SAS
PROC REPORT
PROC TABULATE

Computing for Research I

January 22, 2013

Example

		Baseline		Month 3		Month 6		Month 9		Month 12	
		Tx		Tx		Tx		Tx		Tx	
		A	B	A	B	A	B	A	B	A	B
HRSD	N										
	Mean										
	Std										
	Median										
	Min										
	Max										

Example

Final Status	Treatment Group			
	A		B	
	N	Percent	N	Percent
Total_N				
Study Completed				
Consent Withdrawn				
Lost to Follow Up				
Physician Removal from Study				
Other				

Data Listing

Tx Group	Center	SubjectID	Last Phase	Age	Gender	Baseline RAPID	Last RAPID

Reporting Data

- Plan the layout
  - Summary statistics, analysis output or data listings?
  - Content of columns/rows?
  - Order of columns/rows?
  - Font
- Use a report writing tool

Example

ID	zSiteid
1	1
2	1
3	6
4	2
5	3
6	4
7	…….

Proc Freq

```
proc freq;
 tables zsiteid;
format zsiteid;
run;
```

Raw SAS Frequency Output

The FREQ Procedure

zSiteID

zSiteID	Frequency	Cumulative Percent	Cumulative Frequency	Percent
10	5	62.50	5	62.50
13	2	25.00	7	87.50
14	1	12.50	8	100.00

PROC REPORT

PROC REPORT data=xxx <*option(s)*>;

COLUMN *column-specification(s)*; </ STYLE=<*style-element-name*>
<[*style-attribute-specification(s)*]>>;

DEFINE *report-item* / <*usage*>
<*attribute(s)*>
<*option(s)*>
<*justification*>
<COLOR=*color*>
<'*column-header-1*' <...'*column-header-n*'>>
<*style*>;

RUN;

Proc Report Statement

- Input data set
- Controls layout of the report
  - Box
  - Center
  - Column width
  - Missing data option

Other Statements

Column Statement

- Describes the arrangement of columns and column headers that span >1 column

Define Statement

- Specifies how to use a report variable
  - location
  - appearance

Proc Report Code (site enrollment)

```
/*ods rtf file='I:\test.rtf' style=sasweb;*/

options nodate pageno=1 linesize=100 pagesize=60;
proc report data=demos nowindows center colwidth=10 missing
  box;
 column zsiteid N pctn;
 define zsiteid/'Site' group width=5;
 define n/'Total N' width=5;
      define pctn / 'Percent of Total' format=percent7.1;
title 'Total Subjects By Site';
run;

/*ods rtf close;*/
```

Proc Report Output

Site	Total N	Percent of Total
10	5	62.5%
13	2	25.0%
14	1	12.5%

Several Options in Proc Report

http://www2.sas.com/proceedings/forum2008/170-2008.pdf

http://www2.sas.com/proceedings/sugi28/015-28.pdf

PROC TABULATE

PROC TABULATE

- Display of descriptive statistics
- Tabular format of:
  - Proc means
  - Proc frequency

Proc Tabulate Code

```
proc tabulate data=demos format=7.0 style=[font_size=2];
    class zsiteid /missing style=[font_size=2 foreground=black
    background=white];
        table (zsiteid=‘Site‘  ALL="Total"),( N pctn*f=7.2)
                        /box=[label=“Enrollment"
            style=[font_size=2 foreground=black background=white]]
    printmiss
            misstext="0";
        keylabel PCTN="%";
    format zsiteid site.;
    keyword PCTN /style=[font_size=2 foreground=black
    background=white];
    title "Subject Enrollment, By Site ";
run;
```

Output

Tabulate

Site	N	%
10	5	62.5
13	2	25.0
14	1	12.5
Total	112	100.00

Report

Site	Total N	Percent of Total
10	5	62.5%
13	2	25.0%
14	1	12.5%

Display Ethnicity by Gender by Tx

ID	Ethnic	Gender	Tx
1	1	1	1
2	2	2	1
3	1	1	2
4	3	1	1
5	1	2	1
6	2	1	2
7	……		

Proc Freq

```
proc sort; by tx;
proc freq; by tx;
 tables ethnicity*gender;
run;

proc freq;
 tables tx*ethnicity*gender;
run;
```

Proc Tabulate Code

```
ods rtf text= "Table 1.2. Number of Subjects Randomized by Ethnicity and Gender";
proc tabulate data=demos format=7.0 style=[font_size=2] missing;
   class ethnicity gender ztreatment/missing style=[font_size=2 foreground=black
      background=white];
      table (all='Total' ethnicity=''), ztreatment=''*gender=''*(N colpctn='Percent'*F=7.2)
                  /box=[label="Ethnicity"
         style=[font_size=2 foreground=black background=white]] printmiss
         misstext="0";
   label gender='Gender';
   format ethnicity ethnicity.;
   format gender sex.;
   format ztreatment trt.;
   classlev ethnicity gender/style=[font_size=2 foreground=black background=white];
   keyword PCTN /style=[font_size=2 foreground=black background=white];
run;
ods rtf close;
```

Tabulate Output

.

Ethnicity	TxA				TxB			
	Male		Female		Male		Female	
	N	Percent	N	Percent	N	Percent	N	Percent
Total	5	100.00	69	100.00	1	100.00	37	100.00
Hispanic/Latino	0	0.00	0	0.00	0	0.00	1	2.70
Not Hispanic/Latino	4	80.00	64	92.75	1	100.00	34	91.89
Unknown	1	20.00	5	7.25	0	0.00	2	5.41

Class Statement

- identifies the class variables
- determines the categories that PROC TABULATE uses to calculate statistics
- Options for this statement
  - ‘Missing’: if not included, missing values will exclude the observation from the summary

More Statements

Table Statement

- Required for procedure
- describes the table to create

Var Statement

- Identifies numeric variables to use as analysis variables.

PROC TABULATE

```
proc tabulate data=test;
 class xxx;
  var xxx;
table xxx;
run;
```

PROC MEANS

```
proc sort data=test; by visit;
proc means data=test n mean std med min max;
 by visit;
 var time;
 run;
```

Proc Means Output

---------- Visit =1 ----------

Analysis Variable : Visit

N	Mean	Std Dev	Median	Minimum	Maximum
51	30.1372549	13.4358023	30.0000000	8.0000000	70.0000000

---------- Visit =2 ----------

Analysis Variable : Visit

N	Mean	Std Dev	Median	Minimum	Maximum
50	23.4200000	6.6703425	23.0000000	11.0000000	39.0000000

PROC TABULATE Code

```
proc tabulate data=time format=7.0 style=[font_size=2];
   class visit/missing style=[font_size=2 foreground=black
    background=white];
   var time;
   table time=“ "*(N mean std MEDIAN MIN MAX),visit="" All="Total"
         /box=[label="Session "
          style=[font_size=2 foreground=black background=white]]
    printmiss
          misstext="0";
  classlev time/style=[font_size=2 foreground=black
    background=white];
   keyword N mean std MEDIAN MIN MAX/style=[font_size=2
    foreground=black background=white];
run;
```

Output

Session		1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Time	N	51	50	48	49	42	40	40	39	38	39	38	36	35	545
	Mean	30	23	17	17	22	22	20	19	16	21	18	17	15	20
	Std	13	7	6	7	7	11	8	5	8	6	6	7	6	9
	Median	30	23	16	16	22	18	19	17	15	20	17	15	13	18
	Min	8	11	9	2	9	8	9	11	8	10	10	6	7	2
	Max	70	39	36	36	38	53	47	35	44	34	35	42	31	70

Multiple Variables

```
ods rtf file='I:\FIELD_Poster1acorp.rtf' style=sasweb_white;
proc tabulate data=corp format=7.0 style=[font_size=2];
   class q_6 q_5 q_7 q_15 q_31/missing style=[font_size=2 foreground=black
     background=white];
     table (ALL="Total Respondants =4" q_6='Ownership Type')
           (ALL="Total Respondants =4" q_5='#Nursing Homes' )
           (ALL="Total Respondants =4" q_7='Other Clinical Trials?')
           (ALL="Total Respondants =4" q_15='Any policy for Trials?')
           (ALL="Total Respondants =4" q_31='Likelihood of approval?'),
 (All='All Respondants')*(N colPCTN*F=7.2)
                /box=[label="Demographics"
        style=[font_size=2 foreground=black background=white]] printmiss
        misstext=[label="0"];
   keylabel colPCTN="%";
   keyword colPCTN /style=[font_size=2 foreground=black background=white];
run;
ods rtf close;
```

Output

Demographics	All Respondants	
	N	%
Total Respondants =4	4	100.00
Ownership Type		
For profit	1	25.00
For profit (Corporate)	2	50.00
Not for profit	1	25.00
Total Respondants =4	4	100.00
#Nursing Homes		
1 - 9 facilities	3	75.00
10 - 24 facilities	1	25.00
Total Respondants =4	4	100.00
Other Clinical Trials?		
Yes	2	50.00
No	2	50.00

Continuous Variables

```
proc tabulate data=corp format=7.0 style=[font_size=2];
  class q_31;
   var Q_1 Q_2;
  table Q_1
        Q_2, (N mean std MEDIAN MIN MAX)
                /box=[label="Questions"
           style=[font_size=2 foreground=black background=white]]
     printmiss
           misstext="0";
   keyword N mean std MEDIAN MIN MAX/style=[font_size=2
     foreground=black background=white];
run;
```

Output

Questions	N	Mean	Std	Median	Min	Max
Q_1	4	28	4	26	26	33
Q_2	4	22	2	23	20	24