

Web-Application Bar Charts without SAS/GRAPH®

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ABSTRACT

A picture is worth 1000 words it's said. And while that may be true, producing a picture instead of words can sometimes be 1000 times more difficult. That's particularly true if you're not familiar with SAS/Graph and Annotate. The Internet is a great medium for displaying graphics, but producing them can be troublesome. Anything that would make the task more simple would be welcomed.

With creative uses of HTML tables and images, you can create a bar chart to display information without using SAS/Graph or Annotate. This paper describes how.

Note: This paper assumes the reader has a working knowledge of HTML and SAS/IntrNet™.

INTRODUCTION

In developing a web application displaying Injury Mortality Statistics for the Centers for Disease Control and Prevention, I came across a problem in that I wanted to display the breakdown of certain injury categories in a meaningful and understandable way. A tabular format (see Figure 1) would provide the necessary format, but lacked the impact of a graphical display.

1997 US Homicide Deaths, Ages 25-34

Cause of Death	Number of Deaths	Percentage
Firearm	3,764	74.8%
Cut/Piercing etc.	575	11.3%

Figure 1 - Tabular Format

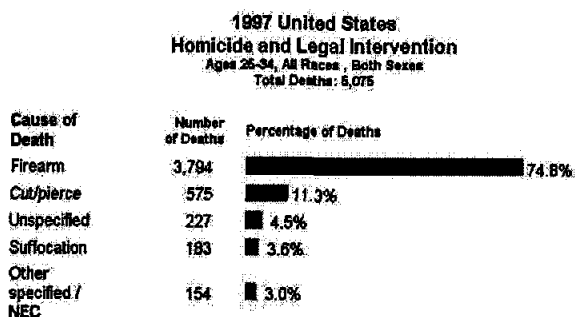


Figure 2 - Graphical Format

USING SAS/GRAPH AND ANNOTATE

A SUGI 24 paper from LeRoy Besseler entitled *Show Them What's Important: Solutions for a Finite Workday in an Era of Information Overload* contained a graph in the format I wanted and contained the code to create such a graph using SAS/Graph and Annotate. A graph for my use would look something like figure 2.

This graph has a much better visual impact than the simple tabular chart. Unfortunately it wasn't easy to produce because some of the labels were too long to display properly without a lot of extra work. Was there another way?

HTML SOLUTION

I knew I could construct a table using standard HTML commands to hold the textual information, but the big questions was how would I get the horizontal bars to generate.

It turned out that using the WIDTH= and HEIGHT= parameters of the HTML image tag would give me what I needed. All I needed was to produce a one-pixel .GIF file for the color I wanted, and then specify the width and height that I wanted it displayed. I could generate the HTML dynamically and thus vary the chart based on the input criteria I needed. In it's simplest form, the HTML code would look like this:

```
<IMG border=0 height=h src="red.gif" width=w>
```

where *h* and *w* were parameters that I could change to vary the size of the bar.

ONE SOLUTION, TWO TECHNIQUES

What's the best way to produce this HTML code? As it turns out, you can do it one of two ways. Using standard SAS® code provides the most flexibility and customization, but requires a fair amount of code. ODS provides a very concise solution, but customization is difficult. Choose the one that most meets your needs

Note: The gif file used in this presentation is available at <http://www.cdc.gov/ncipc/images/red.gif>

SAS Code Technique

Appendix A contains the SAS code used to produce the graphs above. It uses standard DATA STEP coding. While reading SAS code that produces HTML code may be challenging, the user might benefit from first generating the graph using an HTML editor like FrontPage® and looking at the resulting HTML code.

ODS Technique

Since implementation of the code mentioned above, I was told of another solution that used ODS (see Appendix B). While I've not actually put the code in production it appears to be a viable alternative to the DATA STEP programming. It is included for your benefit, though there are likely things that you would change

before you would actually use this in production.

BENEFITS

There were several advantages to this approach:

The graph could be put in a multi-column table which would let the bar be in one column and the labels be in another. This would allow the HTML table to control how the text of the label wrapped and ensured that it stayed with the horizontal bar. The application didn't have to control that, the browser did.

It didn't require any knowledge of SAS/Graph or Annotate, and used standard SAS/IntrNet techniques.

The resulting HTML file was small which would make downloads quicker. Instead of downloading a big graphic to your browser you end up downloading only a one-pixel .GIF file which speeds response time.

CONCLUSION

Adding graphs to your web pages can make them have a much bigger impact on the user. Using the techniques discussed in this paper can make the job easier.

REFERENCES

SAS, SAS/Graph, and SAS/IntrNet are registered trademarks or trademarks of SAS Institute Inc.

FrontPage is a registered trademark of Microsoft Corporation.

ACKNOWLEDGMENTS

I want to acknowledge that Steve Bloom told me about both of these techniques and has made my life much better by easing the process of adding graphics to my web application. I present them here only because he wasn't going to and I thought them too good not to share.

CONTACT INFORMATION

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APPENDIX A

```

*-----;
* Prepare data for creating graphics. The output of this step ;
* is a SAS data set with three variables: cause, deaths, and ;
* percent. ;
*-----;

proc freq data=temp ;
  tables cause / noprint out=totals(rename=count=deaths) ;
  weight deaths ;
  label cause='Cause of Injury' deaths='Number of Deaths' ;
  run ;

*-----;
* Now produce the chart as a table with three columns: one with the cause;
* of death, one with the number of deaths, and one with the percentage of;
* deaths including the bar chart. ;
* The bar chart is drawn using a .GIF that is one pixel in size, and uses;
* the WIDTH= and HEIGHT= options on the IMG tag to make it the right ;
* size. Note: &DEATHS is a macro variable passed in that contains the ;
* total number of deaths for all categories and is used in the title. ;
*-----;

data _null_ ;
  file _webout ;
  set work.totals end=lastob;
  if _n_ = 1
  then do ;
    put '<table border="0" cellpadding="2" width="771">' //
      '<tr>' /
      '<td width="132" height="27"><font face="Arial">'
      '<b>Cause of Death</b></font></td>'
      '<td nowrap><p align="right"><font size="2" face="Arial">'
      '<b>Number<br> of Deaths</b></font></td>'
      '<td width="18" height="27"></td>'

      '<td width="536" height="27">'
      '<font face="Arial" size="2">'
      '<b>Percentage of Deaths</b></font></td>'
      '</tr>'
    ;
  end ;

  * create quoted strings for height and width. Want them;
  * to look like height="20" and width="44.5%" ;
  length height width $8 total 5 ;
  if percent < 1.0 then width=quote("1.0%") ; * set minimum width of bars at 1% ;
  else width = compress(quote(put(percent,5.2) || '%')) ;
  height = quote("20") ;

```

```

total = &deaths ;
put /* print out the cause of death */
'<tr>'
'<td width="132" height="30"><font face="Arial">'
cause
'</font></td>'

/* print out the number of deaths */
'<td width="61" height="30" align="right">'
'<font face="Arial">'
deaths comma10.
'</font></td>'

/* put spaces in column to hold it open */
'<td width="10" align="right"><font color="#FFFFFF" size="2" '
'face="Arial">'
''
'</font></td>'

/* print out the percentage of deaths and the bar */
'<td width="538" height="30" align="left">'
'<font face="Arial">'
''
''
percent 4.1 '%</font></td>'
'</tr>'
;
if lastob
then do ;

    put '<tr>'
        '<td width="132" height="30"><font face="Arial" size="2">'
        '<b>Total Deaths&nbsp;</b></font></td>'
        '<td width="85" height="30" colspan="2"><font size="2">'
        '<p align="right"></font><font size="2" face="Arial"><b>'
        total comma10.
        '</b></font><font face="Arial"> </font></td>'
        '<td width="536" height="30"></td>'
        '</tr>'
    ;

    put '</table>' ;
end ;
run ;

```

APPENDIX B

```

proc template;
edit Base.Freq.OneWayFreqs;
COLUMN Line Variable ListVariable Frequency
TestFrequency bar Percent /*
TestPercent CumFrequency CumPercent */;
define bar;
HEADER=" ";
format=120.;

```

POSTERS

```
        just=1;
        compute as Percent;
        TRANSLATE
            _val_>0 into
                "<a><img
SRC='http://www.cdc.gov/ncipc/images/red.gif' width="
                || put(_val_ * 10 ,4.)
|| " height=10 ALT='' BORDER='0'>" || put(_val_/100,percent8.1) || "</a>";
                ;
        end;
    end;
run;

ods listing close;
ods HTML file = "c:\temp\freq.html"; * set up file to hold HTML code ;

proc freq data=temp order=freq;
    weight deaths;
    table cause/ nocum;
run;

*-----;
* Remove what you have done so it will not affect later freqs.;
*-----;
Proc template;
Delete Base.Freq.OneWayFreqs;
Run;

ods HTML close;
```