resolution map of Russia

Depending on the intended use of the image, only a low resolution map may be needed. The default RESOLUTION used with GMAP is based on the output size. Use RES=None to display all map points.

```sas
proc gmap data=mapsgfk.ru_ssa_attr
  map=mapsgfk.ru_res=2;
  id id;
  choro id1 / nolegend name='russia';
  footnote 'resolution=2';
  run;
```

****

GREMOVE Example

**GREMOVE** Bosnia-Herzegovina to show only Region Level

```sas
/* by default, the data is sorted by id */
proc sort data=mapsgfk.bosnia_herzegovina;
  by id1 id;
run;
```

```sas
proc gremove data=bos_herz out=bos_herz_regions;
  by id1 id;
run;
```

```sas
proc gmap map=bh_region
  data=mapsgfk.bosnia_herzegovina_attr;
  id id1;
  title "BH: Bosnia-Herzegovina Regions";
  choro id1name / discrete contline=gray;
run;
```

****

DATA SET VARIABLES

**Similarities and differences in data set variables**

**AFGHANISTAN**:

1. ID
2. SEGMENT
3. X
4. Y
5. LAT
6. LONG
7. DENSITY
8. RESOLUTION
9. ID1
10. ISO
11. ID1NAME
12. LAKE
13. ADMINTYPE

**BOSNIA_HERZEGOVINA**:

1. ID
2. INAME
3. LATINAME
4. ID1NAME
5. ID1NAMEU
6. ID1NAME_INDEX
7. ID2NAME
8. ID2NAMEU
9. ID2NAME_INDEX

**EUROPE**:

1. ID
2. ADMMN
3. ISO
4. ADMINTYPE

**AFGHANISTAN_ATTR**:

- ID
- INAME
- LATINAME
- ID1NAME
- ID1NAMEU
- ID1NAME_INDEX
- ID2NAME
- ID2NAMEU
- ID2NAME_INDEX
- LAKE
- ADMINTYPE

**EUROPE1_ATTR**:

- ID
- ISO
- ADMINTYPE

**Additional Variables**

Many attribute data sets (_ATTR suffix) may contain IDNAMEU and/or ID1NAMEU variables. The values are national characters in the SAS Unicod Escape format. Users can invoke a SAS UTF8 session and use the following data step to convert the values back to the national representation and display the names.

```sas
where lake=0
  or lake ne 1 to omit "holes" in the map.
```

How will the changes and differences impact you?

There will be a migration period during which both the old and new maps will be shipped. The old maps are assigned to a library referenced by MAPSSAS and will not be updated; while the new maps are accessible by a library named MAPSGFK. During this transition period, the old maps will continue to be shipped as the default MAPS. MAPS can be redefined to point to either MAPSSAS or MAPSGFK. In the future, MAPSSAS will stop shipping, but the old data is already archived and available for download via the MapsOnline website http://support.sas.com/mapsonline.