STA 311 Statistical Computing and Data Management

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Topics to Be Covered

- PROC REPORT- Syntax
- DEFINE statement
  - Column Attributes
  - Column Formats
- Compute Statement
  - Computed Variables
- Summary Statistics
- PROC REPORT with ODS

What SAS REPORT Can Do?

The REPORT procedure can create customized reports:

- Assigning column formats
- Defining column headings
- Specifying the order of the contents the justification, width, and spacing of the columns.
- Grouping the character variables in reports
- Create statistical summaries such as subtotals, grand totals, and averages

SAS REPORT: Syntax

```
PROC REPORT DATA= SAS-data-set options;
 COLUMNS variable_1 …. variable_n;  /* column names */
 DEFINE variable_1 / options and attributes;
 DEFINE variable_2 / options and attributes;
 COMPUTE-block column-names;
  COMPUTED statement - formula;
 ENDCOMP;
 BREAK AFTER variable-name / OL SKIP SUMMARIZE SUPPRESS;
 RBREAK AFTER variable-name / OL SKIP SUMMARIZE;
 TITLE 'Some Meaningful Title';
 RUN;
```

SAS REPORT: DEFINE Statement

Notice the DEFINE statements. The term following the '/' specifies the way the REPORT procedure uses the column. Columns can be defined as:

GROUP - puts observations into categories

DISPLAY - displays values for each observation

ANALYSIS - contributes values to a calculation or statistic

ORDER - defines the order of the report rows

ACROSS - creates columns for each of its values

COMPUTED - its values are created in a COMPUTE block.

SAS REPORT: DEFINE

RAW Data

Obs	patient	gender	height	weight	age	race	drug
1	001	1	74.4	257	67.9	1	Active
2	002	1	63.1	168	36.7	0	Active
3	003	1	69.6	264	74.6	0	Placebo
4	004	1	63.2	270	73.8	1	Placebo
5	005	1	67.8	209	57.8	1	Active

```
PROC REPORT DATA = DEMOGRAPHICS;
COLUMNS patient gender height weight age race drug;
DEFINE patient / DISPLAY 'PTID' WIDTH = 4;  /* Rename patient as PTID,
column width = 4 */
DEFINE gender / DISPLAY FORMAT =  gendfmt.; /* Formatting the variable
GENDER */
DEFINE height / ANALYSIS 'HT' FORMAT = 4.1; /*  */
DEFINE weight / ANALYSIS 'WT' FORMAT = 4.;
DEFINE age / DISPLAY FORMAT = 3.1;
DEFINE race / DISPLAY FORMAT = racefmt.;
DEFINE drup / DISPLAY WIDTH = 8;
TITLE "Basic Report";
RUN;
```

SAS REPORT: DEFINE Statement

Basic Report

PTID	Sex	HT	WT	Age	Race	Drug
001	Woman	74.4	257	68	White	Active
002	Woman	63.1	168	37	Nonwhite	Active
003	Woman	69.6	264	75	Nonwhite	Placebo
004	Woman	63.2	270	74	White	Placebo
005	Woman	67.8	209	58	White	Active
006	Man	56.7	116	48	White	Active

Several changes from the raw data with PROC REPORT:

1. Variable names
2. Format of SEX and RACE
3. Width of columns in the report

SAS REPORT: Options in DEFINE

Some Important Options and Column Attributes you may to explore are:

GROUP -

ACROSS

COMPUTE Block – doing calculation

SAS REPORT ENHANCEMENT

Enhancement of Report Header

1. NOWINDOWS suppresses the REPORT window and directs the report to the output window

2. HEADLINE creates a horizontal line between the column headers and the body of the report

3. HEADSKIP creates a blank line between the column headers and the body of the report

4. STYLE(Column) component option is specified to instruct SAS to use the color "Blue" for the background and "White" for the foreground of each cell on the report output.

SAS REPORT with ODS

Enhancement of Report Header

We can generate REPORT with attributes and options.

Two STYLE options are particularly useful to create nice looking report.

STYLE(Column)

STYLE(Header)

Within PROC REPORT

SAS REPORT with ODS

We can also use the output STYLEs through ODS to create REPORTs with different ODS styles!

SAS has more 50 STYLES that can be used in ODS!

See the see tailed list of these STYLES on the next slide!

ODS Styles

When we output information to a SAS ODS format, the tables, graphs and text are defined with default colors and fonts. There are several built-in ODS styles that we can select. Each style is based on some theme or purpose.

Built-in Styles(partial list):

EGDefault
Analysis
Astronomy
Banker
BarrettsBlue
Beige
Brick
Brown
Curve
Default
D3d
Education
Electronics
Default
D3d
Education
Electronics
Festival
FestivalPrinter
Gears
Harvest
HighContrast
Journal
Journal2
Journal3
Listing
Magnify
Meadow
MeadowPrinter
Minimal
Money
NoFontDefault
Normal
NormalPrinter
Ocean
Printer
Rsvp
Rtf
Sasweb
Science
Seaside
SeasidePrinter
Sketch
Solutions
Statdoc
Statistical
Theme
Torn
Watercolor
blockPrint
fancyPrinter
grayscalePrinter
monochromePrinter
sansPrinter
sasdocPrinter
serifPrinter
PowerPointDark
PowerPointLight
Excel
Raven

PROC REPORT: Wrap-up

What PROC REPORT CAN DO?

SELECTING VARIABLES As probably not all variables are required in the output, the next step should be to choose the variables to be displayed. This is easily done by adding the COLUMNS statement to the code.

DEFINING VARIABLES Now that the required variables are selected, the appearance of the report can be enhanced. This can be achieved by adding DEFINE statements to the code. PROC REPORT uses the variable labels (if not available, the variable names) as column headers for the output.

DEFINE OPTIONS - WIDTH As default PROC REPORT uses the variable length as column width for character variables and 8 for numeric variables, if the variable in the source dataset has no format assigned. In the previous output the column Study ID was wider than needed, whereas the numeric Age column was smaller than needed (causing multiple line breaks in the column header). With the WIDTH option individual column widths can be specified for each variable