

Pumping up the Pixels!

Presented by David Franklin, January 18, 2006

For generating graphs, the standard is now to generate RTF files with the graph embedded inside the file, so the code will look something like:

```
goptions reset=all device=png target=png
      ftext="Times New Roman"
      xmax=8.75 in ymax=4.25 in;
axis1 <various axis options>;
axis2 <various axis options>;
symbol1 <various symbol options>;
symbol2 <various symbol options>;
*<Initialize RTF file>;
*<Initialize titles>;
*<SAS/GRAPH procedure calls>;
quit;
*<Close RTF file>;
```

Using the GOPTIONS code as is, a graph like that in Figure 3 is generated. However the resolution of the figure is poor and looks like it has been through a low quality fax machine a number of times. Figure 1 shows a section of Figure 4 expanded.

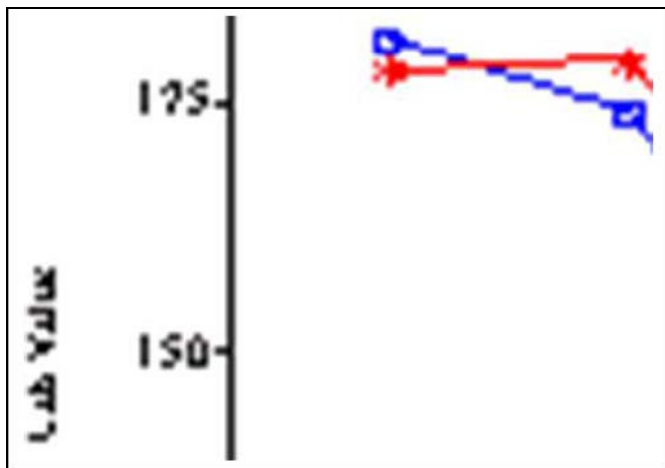


Figure 1

There are two GOPTIONS that are of interest that increase the resolution, XPIXELS (maximum number of horizontal pixels) and YPIXELS (maximum number of vertical pixels). SAS uses the following formula for calculating the x-resolution:

$$\text{x-resolution} = \text{XPIXELS} / \text{XMAX}$$

To reset the value of XPIXELS to its default specify XPIXELS=0. It is similar for the y-resolution using the values of YPIXELS and YMAX. By default the x-resolution and y-resolution settings are set by SAS to be 95dpi. If we have set our XMAX and YMAX values but still want a higher resolution then just changing the XPIXELS and YPIXELS values by the same ratio will result in a graphic

with higher resolution. Changing the values XPIXELS to 4375 and YPIXELS to 2250 results in a higher resolution, as shown in Figure 2:

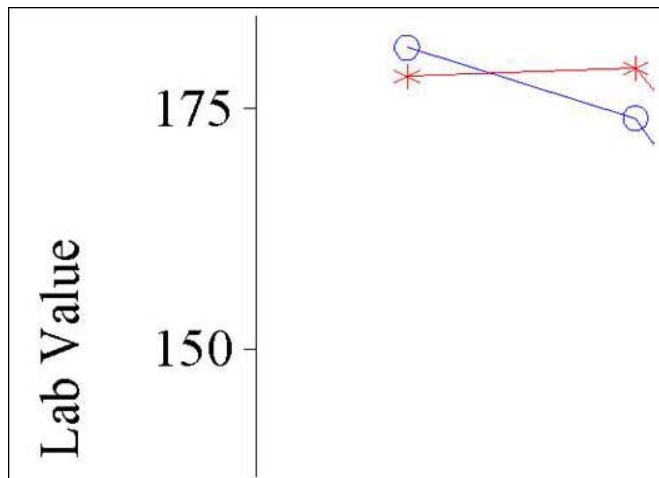


Figure 2

The resolution is higher and therefore has two distinct advantages over the original where the XPIXELS and YPIXELS values were not set; first it is better to read, and secondly is of a resolution that can be copied and used in a presentation. If the resolution needs to be even finer then the XPIXELS and YPIXELS values just need to be changed.

Why "Times New Roman" is not available in CGM graphic format

Times New Roman, and other True Type Fonts, use Raster/Bitmap representations of a character for display. Raster/Bitmap formats store the file as a static representation of the final image.

CGM is a format that stores instructions for the display or output device on how to draw the elements in the graph and hence only understands hardware fonts Base 14 PostScript fonts such as TimesRoman and SAS fonts like SWISS.

Quick Tip

To check to see if the syntax of a datastep or procedure is correct without actually running the code, append the CANCEL option at the end of the RUN statement. For example, the following will check to see if the SUMMARY procedure call is correct:

```
PROC SUMMARY DATA=allage NWAY;
  CLASS patid; VAR age;
  OUTPUT OUT=agean1 (DROP=_TYPE_ _FREQ_)
    N=n_ag MEAN=m_ag STD=s_ag
    MEDIAN=e_ag MIN=i_ag MAX=x_ag;
RUN CANCEL;
```
