One Macro to Produce Descriptive Statistic Summary Tables with P-Values
Rajaram Venkatesan and Harinarayan Gopichandran, Cognizant Technology Solutions

ABSTRACT
In clinical trial reporting, the most popular type of tables is those that have descriptive statistics (n, mean, SD, median, min and max, CI, and p-values) or tables having a frequency (%) count and descriptive statistics of categorical and continuous variables. These are the bread and butter of reporting. However, producing these tables is simple yet trivial, and sometimes cumbersome and time-consuming, as many variables and many conditions might be requested.

The solution is to create a simple macro and easy to understand macro, which allows the user to develop and produce descriptive summary tables within minutes. This can be used to produce or validate most safety tables without any problems. This allows users to create many types of tables (demographics and baseline characteristics, laboratory, vital signs, and ECG data) with minimal effort. This will not only save a lot of time but also improve quality.

INTRODUCTION
In the pharmaceutical industry, most common tables are descriptive summary tables, which consist of categorical variables (frequency counts and percentages) and percentages and/or continuous variables (n, means, standard derivation, medians, min and max, confidence limits, p-values, etc.). Developing these tables sometime cumbersome and time consuming, as many variables, formatting, decimal alignment and many conditions required. Hence, a standard macro was developed to minimize time, increase quality, easy to use, multiple format options, and automatic decimal alignment.

In this paper, we introduce our standard and simple SAS® macro functionality, parameters and usage.

ROUNDING
By default, descriptive statistics mean, median, the confidence interval (CI), quartiles and geometric mean will be rounded to 1 additional decimal place of original data. Standard deviation, standard error of the mean and coefficient of variation (CV) will be displayed to the 2 decimal places of original data. The min and max should be displayed to the same number of decimal places as the original data.

P-values will be reported to the fourth (4th) decimal place and presented in the format of “0.xxxx” or “<0.0001”.

MACRO CALL AND ITS PARAMETERS
To invoke the macro, issue the macro call:

%ASUMSTAT (INDSNM=, POPDSNM=, OUTDSNM=, DISPLBL=, ANLYZVRS=, COLMVAR=, GRPCOLM=, INTOTCAT=, BYVARBL=, PGVARBL=, MISNOTN=, DISFMT=, UNIQSUBC=, STACKSPC=, SPCBVAL=, ALPHA=, INALLCAT=, SMRYLBL=, SETDECN=, TOTCLMYN=, BRKAVRS=, STATST=);

Where

INDSNM

The input dataset name. If you want to subset dataset you can also pass required condition as it is used in WHERE statement, any valid SAS® syntax is acceptable. Dataset and where condition should be separated by \.

General format
INDSNM = ADaM.ADSL\ITTFL="Y"

**Required:** Yes  
**Default:** No default value.

**POPDSNM**  
The population/denominator dataset name. If you want to subset dataset you can also pass required condition as it is used in WHERE statement, any valid SAS® syntax is acceptable. Dataset and where condition should be separated by \. This dataset will be used for percentage calculation.  

**Required:** No  
**Default:** No default value.

**OUTDSNM**  
The output dataset name.  

**Required:** Yes  
**Default:** No default value.

**DISPLBL**  
Display label for each variable separated by pipe (\). If you do not want to specify display label in the output you can pass “NULL” or “_NULL_”  

**Required:** Yes  
**Default:** No default value.

**ANLYZVRS**  
List of analysis variables. This is no restriction to maximum number of variables. Variables should be separated by pipe (\). Each variable has special format to indicate variable, format, and type of data (i.e., continuous or categorical) and these will be separated by backslash (\).

General format

ANLYZVRS=VARIABLE\FORMAT\TYPE|VARIABLE\FORMAT\TYPE

Where

Variable=Name of the variable  
Format=SAS® acceptable format  
Type=Continuous (CON) or Categorical (CAT)

Example: ANLYZVRS=AGE\8.\CON|SEX\$SEX\CAT

For categorical variables, ‘n’ and percent will be displayed. For continuous variables, statistics which are requested in DISFMT will be displayed. Display order in the table will be based on the variable list.  

**Required:** Yes  
**Default:** No default value.

**COLMVAR**  
Specify column (usually treatment) variable. You can also specify to transpose descriptive statistics and apply format for variables and these will be separated by
backslash (\). Only one variable will be allowed.

General format

COLMVAR=VARIABLE\YES or NO\FORMAT

Where

Variable=Name of the variable
Format=SAS® acceptable format (Optional)

Example: COLMVAR=TRTPN\NO\TRTN.

**Required**: Yes  
**Default**: TRTPN\N

Refer: [Example 2](#)

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**GRPCOLM**  
Second stratification variable, placed above the COLMVAR variable. One variable can be specified on the GRPCOLM parameter. GRPCOLM may or may not format. Format will be separated by backslash (\).

General format GRPCOLM=VARIABLE\FORMAT

Where

Variable=Name of the variable
Format=SAS® acceptable format (Optional)

Example: GRPCOLM=TRTPN\TRTN.

**Required**: No  
**Default**: No default value.

Refer: [Example 5](#)

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**PGVARBL**  
Name of variable(s) used to specify Page By on report. More than one variable can be specified with spaces between. The PGVARBL variable(s) appears on a BY line at the top of each page of the table.

**Required**: No  
**Default**: No default value.

Refer: [Example 7](#)

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**BYVARBL**  
Name of variable(s) used to specify By variable on report. More than one variable can be specified with pipe (|) between. Each variable optionally combined with its format by backslash (\). The BYVARBL variable(s) appears first column in the table. BYVARBL can be clubbed with statistics and/or display label.

General format BYVARBL=VARIABLE\FORMAT|VARIABLE\FORMAT
Where

Variable=Name of the variable
Format=SAS® acceptable format (Optional)

Example: BYVARBL=AVISTIN\VISMAP.

Required: No
Default: No default value.

Refer: Example 7

DISFMT

Control display format in report for continuous and categorical separated by pipe (|). Continuous statistics order will be based on selected position will be arranged.

General format DISFMT=Continuous|Categorical

Following options are available for Continuous

<table>
<thead>
<tr>
<th>INPUT</th>
<th>DISPLAY LABEL</th>
<th>EXAMPLE OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n</td>
<td>462</td>
</tr>
<tr>
<td>2</td>
<td>Mean</td>
<td>145.0</td>
</tr>
<tr>
<td>3</td>
<td>SD</td>
<td>16.40</td>
</tr>
<tr>
<td>4</td>
<td>SE</td>
<td>0.76</td>
</tr>
</tbody>
</table>

MEAN WITH STANDARD DEVIATION & STANDARD ERROR

<table>
<thead>
<tr>
<th>INPUT</th>
<th>DISPLAY LABEL</th>
<th>EXAMPLE OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Mean (SD)</td>
<td>145.0 (16.40)</td>
</tr>
<tr>
<td>6</td>
<td>Mean (SE)</td>
<td>145.0 (0.76)</td>
</tr>
<tr>
<td>7</td>
<td>Mean ± SD</td>
<td>145.0 ± 16.40</td>
</tr>
<tr>
<td>8</td>
<td>Mean ± SE</td>
<td>145.0 ± 0.76</td>
</tr>
</tbody>
</table>

MEDIAN & MEDIAN WITH RANGE & INTER QUARTILE RANGE

<table>
<thead>
<tr>
<th>INPUT</th>
<th>DISPLAY LABEL</th>
<th>EXAMPLE OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Median</td>
<td>142.8</td>
</tr>
<tr>
<td>10</td>
<td>Median (Min, Max)</td>
<td>145.0 (103, 190)</td>
</tr>
<tr>
<td>11</td>
<td>Median (Q1, Q3)</td>
<td>145.0 (132.7, 160.0)</td>
</tr>
</tbody>
</table>

RANGE

<table>
<thead>
<tr>
<th>INPUT</th>
<th>DISPLAY LABEL</th>
<th>EXAMPLE OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Min</td>
<td>103</td>
</tr>
<tr>
<td>13</td>
<td>Max</td>
<td>190</td>
</tr>
<tr>
<td>14</td>
<td>Min, Max</td>
<td>103, 190</td>
</tr>
<tr>
<td>15</td>
<td>(Min, Max)</td>
<td>(103, 190)</td>
</tr>
<tr>
<td></td>
<td>Min to Max</td>
<td>103 to 190</td>
</tr>
<tr>
<td>---</td>
<td>------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>

**INTER QUARTILE RANGE**

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>132.7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q3</td>
<td>160.0</td>
</tr>
<tr>
<td></td>
<td>Q1, Q3</td>
<td>132.7, 160.0</td>
</tr>
<tr>
<td></td>
<td>(Q1, Q3)</td>
<td>(132.7, 160.0)</td>
</tr>
<tr>
<td></td>
<td>Q1 to Q3</td>
<td>132.7 to 160.0</td>
</tr>
</tbody>
</table>

**COEFFICIENT OF VARIATION & GEOMETRIC MEAN (GM)**

<table>
<thead>
<tr>
<th></th>
<th>%CV</th>
<th>11.30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Geometric Mean</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>%CV for GM</td>
<td>11.00</td>
</tr>
</tbody>
</table>

**CONFIDENCE INTERVAL FOR MEAN & GM**

<table>
<thead>
<tr>
<th></th>
<th>Lower</th>
<th>143.8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upper</td>
<td>146.3</td>
</tr>
<tr>
<td></td>
<td>Lower, Upper</td>
<td>143.8, 146.3</td>
</tr>
<tr>
<td></td>
<td>(Lower, Upper)</td>
<td>(143.8, 146.3)</td>
</tr>
<tr>
<td></td>
<td>Lower to Upper</td>
<td>143.8 to 146.3</td>
</tr>
<tr>
<td></td>
<td>Lower for GM</td>
<td>142.9</td>
</tr>
<tr>
<td></td>
<td>Upper for GM</td>
<td>145.4</td>
</tr>
<tr>
<td></td>
<td>Lower, Upper for GM</td>
<td>142.9, 145.4</td>
</tr>
<tr>
<td></td>
<td>(Lower, Upper) for GM</td>
<td>(142.9, 145.4)</td>
</tr>
<tr>
<td></td>
<td>Lower to Upper for GM</td>
<td>142.9 to 145.4</td>
</tr>
</tbody>
</table>

Following options are available for Categorical

1 = displays count only
2 = displays count and percentage as XX (XX.X)
3 = displays count and percentage with percentage symbol as XX (XX.X%)
4 = displays count, population and percentage as XX/XX (XX.X)
5 = displays count, population and percentage with percentage symbol as XX/XX (XX.X%)

Display of percentages when count=0. The default condition displays percentages for 0 counts.

X = displays count of 0, no percentages.
X\0 = displays count of 0, and 0 percentage.

**Required: Yes**
Default: 1 7 9 14|2:0

Refer: Example 6

SMRYLBL
Statistics will be displayed with the default labels. User can override default values. Maximum allowed character is 100.

Each statistic label can be relabeled

SMRYLBL=STAT1=LABEL1|STAT2=LABEL2| … |STATy=LABELy.

Where

STATn is an output statistics key words and its default values:
N = Number of observation (Default: N=n)
MEAN = Mean (Default: MEAN=Mean)
MEDIAN = Median (Default: MEDIAN=Median)
STD or SD = Standard deviation (Default: STD=SD)
STDERR or SE = Standard error (Default: STDERR=SE)
Q1 = 25% Quartile (Default: Q1=Q1)
Q3 = 75% Quartile (Default: Q3=Q3)
GMEAN OR GM = Geometric mean (Default: GMEAN=Geometric Mean)
CV = Co-efficient of variance (Default: CV=%CV)
GCV = Co-efficient of variance log based (Default: GCV=%CV for GM)
LCL = Lower confidence limit (Default: LCL=Lower)
UCL = Upper confidence limit (Default: UCL=Upper)
GLCL = Lower confidence limit log based (Default: GLCL=Lower)
GUCL = Upper confidence limit log based (Default: GUCL=Upper)
MIN = Minimum (Default: MIN=Min)
MAX = Maximum (Default: MAX=Max)

Example:
SMRYLBL = MIN=Minimum|MAX=Maximum.

If output format is Min, Max and you want relabel to Range then specify as follow
SMRYLBL = MIN=Range|MAX=Range.

Required: No

Default: Refer above

SETDECN
Set decimal places for continuous variables. Specify a decimal "offset" for specific statistics or standard option (STDD, STDF, ASISD, and ASISF). In general, statistics are assigned that number of places as per data and rounding rule, with the exception of P-value statistics.
The SETDECN parameter uses the following syntax:

SETDECN=<Standard option>\STAT1=N|STAT2=M| ... |STATy=X

Where

Standard option:

STDD = Standard Rounding based on dataset
STDF = Standard Rounding based on format specified in ANLYZVRS
ASISD = Maximum number of decimals in dataset for all statistics
ASISF = Same decimal places in format specified in ANLYZVRS for all statistics

STATn is an output statistics key words:

MEAN = Mean
MEDIAN = Median
STD or SD = Standard deviation
STDERR or SE = Standard error
Q1 or Q3 or Q1Q3 = Quartiles
GMEAN or GM = Geometric mean
CV = Co-efficient of variance
GCV = Co-efficient of variance log based
CI or CL or CLM = Confidence limit
MINMAX or MIN or MAX = Minimum and maximum
PCT or PERCENT = Percentage

N, M...X are decimal offsets. The number of decimal places used for the statistic is the maximum number of decimals in dataset or format plus the offset.

Example:

SETDECN=STD=2|CV=3 or SETDECN=STDD\STD=2|CV=3

If maximum number of decimals in dataset were 1, then the STD would display three places and the CV would display four.

Required: No
Default: STDD

STACKSPC

If ANLYZVRS to be stacked with statistics or summary category then specify number spaces to stack. If you are going to report using ODS RTF or TAGSETS.RTF then specify RTF with \ between. If you specify RTF then special RTF Tag will be added appropriately.

General format STACKSPC=Number of spaces\Options\< RTF>

There are three options to stack
STAT = Display label stack with summary statistics
BYVAR = By variable stack with display label
ALL = Display label and by variable stack with summary statistics

**Required:** No

**Default:** Number of spaces\STAT

Refer: Example 4

**SPCBVAL** Include space before summary values to adjust counts.

**Required:** No

**Default:** 0

**MISNOTN** Summary statistics missing value notation for continuous variables.

**Required:** No

**Default:** NE

**STATTST** Request p-value for variables in ANLYZVRS. Available tests are Student t-test, Wilcoxon, Kruskal- Wallis, Analysis of Variance, Analysis of Co-variance, Chi-square, Fisher’s exact test and Cochran–Mantel–Haenszel.

General format

\[ \text{STATTST} = \text{Test-Test Option\Scores-Identifier-Covariates} \]

**Test:**

TTEST to request Student t-test
WILCOXON to request Wilcoxon test
KRUSKAL to request Kruskal- Wallis test
ANOVA to request Analysis of Variance
ANCOVA to request Analysis of Co-variance
CHISQ to request Chi-square test
FISHER or EXACT to request Fisher’s exact test
CMH to request Cochran–Mantel–Haenszel test

**Test Option:**

If t-test is requested then following options are applicable to test

a. DIFF (To test the difference of means – Default)
b. RATIO (To test the ratio of means)

If Wilcoxon/Kruskal- Wallis is requested then following options are applicable for p-value display

a. PL_WIL (Left sided p-value - normal assumption)
b. PR_WIL (Right sided p-value - normal assumption)
c. P2_WIL (2-sided p-value - normal assumption)
d. PTL_WIL (Left sided p-value - t-assumption)
e. PTR_WIL (Right sided p-value - t-assumption)
f. PT2_WIL (2-sided p-value - t-assumption)
g. P_KW (Kruskal-Wallis – Default)

If AN(C)OVA is requested then following options are applicable for p-value display
Class variables (default: COLMVAR)

If chi-square is requested then following options are applicable for p-value display
a. P_PCHI (Pearson chi-square for 2-way tables – Default)
b. P_LRCHI (Likelihood-ratio chi-square)
c. P_AJCHI (Continuity-adjusted chi-square for 2-way tables)
d. P_MHCHI (Mantel-Haenszel chi-square)

If Fisher’s exact test is requested then following options are applicable for p-value display
a. XPL_FISH (Left sided p-value for 2-way tables)
b. XPR_FISH (Right sided p-value for 2-way tables)
c. XP2_FISH (2-sided p-value for 2-way and larger than 2-way tables – Default)

If Cochran–Mantel–Haenszel test is requested then following options are applicable for p-value display and specify scores option
a. P_CMHCOR (Nonzero correlation)
b. P_CMHRMS (Row mean scores difference – Default if MODRIDIT)
c. P_CMHGA (General association – Default if Other)

Scores: Applicable to CHM only. TABLE, RANK, RIDIT or MODRIDIT (Default: TABLE)

Identifier: Any identification alphanumeric with or without special characters

Covariates: Applicable to ANCOVA and CMH

Required: No

Default: Refer above

Restriction: STATTST is not applicable if GRPCOLM is present

Refer: Example 3

UNIQSUBC Patient variable name to calculate unique subject/patient count. If patient variable is specified unique count will be used while calculating numerator and denominator count.

Required: No

Default: No default value.

INTOTCAT Optional display of a TOTAL value for categorical variables

The SETDECN parameter uses the following syntax:

INTOTCAT=T or B\Percentage Y or N</Label>

Where
T = Total row is displayed above the all categories.
B = Total row is displayed below the all categories.
Y = Total row with percentage is displayed (Default: N).
Label = Total row display label (Default: Total).

**Required:** No
**Default:** Refer above

Refer: [Example 4](#)

**TOTCLMYN**
Controls creation and display of a TOTAL column on the final table. The TOTAL group combines data from all values of the COLMVAR parameter. Set TOTCLMYN=N to suppress display of a TOTAL group.

**Required:** No
**Default:** N

**INALLCAT**
Request to include all categories in the format event the category is not present in the dataset. Set INALLCAT=Y to display all categories.

**Required:** No
**Default:** N

**Restriction:** If format is not exist then this will set to INALLCAT=N.

Refer: [Example 4](#)

**ALPHA**
Set the level of confidence limits. The value of $\alpha$ must be between 0 and 1. A confidence level of $\alpha$ produces $100 (1-\alpha)$ % confidence limits. The default of ALPHA=0.05 produces 95% confidence limits.

**Required:** No
**Default:** 0.05

**BRKAVRS**
Option to generate blank line between data rows. When BRKAVRS=Y, the report generates a blank line when the value for the first term variable changes. To suppress the blank lines, set BRKAVRS=N.

**Required:** No
**Default:** Yes

**EXAMPLES**

**Example 1**
This example uses default options.

```bash
%asumstat(indsnm=adam.adsl\trt01pn notin (1,0),
   outdsn=tfin,
   displbl=Age (years)|Sex - n (%),
   anlyzvrs=age\8.|con|sex\$sex.|cat);
```
### Demographic Parameter Statistics

<table>
<thead>
<tr>
<th>Demographic Parameter</th>
<th>Active (N=XXX)</th>
<th>Placebo (N=XXX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>75</td>
<td>77</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>76.8 ± 5.92</td>
<td>76.8 ± 4.53</td>
</tr>
<tr>
<td>Median</td>
<td>75.0</td>
<td>76.0</td>
</tr>
<tr>
<td>Min, Max</td>
<td>70, 98</td>
<td>70, 90</td>
</tr>
<tr>
<td>Sex – n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23 (30.7)</td>
<td>29 (37.7)</td>
</tr>
<tr>
<td>Female</td>
<td>52 (69.3)</td>
<td>48 (62.3)</td>
</tr>
</tbody>
</table>

### Example 2
This example uses statistics are transposed in COLMVAR.

```plaintext
%asumstat(indsnm=adam.adsl\trt01pn notin (1,0),
  outdsnm=tfin,
  colmvar=trt01pn\y\trtn.,
  displbl=Age (Years)|Sex,
  anlyzvrs=age\8.|con|sex\$sex.|cat);
```

<table>
<thead>
<tr>
<th>Active</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Median</td>
<td>Median</td>
</tr>
<tr>
<td>Min, Max</td>
<td>Min, Max</td>
</tr>
<tr>
<td>Age (Years)</td>
<td>75</td>
</tr>
<tr>
<td>76.8 ± 5.92</td>
<td>76.8 ± 4.53</td>
</tr>
<tr>
<td>75.0</td>
<td>76.0</td>
</tr>
<tr>
<td>70, 98</td>
<td>70, 90</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>23 (30.7)</td>
<td>29 (37.7)</td>
</tr>
<tr>
<td>Male</td>
<td>52 (69.3)</td>
</tr>
</tbody>
</table>

### Example 3
This example uses STATTTST option to request t-test and chi-square p-values.

```plaintext
%asumstat(indsnm=adam.adsl\trt01pn notin (1,0),
  outdsnm=tfin,
  colmvar=trt01pn\y\trtn.,
  displbl=Age (years)|Sex – n (%),
  anlyzvrs=age\8.|con|sex\$sex.|cat,
  stattst=ttest-diff- [a]|chisq-p_pchi- [b]);
```

### Example 4
This example demonstrate STACKSPC, INTOTCAT and INALLCAT option.

```plaintext
proc format;
  value sexn
    1='Male'
    2='Female'
```
3='Unknown';

run;

%asumstat(indsnm=adam.adsl\trt01pn notin (1,0),
    outdsnm=tfin,
    displbl=Age (years)Sex – n (%),
    anlyzvrs=age\8.\con|sexn\sexn.\cat,
    inallcat=y,
    stackspc=3);

<table>
<thead>
<tr>
<th>Demographic Parameter</th>
<th>Active (N=XXX)</th>
<th>Placebo (N=XXX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>75</td>
<td>77</td>
</tr>
<tr>
<td>n</td>
<td>76.8 ± 5.92</td>
<td>76.8 ± 4.53</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>75.0</td>
<td>76.0</td>
</tr>
<tr>
<td>Median</td>
<td>70, 98</td>
<td>70, 90</td>
</tr>
<tr>
<td>Min, Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex – n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>77</td>
</tr>
<tr>
<td>Male</td>
<td>23 (30.7)</td>
<td>29 (37.7)</td>
</tr>
<tr>
<td>Female</td>
<td>52 (69.3)</td>
<td>48 (62.3)</td>
</tr>
<tr>
<td>Unknown</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

Example 5
This example demonstrate GRPCOLM option.

%asumstat(indsnm=adam.adsl\trt01pn notin (1,0),
    outdsnm=tfin,
    grpcolm=trt01pn\trtn.,
    colmvar=sexn\n\sexn.\,
    displbl=Age (Years)Sex – n (%),
    anlyzvrs=age\8.\con|sex\$sex.\cat,
    disfmt=1 2 3 12 9 13|5\0);
### Statistics

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Statistics</th>
<th>Active</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>75</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>76.8</td>
<td>76.8</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>5.92</td>
<td>4.53</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>70</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>75.0</td>
<td>76.0</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>98</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sex – n (%)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>23/75 (30.7)</td>
<td>29/77 (37.7)</td>
</tr>
<tr>
<td>Male</td>
<td>52/75 (69.3)</td>
<td>48/77 (62.3)</td>
</tr>
</tbody>
</table>

### Example 7

This example uses PGVARBL and BYVARBL.

```sas
%asumstat(indsnm=adam.advs,
          outdsn=tfin,
          colmvar=trt01pn\n\trtn.,
          displbl=_null_,
          anlyzvrs=aval\8.\con,
          byvarbl=avisitn,
          pgvarbl=param);
```

### Vital Signs: Systolic BP

<table>
<thead>
<tr>
<th>Visit</th>
<th>Statistics</th>
<th>Active (N=XXX)</th>
<th>Placebo (N=XXX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>n</td>
<td>xxx</td>
<td>xxx</td>
</tr>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>xx.xx ± x.xx</td>
<td>xx.xx ± x.xx</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>xx.xx</td>
<td>xx.xx</td>
</tr>
<tr>
<td></td>
<td>Min, Max</td>
<td>xx, xx</td>
<td>xx, xx</td>
</tr>
<tr>
<td>Week 1</td>
<td>n</td>
<td>xxx</td>
<td>xxx</td>
</tr>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>xx.xx ± x.xx</td>
<td>xx.xx ± x.xx</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>xx.xx</td>
<td>xx.xx</td>
</tr>
<tr>
<td></td>
<td>Min, Max</td>
<td>xx, xx</td>
<td>xx, xx</td>
</tr>
</tbody>
</table>

### CONCLUSION

One macro handles both categorical and continuous descriptive statistic summary tables along with statistical analysis. This macro is generalized so that they can be used in many situations and as I mentioned in the introduction, this macro will not only save a lot of time but also improve the quality.

### REFERENCES

Zhong, Wayne. “One Macro Call to a Table with both Frequency and Summary Elements from a Subject-Level Dataset” *Proceedings of the PharmaSUG 2012, Paper CC18*.


### CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

   Rajaram Venkatesan
Cognizant Technology Solutions
rajaram.venkatesan@cognizant.com

Harinarayan Gopichandran
Cognizant Technology Solutions
harinarayan.g@cognizant.com

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