Getting Up to Speed with PROC REPORT

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ABSTRACT

Learning the basics of PROC REPORT can help the new SAS® user avoid hours of headaches. PROC REPORT can often be used in lieu of PROC TABULATE or DATA _NULL_ reporting—two areas that have driven the new SAS user crazy!!! With the added capabilities of ODS provided in Version 7 and Version 8, PROC REPORT can look as sharp as an EXCEL report. This paper will show how to use PROC REPORT in both a windowing and non-windowing environment.

WINDOWING ENVIRONMENT

To use PROC REPORT in the windowing environment, there are several options.

If your site has SAS/ASSIST®, you can get to PROC REPORT by choosing the following sequence of icons:

REPORT WRITING → DESIGN REPORT → Design a Report

If you do not have SAS/ASSIST, submit the following program from the program editor.

options nocenter;
proc report data=sasuser.class;
run;

Note: This paper will be using the CLASS data set provided as an example data set when you license SAS/ASSIST. See Appendix I for details on how to get access to this data set.

After submitting the program, the following screen will appear.

This screen is the default report. It looks very similar to “vanilla” PROC PRINT. The value of PROC REPORT is in its grouping capabilities, which include summarizing. The report will now be reorganized interactively to group by GENDER.

PROC REPORT works from left to right. Thus, if you want a grouping by GENDER, then you need to move GENDER before FIRST NAME. To reorder the report, highlight the GENDER label. Choose the following sequence either from the PMENU or by clicking the right mouse button.

Edit → Move selected item → to the left of the next selected item
Nothing seems to happen. The next step is to highlight the FIRST NAME label. The GENDER column should move to the left of FIRST NAME. The report should look the same, except for the column change.

Now you decide that all of the F's for females and M's for males are cluttering the report. You only want one F and one M to designate the group. To do this, follow the next sequence of push buttons.

Edit → Define selected item → Group → Apply → OK

Now you would like a line break between each grouping.

Edit → Summarize information → After detail lines → Skip line after break → OK

You will now proceed onto a more slightly difficult change. You would like to have the data sorted by age. Because PROC REPORT works from left to right, you cannot sort the AGE IN YEARS column with FIRST NAME to the left of it. To further complicate things, you really like where AGE IN YEARS is located. We need to have AGE IN YEARS have two columns on our report, but you do not want to see the column to the left of FIRST NAME. To do this, you will need to follow the next sequence after highlighting FIRST NAME:

Edit → Add report item → Data column → at left of selected item → AGE IN YEARS → File → End

The report now has two AGE IN YEARS columns, and you do not want that look. You will now need to sort the data and remove the new column from the report layout. To do this, highlight the new AGE IN YEARS column and do the following.

Edit → Define selected item → Order → No print → Apply → OK

Now you would like to get some summary statistics for the GENDER grouping and for an overall total.

To get the summary statistics for GENDER do the following:

Edit → Summarize information → After detail lines → Overline summary → Summarize analysis columns → Apply → OK

This will use the SUM calculation. The MEAN is the preferred summary statistic. To make this change, you will need to modify the height and weight columns. After highlighting HEIGHT IN INCHES, follow the sequence below.

Edit → Define selected item → change SUM to MEAN under STATISTICS → Apply → OK

For an overall total, follow this sequence. Again, if you did not do the above step then the overall total will be the SUM calculation.

Edit → Summarize information → At bottom of report → Summarize analysis columns → Apply → OK

To do a little format clean up by lining up the decimal places to the right for HEIGHT IN INCHES and WEIGHT IN POUNDS, follow the sequence below.
If you forget the format you want to use, enter a ? on the format field and modify the format screen.

Keep in mind that you could have gotten a similar looking report using PROC PRINT, but you also would have had to sort your data first. We have achieved an ordered report without sorting the data first—PROC TABULATE could have done something similar too.

Speaking of PROC TABULATE, you can have the boxed look with PROC REPORT too. For the final interactive option, turn on box.

Your report hopefully looks like the following.

```
  DATA  Name        Age   Weight  Height
  Sam   12.00      66.00  77.40
  Sarah 12.00     85.00  84.00
  John  12.00      57.00  82.00
  Mary  12.00      52.00  110.00
  Peter 12.02     65.00  88.11

Now you would like to save the report statements that were generated from the interactive work to be used in our non-windowing environment. Following is the sequence that will return the code.

Locals → List REPORT statements → File → Save as → Write to file → enter file name

NON-WINDOWING ENVIRONMENT

The SAS code that was generated from the interactive work in the windowing environment section is shown in Figure 1. Each line of code will be explained in detail.

The first line of code generated is PROC REPORT.

```
PROC REPORT DATA=SASUSER.CLASS LS=80 PS=44 SPLIT="/" NOCENTER BOX;
```

To work in a non-windowing environment, the PROC REPORT statement will need to be rewritten with the NOWINDOWS option.

```
PROC REPORT DATA=SASUSER.CLASS LS=80 PS=44 SPLIT="/" NOCENTER BOX NOWINDOWS;
```

Like other PROCs, you can designate the data to be used with a DATA= or default to the most recently created data set. In this example, a permanent SAS data set was used.

The remaining options are for formatting the overall report. The split="/" works the same way as PROC PRINT for labels on specific variables. The label will be split to a new line at the /. The LS and PS are exactly the same as those used in the global OPTION statement for linesize and pagesize, respectively. Note: PROC REPORT honors the
PROC REPORT DATA=SASUSER.CLASS LS=80 PS=44 SPLIT="/" NOCENTER BOX;
COLUMN SEX AGE NAME AGE=_A1 HEIGHT WEIGHT;

DEFINE SEX / ORDER FORMAT= $1. WIDTH=6 SPACING=2 LEFT "Gender" ;
DEFINE AGE / ORDER FORMAT= BEST9. WIDTH=9 SPACING=2 NOPRINT RIGHT "Age in years" ;
DEFINE NAME / ORDER FORMAT= $8. WIDTH=8 SPACING=2 LEFT "First name" ;
DEFINE _A1 / SUM FORMAT= BEST9. WIDTH=9 SPACING=2 RIGHT "Age in years" ;
DEFINE HEIGHT / SUM FORMAT= 8.2 WIDTH=9 SPACING=2 RIGHT "Height in inches" ;
DEFINE WEIGHT / SUM FORMAT= 8.2 WIDTH=9 SPACING=2 RIGHT "Weight in pounds" ;

BREAK AFTER SEX / OL SKIP SUMMARIZE ;

RBREAK AFTER / SUMMARIZE ;
RUN;

Figure 1 SAS code created from windowing environment.

In this example, the COLUMN statement works like a VAR statement in PROC PRINT. This statement shows the order of the SAS variables that are to be processed and possibly printed. The AGE=_A1 is the only unclear piece of code. _A1 is the alias for AGE. The DEFINE statement will further clarify the need and use of an alias.

The COLUMN statement can also provide detailed header information. You might want to have a special label across the HEIGHT and WEIGHT variables. To do this, the COLUMN statement needs to be rewritten as follows:

COLUMN SEX AGE NAME AGE=_A1 ('*Body Size*' HEIGHT WEIGHT);

The DEFINE statement specifies how to use the specific variable that was defined in the column statement. The variable can be either a SAS variable or a computed variable created in PROC REPORT.

The AGE and _A1 DEFINE statements will be used to explain how to use the DEFINE statement. Remember that _A1 variable is an alias of AGE. Because the report has AGE sorted within GENDER, the AGE variable needed to follow GENDER, but the report was to keep AGE in the same location as the original report. Thus, the DEFINE statement for AGE includes the option NOPRINT, along with the option of ORDER.

DEFINE AGE / ORDER FORMAT= BEST9. WIDTH=9 SPACING=2 NOPRINT RIGHT "Age in years" ;
To begin a DEFINE statement, start with DEFINE followed by the report item and then a slash (/).

```
DEFINE _A1 / MEAN FORMAT=8.2 WIDTH=9 SPACING=2 RIGHT "Age in years" ;
```

The report item for this example is _A1. The report item can be a SAS variable, computed variable, or an alias of either of these two variables.

After the slash, there are many options. Some of these options are obvious, but others are better understood with a SAS manual or on-line help. The on-line SAS System Help for PROC REPORT is very helpful. To get to HELP on PROC REPORT from SAS 6.12, type HELP REPORT on the command line. (As you might guess, there are many ways to get to HELP while using interactive SAS.) For version 7 or version 8, you will need to Internet Browser.

To find out what the WIDTH option does, enter the following sequence:

**Syntax → Define → <attribute(s)> Width=column-width**

The following screen should appear.

The BREAK and RBREAK statement work in a similar manner, and so, they will be discussed together. The BREAK statement allows for a break at a grouped or ordered variable. The break can be a summary line, page break, or a line space. It can be before or after the grouped data. The RBREAK statement is a summary line for the completed report. It can be at the start or end of the report.

**CONCLUSION**

PROC REPORT is a very powerful tool that is also easy to use. This paper has explored generating SAS code using PROC REPORT in an interactive mode, and then later modifying that code to work in a non-windowing environment.

One area that was not covered in this paper that could also increase your speed in generating PROC REPORT code is to add PROMPT to the following code:

```
proc report data=sasuser.class prompt;
run;
```

**APPENDIX I**

The CLASS data set used in this paper is provided with SAS/ASSIST. To have the data saved in your SASUSER library, click on the following sequence of icons/menus:

**SETUP → Sample data sets... → Create sample data sets... → Select CLASS → OK**
REFERENCES


ABOUT THE AUTHOR

Kim LeBouton is an independent consultant with 16 years experience with SAS. Her areas of expertise include base SAS, SAS/STAT®, SAS/FSP®, SAS/AF® and IT Service Vision software. She has a BA from California State University, Long Beach and an MA from UCLA. Kim was the Western Users of SAS Software 1997 Co-Chair. She is also a SAS Institute Quality Partner®.

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