			%DSTMAC	*%UNICAT*	*%GGBASELINE*
Mixed Data types			√	√	√
Showing Number of Missing			√ Only for one group	√ Only for one group	√
Output	Rtf files		√	√	√
	PDF files				√
Continuous Variables	Parametric Test	ANOVA	√	√	√
	Nonparametric Test	Wilcoxon rank sum test	√		√
		Kruskal-Wallis Test	√	√	√
Categorical Variables	Parametric Test	Chi-square test	√ Likelihood Ratio Chi-Square	√	√
	Nonparametric Test	Fisher's exact test	√	√	√

*This summary file is generated by the combination of the SAS code and all of the output files manually.

SAS code File name: SAS Macro Summary Compilation_20190924_PSY.sas

```
/*************************************************************************************************
Purpose: Introduce different summary tables under group stratification
SAS Macros: %DSTMAC, %UNICAT, %ggBaseline
Dataset: PBC
Date- 09/24/2019
Demonstrated Version- SAS 9.4
Author- Pei-Shan Yen, Nairita Ghosal, Yi-Fan Chen
Biostatistics Core, Center for Clinical and Translational Science, University of Illinois at Chicago
*************************************************************************************************/
/*import PBC data from my drive*/
PROC IMPORT OUT= WORK.PBC
        DATAFILE= "C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_SAS summary macro\Group
Comparison\Data\pbc.csv"
        DBMS=csv REPLACE;
        GETNAMES=YES;
RUN;

/*format for categorical variables*/
/*format for categorial variables*/
PROC FORMAT;
          value status_F 0="alive" 1="liver transplant" 2="dead" .=' ';
          value trt_F 1="Dpenicillamine"  2="placebo" .=' ';
          value sex_F 0="male"  1="female" .=' ';
          value ascites_F 0="no"  1="yes"  .=' ';
          value ascites_FM 0="no"  1="yes"  .='MISSING';
          value hepato_F 0="no"  1="yes"  .=' ';
          value spiders_F 0="absent"  1="present"  .=' ';
          value edema_F   0="no edema and no diuretic therapy for edema"
                         .5="edema present without diuretics, or edema resolved by diuretics"
                          1="edema despite diuretic therapy"  .=' ';
RUN;

DATA WORK.PBC2;
 SET WORK.PBC(OBS=312);

/*label for all variables, # of variables=20*/
label
id          = "case number"
time        = "number of days between registration and the earlier of death, transplantion, or study analysis time in July, 1986"
status      = "status"
status_C    = "status"
trt         = "for D-penicillmain, placebo, not randomised"
trt_C       = "for D-penicillmain, placebo, not randomised"
```

```
age          = "age in years"
sex          = "sex"
sex_C        = "sex"
ascites      = "presence of ascites"
ascites_C    = "presence of ascites"
hepato       = "presence of hepatomegaly or enlarged liver"
hepato_C     = "presence of hepatomegaly or enlarged liver"
spiders      = "blood vessel malformations in the skin"
spiders_C    = "blood vessel malformations in the skin"
edema        = "presence of edema 0=no edema and no diuretic therapy for edema"
edema_C      = "presence of edema 0=no edema and no diuretic therapy for edema"
bili         = "serum bilirubin in mg/dl"
chol         = "serum cholesterol in mg/dl"
albumin      = "serum albumin (g/dl)"
copper       = "urine copper in ug/day"
alk_phos     = "alkaline phosphotase (U/liter)"
ast          = "aspartate aminotransferase, once called SGOT (U/ml)"
trig         = "triglicerides in mg/dl"
platelet     = "platelets per cubic ml/1000"
protime      = "standardised blood clotting time"
stage        = "histologic stage of disease (needs biopsy)"
;

/*Make up some missing data*/
If chol=. then ascites=. ;

/*format for categorical variables*/
status_C    =put(status,status_F.);
trt_C       =put(trt ,trt_F.);
sex_C       =put(sex,sex_F.);
ascites_C   =put(ascites,ascites_F.);
ascites_CM =put(ascites,ascites_FM.);
hepato_C    =put(hepato,hepato_F.);
spiders_C   =put(spiders,spiders_F.);
edema_C     =put(edema ,edema_F.);
RUN;

DATA WORK.PBC3;
 SET WORK.PBC2(KEEP= id trt_C age bili chol sex_C ascites_C ascites_CM edema_C);
RUN;

/*print out dataset*/
PROC PRINT DATA=WORK.PBC3;
RUN;
```

Obs	id	time	age	bili	chol	albumin	copper	alk_phos	ast	trig	platelet	protime	stage	status_C	trt_C	sex_C	ascites_C	hepato_C	spiders_C	edema_C
1	1	400	58.7652293	14.5	261	2.6	156	1718	137.95	172	190	12.2	4	2. dead	1.D-penicillamine	1. female	1. yes	1. yes	1. present	1. edema despite diuretic therapy
2	2	4500	56.44626968	1.1	302	4.14	54	7394.8	113.52	88	221	10.6	3	0. alive	1.D-penicillamine	1. female	0. no	1. yes	1. present	0. no edema and no diuretic therapy for edema
3	3	1012	70.07255305	1.4	176	3.48	210	516	96.1	55	151	12	4	2. dead	1.D-penicillamine	0. male	0. no	0. no	0. absent	.5 edema present without diuretics, or edema resolved by diuretics

```
/*************************************************************************************
Data Analysis
1. We will use data PBC3 as an example throughout the demonstration
2. Consider first 312 samples and only focus on 6 variable (3 continuous+3 categorical)
3. Variable "trt" and "sex" will be used as the stratification variable.
4. In Summary statistics, Means ± standard deviations are calculated for continuous variables, n (%) are produced for categorical
variables
*************************************************************************************/
```

```
/*****************************************************************************************
SAS MACRO FOR DESCRIPTIVE STATISTICS TABLE: %DSTMAC
by Matthew C. Fenchel, M.S.,Cincinnati Children's Hospital Medical Center, Cincinnati, OH et al.,2011
URL link: https://www.mwsug.org/proceedings/2011/stats/MWSUG-2011-SA19.pdf
*****************************************************************************************
Note:
1. Creates .rtf file
2. Parametric Test: T-Test/ANOVA for continuous variables
3. Parametric Test: Likelihood Ratio Chi-Square Test for categorical variables
4. Non-parametric Test: Kruskal-Wallis Test for continuous variables
5. Non-parametric Test: Fisher's exact Test for categorical variables
*****************************************************************************************/
%INCLUDE "C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison
SAS Macro\Macro\DSTMAC\MWSUG 2011 Descriptive Stat V2.sas" ;

/*Summary Stataistics*/
%DSTMAC (dsname = PBC3(drop=ascites_C),
/*Name of data set.*/
/*drop up the variable which has missing data and without missing label because we would like to show count of missing*/

Byvar = NONE,
/*The "By" variable*/
/*Separate DST's will be produced for each level of the "By" variable*/

group = NONE,
/*The "Group" variable*/

test = TST,
/*For most cases, enter "TST" (all caps)*/
/*If you have a "Group" variable with exactly three (3) levels,
and you want overall (ANOVA) results instead of all two-way comparisons,
then enter the word "OVERALL" (all caps).*/

outpath = C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison SAS
Macro\Output,
/* Output file location*/

outname = Descriptive Statistics using Macro DSTMAC,
/*output file name*/

title = Descriptive Statistics using Macro DSTMAC);
/*Title*/
```

Descriptive Statistics using Macro DSTMAC
Mean ± SD (n) or Counts (%)
By Variable Level = None
Statistics Only
No Tests (No Group Variable Defined)

Variable	Sub-Cat	Statistics (n = 312)	VarNumber
age		50.02 ± 10.58 (312)	1
bili		3.26 ± 4.53 (312)	2
chol		369.51 ± 231.94 (284)	3
ascites_CM	MISSING	28 (8.97%)	7
ascites_CM	no	263 (84.29%)	7
ascites_CM	yes	21 (6.73%)	7
edema_C	edema despite diuretic th	20 (6.41%)	6
edema_C	edema present without diu	29 (9.29%)	6
edema_C	no edema and no diuretic	263 (84.29%)	6
sex_C	female	276 (88.46%)	5
sex_C	male	36 (11.54%)	5
trt_C	Dpenicillamine	158 (50.64%)	4
trt_C	placebo	154 (49.36%)	4

```
/* Summary statistics stratified by Sex*/
%DSTMAC (dsname = PBC3(drop=ascites_CM),
/*drop up the variable which has missing data and with missing label because we would like to perform test (exclude missing)*/
      ID=id,
      byvar = NONE,
      group = SEX_C,
      test = TST,
      outpath = C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison SAS Macro\Output,
      outname = Descriptive Statistics stratified by Sex using Macro DSTMAC,
      title = Descriptive Statistics stratified by Sex using Macro DSTMAC);
```

Descriptive Statistics stratified by Sex using Macro DSTMAC
Mean ± SD (n) or Counts (%)
By Variable Level = None
Statistics & Comparisons by SEX_C

Variable	Sub-Cat	female (n = 276)	male (n = 36)	Compare1	P-F1	P-KW1	P-LR1	P-Fish1	VarNumber
age		49.21 ± 10.21 (276)	56.20 ± 11.49 (36)	female-male	0.0002	0.0009			1
bili		3.31 ± 4.75 (276)	2.87 ± 2.23 (36)	female-male	0.5896	0.0518			2
chol		370.50 ± 238.73 (249)	362.46 ± 178.99 (35)	female-male	0.8480	0.9448			3
ascites_C	no	230 (92.37%)	33 (94.29%)	female-male			0.6751	1	6
ascites_C	yes	19 (7.63%)	2 (5.71%)	female-male			***	***	6
edema_C	edema despite diuretic th	17 (6.16%)	3 (8.33%)	female-male			0.8096	0.6147	7
edema_C	edema present without diu	25 (9.06%)	4 (11.11%)	female-male			***	***	7
edema_C	no edema and no diuretic	234 (84.78%)	29 (80.56%)	female-male			***	***	7
sex_C			3 (8.33%)	female-male			0	0	5
sex_C			4 (11.11%)	female-male			0	0	5
sex_C			29 (80.56%)	female-male			0	0	5
trt_C	Dpenicillamine	137 (49.64%)	21 (58.33%)	female-male			0.3252	0.3774	4
trt_C	placebo	139 (50.36%)	15 (41.67%)	female-male			***	***	4

```
/* Summary statistics stratified by Sex and Treatment*/
%DSTMAC (dsname=PBC3(drop=ascites_CM),
/*drop up the variable which has missing data and with missing label because we would like to perform test (exclude missing)*/
    ID=id,
    byvar=SEX_C,
    group=TRT_C,
    test=TST,
    outpath=C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison SAS Macro\Output,
    outname= Descriptive Statistics stratified by Sex and Treatment using Macro DSTMAC,
    title= Descriptive Statistics stratified by Sex and Treatment using Macro DSTMAC);
```

Descriptive Statistics stratified by Sex and Treatment using Macro DSTMAC
Mean ± SD (n) or Counts (%)
By Variable Level = female
Statistics & Comparisons by TRT_C

SEX_C	Variable	Sub-Cat	Dpenicillamine (n = 137)	placebo (n = 139)	Compare1	P-F1	P-KW1	P-LR1	P-Fish1	VarNumber
female	age		50.78 ± 10.65 (137)	47.66 ± 9.54 (139)	Dpenicillamine-placebo	0.0109	0.0151			1
female	bili		2.86 ± 3.81 (137)	3.75 ± 5.50 (139)	Dpenicillamine-placebo	0.1189	0.6072			2
female	chol		358.24 ± 210.46 (119)	381.73 ± 262.26 (130)	Dpenicillamine-placebo	0.4390	0.9410			3
female	ascites_C	no	107 (89.92%)	123 (94.62%)	Dpenicillamine-placebo			0.1616	0.2318	6
female	ascites_C	yes	12 (10.08%)	7 (5.38%)	Dpenicillamine-placebo			***	***	6
female	edema_C	edema despite diuretic th	9 (6.57%)	8 (5.76%)	Dpenicillamine-placebo			0.9265	0.9062	7
female	edema_C	edema present without diu	13 (9.49%)	12 (8.63%)	Dpenicillamine-placebo			***	***	7
female	edema_C	no edema and no diuretic	115 (83.94%)	119 (85.61%)	Dpenicillamine-placebo			***	***	7
female	sex_C	female	137 (100.00%)	139 (100.00%)	Dpenicillamine-placebo			0	0	5
female	trt_C			139 (100.00%)	Dpenicillamine-placebo			0	0	4

Descriptive Statistics stratified by Sex and Treatment using Macro DSTMAC
Mean ± SD (n) or Counts (%)
By Variable Level = male
Statistics & Comparisons by TRT_C

SEX_C	Variable	Sub-Cat	Dpenicillamine (n = 21)	placebo (n = 15)	Compare1	P-F1	P-KW1	P-LR1	P-Fish1	VarNumber
male	age		55.57 ± 12.61 (21)	57.09 ± 10.07 (15)	Dpenicillamine-placebo	0.7008	0.8852			1
male	bili		2.98 ± 2.11 (21)	2.72 ± 2.46 (15)	Dpenicillamine-placebo	0.7352	0.4504			2
male	chol		403.43 ± 204.95 (21)	301.00 ± 111.32 (14)	Dpenicillamine-placebo	0.0977	0.1780			3
male	ascites_C	no	20 (95.24%)	13 (92.86%)	Dpenicillamine-placebo			0.7684	1	6
male	ascites_C	yes	1 (4.76%)	1 (7.14%)	Dpenicillamine-placebo			***	***	6
male	edema_C	edema despite diuretic th	1 (4.76%)	2 (13.33%)	Dpenicillamine-placebo			0.5358	0.686	7
male	edema_C	edema present without diu	3 (14.29%)	1 (6.67%)	Dpenicillamine-placebo			***	***	7
male	edema_C	no edema and no diuretic	17 (80.95%)	12 (80.00%)	Dpenicillamine-placebo			***	***	7
male	sex_C	male	21 (100.00%)	15 (100.00%)	Dpenicillamine-placebo			0	0	5
male	trt_C			15 (100.00%)	Dpenicillamine-placebo			0	0	4

```
/*************************************************************************************************
SAS MACRO FOR DESCRIPTIVE STATISTICS TABLE:  %UNICAT
by Dana Nickleach, Yuan Liu, Adam Shrewsberry, Kenneth Ogan, Sungjin Kim, and Zhibo
    Wang, Emory University, Atlanta, GA, 2013
URL link: https://github.com/Emory-Yuan/BBISR-SAS-Macros
*************************************************************************************************
/*Note:
1. Creates Microsoft Words documents
2. %UNICAT for stratification and statistical tests
3. Parametric Test: T-Test/ANOVA for numerical variables
4. Parametric Test: Chi-Square Test for categorical variables
5. Non-parametric Test: Kruskal-Wallis Test for numerical variables
6. Non-parametric Test: Fisher's exact Test for categorical variables
*************************************************************************************************/

/* Summary statistics stratified by Treatment*/
%INCLUDE "C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison
SAS Macro\Macro\UNICAT\UNI_CAT V29.sas" ;
/*SAS Macro location*/

TITLE 'Descriptive Statistics stratified by Treatment using Macro UNICAT';
/*Table name*/

%UNI_CAT(DATASET=PBC3(drop=ascites_CM),
/*Dataset name*/
/*drop up the variable which has missing data and with missing label because we would like to perform test (exclude missing)*/

OUTCOME=Trt_C,
/*Stratification variable name*/

CLIST=sex_C ascites_C edema_C,
/*Categorical Variable*/

NLIST=age bili albumin chol,
/*Continuous Variable*/

NONPAR=T,
/*Specify a value of F, T, or A to indicate whether to conduct non-parametric tests.
If the value is T then both parametric and non-parametric tests will be conducted.
If the value is F then only parametric tests will be conducted.
A value of A means that for categorical variables, the appropriate test statistic,
non-parametric or parametric, will be automatically chosen based on whether the chi-square test is invalid,
but for numerical variables only the parametric test will be calculated.
Option A is only available for SAS V9.3 or later.
The default value is F.*/

SPREAD=T,
/*Set to T to also report standard deviation, min, and max for numerical variables. The default value is F.*/

OUTPATH=C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_SAS summary macro\Group Comparison\Output\,
/*Output file location*/

FNAME=Descriptive Statistics stratified by Treatment using Macro UNICAT,
/*Output file name*/

ROWPERCENT=T);
TITLE;
```

Descriptive Statistics stratified by Treatment using Macro UNICAT

			for D-penicillmain, placebo, not randomised			
Covariate	**Statistics**	**Level**	**Dpenicillamine**	**placebo N=154**	**Parametric P-**	**Non-Parametric P-**
sex	N (Row %)	female	137 (49.64)	139 (50.36)	0.326	0.377
	N (Row %)	male	21 (58.33)	15 (41.67)		
presence of ascites	N (Row %)	no	127 (48.29)	136 (51.71)	0.230	0.262
	N (Row %)	yes	13 (61.9)	8 (38.1)		
presence of edema 0=no edema and no diuretic therapy for edema	N (Row %)	edema despite diuretic	10 (50)	10 (50)	0.877	0.894
	N (Row %)	edema present without	16 (55.17)	13 (44.83)		
	N (Row %)	no edema and no diuretic	132 (50.19)	131 (49.81)		
age in years	N		158	154	**0.018**	**0.020**
	Mean		51.42	48.58		
	Median		51.93	48.11		
	Min		26.28	30.57		
	Max		78.44	74.52		
	Std Dev		11.01	9.96		
serum bilirubin in mg/dl	N		158	154	0.131	0.842
	Mean		2.87	3.65		
	Median		1.4	1.3		
	Min		0.3	0.3		
	Max		20	28		
	Std Dev		3.63	5.28		
albumin	N		158	154	0.131	0.842
	Mean		2.87	3.65		
	Median		1.4	1.3		
	Min		0.3	0.3		
	Max		20	28		
	Std Dev		3.63	5.28		
serum cholesterol in mg/dl	N		140	144	0.748	0.544
	Mean		365.01	373.88		
	Median		315.5	303.5		
	Min		127	120		
	Max		1712	1775		
	Std Dev		209.54	252.48		

* The parametric p-value is calculated by ANOVA for numerical covariates and chi-square test for categorical covariates.

** The non-parametric p-value is calculated by the Kruskal-Wallis test for numerical covariates and Fisher's exact test for categorical covariates.

```
/* Summary statistics stratified by Treatment_Sex*/
TITLE 'Descriptive Statistics stratified by Sex/Treatment using Macro UNICAT';
%UNI_CAT(DATASET=PBC3(drop=ascites_CM),
OUTCOME=sex_C trt_C,
CLIST=ascites_C edema_C,
NLIST=age bili albumin chol,

NONPAR=T,
/*Specify a value of F, T, or A to indicate whether to conduct non-parametric tests.
If the value is T then both parametric and non-parametric tests will be conducted.
If the value is F then only parametric tests will be conducted.
A value of A means that for categorical variables, the appropriate test statistic,
non-parametric or parametric, will be automatically chosen based on whether the chi-square test is invalid,
but for numerical variables only the parametric test will be calculated.
Option A is only available for SAS V9.3 or later.
The default value is F.*/

SPREAD=T,
OUTPATH=C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison SAS Macro\Output\,
FNAME=Descriptive Statistics stratified by Sex and Treatment using Macro UNICAT,
ROWPERCENT=T);
TITLE;
```

Descriptive Statistics stratified by Sex/Treatment using Macro UNICAT

			sex				for D-penicillmain, placebo, not randomised			
Covariate	Statistics	Level	female N=276	male N=36	Parametric P-value*	Non-Parametric P-value**	Dpenicillamine N=158	placebo N=154	Parametric P-value*	Non-Parametric P-value**
presence of ascites	N (Row %)	no	230 (87.45)	33 (12.55)	0.685	1.000	127 (48.29)	136 (51.71)	0.230	0.262
	N (Row %)	yes	19 (90.48)	2 (9.52)			13 (61.9)	8 (38.1)		
presence of edema 0=no edema and no diuretic therapy for edema	N (Row %)	edema despite diuretic therapy	17 (85)	3 (15)	0.800	0.615	10 (50)	10 (50)	0.877	0.894
	N (Row %)	edema present without diuretics, or edema resolved by diuretics	25 (86.21)	4 (13.79)			16 (55.17)	13 (44.83)		
	N (Row %)	no edema and no diuretic therapy for edema	234 (88.97)	29 (11.03)			132 (50.19)	131 (49.81)		
age in years	N		276	36	**<.001**	**<.001**	158	154	**0.018**	**0.020**
	Mean		49.21	56.2			51.42	48.58		
	Median		48.9	54.65			51.93	48.11		
	Min		26.28	33.48			26.28	30.57		
	Max		76.71	78.44			78.44	74.52		
	Std Dev		10.21	11.49			11.01	9.96		
serum bilirubin in mg/dl	N		276	36	0.590	0.052	158	154	0.131	0.842
	Mean		3.31	2.87			2.87	3.65		
	Median		1.3	2.2			1.4	1.3		
	Min		0.3	0.6			0.3	0.3		
	Max		28	8.6			20	28		
	Std Dev		4.75	2.23			3.63	5.28		

```
/*************************************************************************************************
SAS MACRO FOR DESCRIPTIVE STATISTICS TABLE:  %ggBaseline
by Hong-Qiu Gu1,2, Dao-Ji Li3, Chelsea Liu4, Zhen-Zhen Rao , 2018
URL link: http://atm.amegroups.com/article/download/21039/pdf
*************************************************************************************************
Notes:
1. Creates rtf or PDF report
2. Deletes the Dataset used for the analysis!!
3. Does not have the option to produce summary statistics without stratification
4. Parametric Test: t-test, ANOVA for numerical variables
5. Parametric Test: Chi-Square test for categorical variables
6. Non-parametric Test: Wilcoxon Rank Sum, Kruskal-Wallis test for numerical variables
7. Non-parametric Test: Fisher's exact test for categorical variables
*************************************************************************************************/
%INCLUDE "C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_SAS summary macro\Group Comparison\Macro\ggBaseline\ggBaseline1.sas";
%INCLUDE "C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_SAS summary macro\Group Comparison\Macro\ggBaseline\ggBaseline2.sas";
%INCLUDE "C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_SAS summary macro\Group Comparison\Macro\ggBaseline\ggBaseline.sas";

/*Summary statistics*/
%ggBaseline(data=PBC3,  /*Dataset*/
var = age|CTN|'age in years'\
bili|CTN|'serum bilirubin in mg/dl'\
chol|CTN|'serum cholesterol in mg/dl'\
sex_C|CTG|'sex'\
edema_C|CTG|'presence of edema'\
ascites_C|CTG|'presence of ascites'\,
/*Variables|CTN/CTG|variable_label*//*If there is only one group,
test_name is replaced by variable type and can be CTN for continuous variables and CTG for categorical variables*/

totcol=Y,        /*Use Y or N to indicate whether we need a total column ahead of group columns*/

filetype=RTF,   /*Use RTF or PDF*/

file=C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison SAS Macro\Output\Descriptive Statistics using Macro ggBaseline,  /*Specify the Output file location and name*/

title=%str(Descriptive Statistics using Macro ggBaseline));  /*Specify the table title*/
```

Descriptive Statistics using Macro ggBaseline

Variables	Statistics (N=312)
'age in years'	
Mean¡ÀSD	50.0¡Â10.6
Min-Max	26.3¨C78.4
Median (Q1-Q3)	49.8 (42.1-56.7)
'serum bilirubin in mg/dl'	
Mean¡ÀSD	3.3¡Â4.5
Min-Max	0.3¨C28.0
Median (Q1-Q3)	1.4 (0.8-3.5)
'serum cholesterol in mg/dl'	
Nmiss (%)	28 ()
Mean¡ÀSD	369.5¡Â231.9
Min-Max	120.0¨C1775.0
Median (Q1-Q3)	309.5 (249.0-400.0)
'sex'	
female	276 (88.5)
male	36 (11.5)
'presence of edema'	
edema despite diuretic therapy	20 (6.4)
edema present without diuretics, or edema resolved by diuretics	29 (9.3)
no edema and no diuretic therapy for edema	263 (84.3)
'presence of ascites'	
Missing	28 (9.0)
no	263 (92.6)
yes	21 (7.4)

```
/* Summary statistics stratified by Treatment*/
%ggBaseline(data=PBC3(drop=ascites_CM),
/*drop up the variable which has missing data and with missing label because we would like to perform test (exclude missing)*/
var = age|TTEST|'age in years'\
bili|TTEST|'serum bilirubin in mg/dl'\
chol|TTEST|'serum cholesterol in mg/dl'\
sex_C|CHISQ|'sex'\
edema_C|CHISQ|'presence of edema'\
ascites_C|CHISQ|'presence of ascites'\,
/*Variables|Test Name|variable_label*/
/*Test Name; TTEST/WILCX/ANOVA/KRSWLS for continuous variables; CHISQ/CMH/TREND/FISHER for categorical variables*/
grp=Trt_C,
grplabel= D-penicillamine| Placebo,
totcol=Y,
filetype=PDF,
file=C:\Users\pyen2\Dropbox\UIC RA CCTS\201909 Small Project_Group Comparison SAS Macro\Group Comparison SAS Macro\Output\Descriptive Statistics stratified by Treatment using Macro ggBaseline,
title=%str(Descriptive Statistics stratified by Treatment using Macro ggBaseline));
```

Descriptive Statistics stratified by Treatment using Macro ggBaseline

Variables	Total (N=312)	D-penicillamine (N=158)	Placebo (N=154)	P Value
'age in years'				0.0177
Mean±SD	50.0±10.6	51.4±11.0	48.6±10.0	
Min-Max	26.3-78.4	26.3-78.4	30.6-74.5	
Median (IQR)	49.8 (42.1-56.7)	51.9 (43.0-59.0)	48.1 (41.4-55.8)	
'serum bilirubin in mg/dl'				0.1329
Mean±SD	3.3±4.5	2.9±3.6	3.6±5.3	
Min-Max	0.3-28.0	0.3-20.0	0.3-28.0	
Median (IQR)	1.4 (0.8-3.5)	1.4 (0.8-3.2)	1.3 (0.7-3.6)	
'serum cholesterol in mg/dl'				0.7474
Nmiss (%)	28 (9.0)	18 (11.4)	10 (6.5)	
Mean±SD	369.5±231.9	365.0±209.5	373.9±252.5	
Min-Max	120.0-1775.0	127.0-1712.0	120.0-1775.0	
Median (IQR)	309.5 (249.0-400.0)	315.5 (247.5-418.0)	303.5 (253.5-379.0)	
'sex'				0.3263
female	276 (88.5)	137 (86.7)	139 (90.3)	
male	36 (11.5)	21 (13.3)	15 (9.7)	
'presence of edema'				0.8768
edema despite diuretic therapy	20 (6.4)	10 (6.3)	10 (6.5)	
edema present without diuretics, or edema resolved by diuretics	29 (9.3)	16 (10.1)	13 (8.4)	
no edema and no diuretic therapy for edema	263 (84.3)	132 (83.5)	131 (85.1)	
'presence of ascites'				0.2297
Missing	28 (9.0)	18 (11.4)	10 (6.5)	
no	263 (92.6)	127 (90.7)	136 (94.4)	
yes	21 (7.4)	13 (9.3)	8 (5.6)	