Program Summary - Assignment1.sas

Execution Environment

Author:	u64009447
File:	/home/u64009447/BAN100/Assignment 1/Assignment1.sas
SAS Platform:	Linux LIN X64 5.14.0-284.30.1.el9_2.x86_64
SAS Host:	ODAWS02-USW2.ODA.SAS.COM
SAS Version:	9.04.01M7P08062020
SAS Locale:	en_US
Submission Time:	10/7/2024, 9:30:22 PM
Browser Host:	142.204.17.54
User Agent:	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/129.0.0.0 Safari/537.36
Application Server:	ODAMID00-USW2.ODA.SAS.COM

Code: Assignment1.sas

```
/* Import the dataset */
proc import datafile="/home/u64009447/BAN100/Assignment 1/File BIRTH(1).xlsx"
    out=birth_data
    dbms=xlsx
    replace;
    sheet="BIRTH"; /* Change to your actual sheet name */
    getnames=yes;
run;

/* T-test to compare 'Weight' based on the 'Boy' variable */
proc ttest data=birth_data;
    class Boy;
    var Weight;
run;

/* T-test to compare 'Weight' based on the 'Married' variable */
proc ttest data=birth_data;
    class Married;
    var Weight;
run;

/* T-test to compare 'Weight' based on the 'MomSmoke' variable */
proc ttest data=birth_data;
    class MomSmoke;
    var Weight;
run;

/* Correlation analysis for continuous variables */
proc corr data=birth_data;
    var Weight MomAge CigsPerDay MomWtGain Visit MomEdLevel;
run;

/* Summary statistics for better interpretation */
proc means data=birth_data mean stddev;
    var Weight Boy Married MomSmoke MomAge CigsPerDay MomWtGain Visit MomEdLevel;
run;

data classroom;
    input cooperation competition;
    datalines;
70 66
70 62
71 68
72 68
72 75
72 74
73 80
73 80
74 82
84 85
80 85
79 86
80 88
85 90
;
run;
```

```
/* Measures of Central Tendency, Variation, and Shape for Cooperation */
proc means data=classroom mean median std var skewness kurtosis;
    var cooperation;
    output out=coop_stats mean=mean_coop median=median_coop std=std_coop var=var_coop skewness=skew_coop kurtosis=kurt_coop;
    title 'Descriptive Statistics for Cooperation Approach';
run;

/* Measures of Central Tendency, Variation, and Shape for Competition */
proc means data=classroom mean median std var skewness kurtosis;
    var competition;
    output out=comp_stats mean=mean_comp median=median_comp std=std_comp var=var_comp skewness=skew_comp kurtosis=kurt_comp;
    title 'Descriptive Statistics for Competition Approach';
run;

/* Displaying Output for Comparison */
proc print data=coop_stats;
    title 'Statistics for Cooperation Approach';
run;

proc print data=comp_stats;
    title 'Statistics for Competition Approach';
run;
```

Log: Assignment1.sas

Notes (21)

```
1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69         /* Import the dataset */
70         proc import datafile="/home/u64009447/BAN100/Assignment 1/File BIRTH(1).xlsx"
71             out=birth_data
72             dbms=xlsx
73             replace;
74             sheet="BIRTH"; /* Change to your actual sheet name */
75             getnames=yes;
76         run;

NOTE: The import data set has 50000 observations and 10 variables.
NOTE: WORK.BIRTH_DATA data set was successfully created.
NOTE: PROCEDURE IMPORT used (Total process time):
      real time           3.71 seconds
      user cpu time       3.68 seconds
      system cpu time     0.01 seconds
      memory              4644.12k
      OS Memory           29184.00k
      Timestamp           10/08/2024 01:30:16 AM
      Step Count                        103  Switch Count  4
      Page Faults                       0
      Page Reclaims                     820
      Page Swaps                        0
      Voluntary Context Switches        34
      Involuntary Context Switches      11
      Block Input Operations            0
      Block Output Operations           7944


77
78         /* T-test to compare 'Weight' based on the 'Boy' variable */
79         proc ttest data=birth_data;
80             class Boy;
81             var Weight;
82         run;

NOTE: PROCEDURE TTEST used (Total process time):
      real time           1.38 seconds
      user cpu time       0.87 seconds
      system cpu time     0.19 seconds
      memory              24878.06k
      OS Memory           47508.00k
      Timestamp           10/08/2024 01:30:17 AM
      Step Count                        104  Switch Count  108
      Page Faults                       0
      Page Reclaims                     52128
      Page Swaps                        0
      Voluntary Context Switches        9630
      Involuntary Context Switches      38
      Block Input Operations            0
      Block Output Operations           90296
```

```
83
84          /* T-test to compare 'Weight' based on the 'Married' variable */
85          proc ttest data=birth_data;
86              class Married;
87              var Weight;
88          run;

NOTE: PROCEDURE TTEST used (Total process time):
      real time           1.50 seconds
      user cpu time       1.03 seconds
      system cpu time     0.20 seconds
      memory              17330.50k
      OS Memory           48012.00k
      Timestamp           10/08/2024 01:30:19 AM
      Step Count                        105  Switch Count  109
      Page Faults                       0
      Page Reclaims                     50216
      Page Swaps                        0
      Voluntary Context Switches        10020
      Involuntary Context Switches      69
      Block Input Operations            0
      Block Output Operations           109408


89
90          /* T-test to compare 'Weight' based on the 'MomSmoke' variable */
91          proc ttest data=birth_data;
92              class MomSmoke;
93              var Weight;
94          run;

NOTE: PROCEDURE TTEST used (Total process time):
      real time           1.57 seconds
      user cpu time       1.12 seconds
      system cpu time     0.20 seconds
      memory              17196.34k
      OS Memory           47856.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                        106  Switch Count  112
      Page Faults                       0
      Page Reclaims                     50731
      Page Swaps                        0
      Voluntary Context Switches        9974
      Involuntary Context Switches      56
      Block Input Operations            0
      Block Output Operations           124376


95
96          /* Correlation analysis for continuous variables */
97          proc corr data=birth_data;
98              var Weight MomAge CigsPerDay MomWtGain Visit MomEdLevel;
99          run;

NOTE: PROCEDURE CORR used (Total process time):
      real time           0.05 seconds
      user cpu time       0.06 seconds
      system cpu time     0.00 seconds
      memory              2272.34k
      OS Memory           34740.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                        107  Switch Count  0
      Page Faults                       0
      Page Reclaims                     244
      Page Swaps                        0
      Voluntary Context Switches        3
      Involuntary Context Switches      5
      Block Input Operations            0
      Block Output Operations           16


100
101         /* Summary statistics for better interpretation */
102         proc means data=birth_data mean stddev;
103             var Weight Boy Married MomSmoke MomAge CigsPerDay MomWtGain Visit MomEdLevel;
104         run;

NOTE: There were 50000 observations read from the data set WORK.BIRTH_DATA.
NOTE: PROCEDURE MEANS used (Total process time):
      real time           0.02 seconds
      user cpu time       0.03 seconds
      system cpu time     0.01 seconds
      memory              7456.68k
      OS Memory           39880.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                        108  Switch Count  1
```

```
      Page Faults                     0
      Page Reclaims                   1538
      Page Swaps                      0
      Voluntary Context Switches      47
      Involuntary Context Switches    0
      Block Input Operations          0
      Block Output Operations         0


105
106       data classroom;
107           input cooperation competition;
108           datalines;

NOTE: The data set WORK.CLASSROOM has 14 observations and 2 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      user cpu time       0.00 seconds
      system cpu time     0.00 seconds
      memory              668.18k
      OS Memory           33972.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                      109  Switch Count  2
      Page Faults                     0
      Page Reclaims                   85
      Page Swaps                      0
      Voluntary Context Switches      15
      Involuntary Context Switches    0
      Block Input Operations          0
      Block Output Operations         264


123       ;
124       run;
125
126       /* Measures of Central Tendency, Variation, and Shape for Cooperation */
127       proc means data=classroom mean median std var skewness kurtosis;
128           var cooperation;
129           output out=coop_stats mean=mean_coop median=median_coop std=std_coop var=var_coop skewness=skew_coop
129     ! kurtosis=kurt_coop;
130           title 'Descriptive Statistics for Cooperation Approach';
131       run;

NOTE: There were 14 observations read from the data set WORK.CLASSROOM.
NOTE: The data set WORK.COOP_STATS has 1 observations and 8 variables.
NOTE: PROCEDURE MEANS used (Total process time):
      real time           0.01 seconds
      user cpu time       0.02 seconds
      system cpu time     0.00 seconds
      memory              7550.18k
      OS Memory           40152.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                      110  Switch Count  4
      Page Faults                     0
      Page Reclaims                   1606
      Page Swaps                      0
      Voluntary Context Switches      46
      Involuntary Context Switches    0
      Block Input Operations          0
      Block Output Operations         264


132
133       /* Measures of Central Tendency, Variation, and Shape for Competition */
134       proc means data=classroom mean median std var skewness kurtosis;
135           var competition;
136           output out=comp_stats mean=mean_comp median=median_comp std=std_comp var=var_comp skewness=skew_comp
136     ! kurtosis=kurt_comp;
137           title 'Descriptive Statistics for Competition Approach';
138       run;

NOTE: There were 14 observations read from the data set WORK.CLASSROOM.
NOTE: The data set WORK.COMP_STATS has 1 observations and 8 variables.
NOTE: PROCEDURE MEANS used (Total process time):
      real time           0.01 seconds
      user cpu time       0.01 seconds
      system cpu time     0.01 seconds
      memory              7326.15k
      OS Memory           40152.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                      111  Switch Count  4
      Page Faults                     0
      Page Reclaims                   1605
      Page Swaps                      0
      Voluntary Context Switches      43
      Involuntary Context Switches    0
```

```
      Block Input Operations           0
      Block Output Operations          264


139
140       /* Displaying Output for Comparison */
141       proc print data=coop_stats;
142           title 'Statistics for Cooperation Approach';
143       run;

NOTE: There were 1 observations read from the data set WORK.COOP_STATS.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.00 seconds
      user cpu time       0.01 seconds
      system cpu time     0.00 seconds
      memory              680.00k
      OS Memory           33972.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                       112  Switch Count  1
      Page Faults                      0
      Page Reclaims                    62
      Page Swaps                       0
      Voluntary Context Switches       10
      Involuntary Context Switches     1
      Block Input Operations           0
      Block Output Operations          0


144
145       proc print data=comp_stats;
146           title 'Statistics for Competition Approach';
147       run;

NOTE: There were 1 observations read from the data set WORK.COMP_STATS.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.00 seconds
      user cpu time       0.01 seconds
      system cpu time     0.00 seconds
      memory              665.87k
      OS Memory           33972.00k
      Timestamp           10/08/2024 01:30:20 AM
      Step Count                       113  Switch Count  1
      Page Faults                      0
      Page Reclaims                    62
      Page Swaps                       0
      Voluntary Context Switches       9
      Involuntary Context Switches     2
      Block Input Operations           0
      Block Output Operations          16


148
149
150
151       OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
161
```

Results: Assignment1.sas

The TTEST Procedure

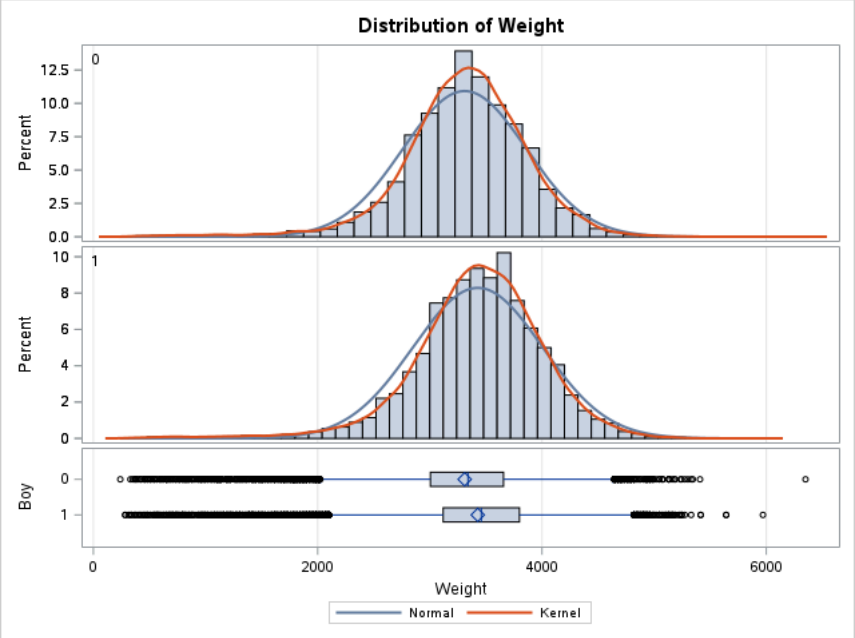
Variable: Weight (Weight)

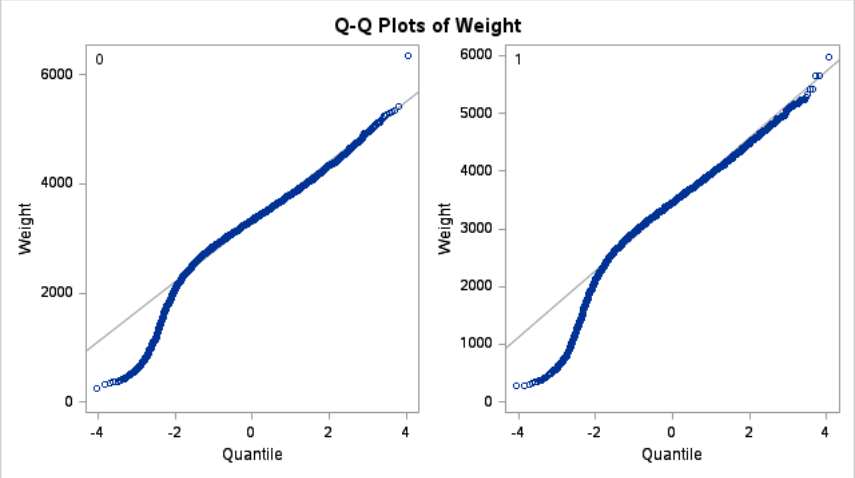
Boy	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
0		24208	3310.6	547.7	3.5204	240.0	6350.0
1		25792	3427.3	577.7	3.5970	284.0	5970.0
Diff (1-2)	Pooled		-116.7	563.4	5.0416		
Diff (1-2)	Satterthwaite		-116.7		5.0331		

Boy	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		3310.6	3303.7	3317.5	547.7	542.9	552.7
1		3427.3	3420.2	3434.3	577.7	572.7	582.7
Diff (1-2)	Pooled	-116.7	-126.6	-106.8	563.4	559.9	566.9
Diff (1-2)	Satterthwaite	-116.7	-126.6	-106.8			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	49998	-23.15	<.0001
Satterthwaite	Unequal	49993	-23.18	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	25791	24207	1.11	<.0001





The TTEST Procedure

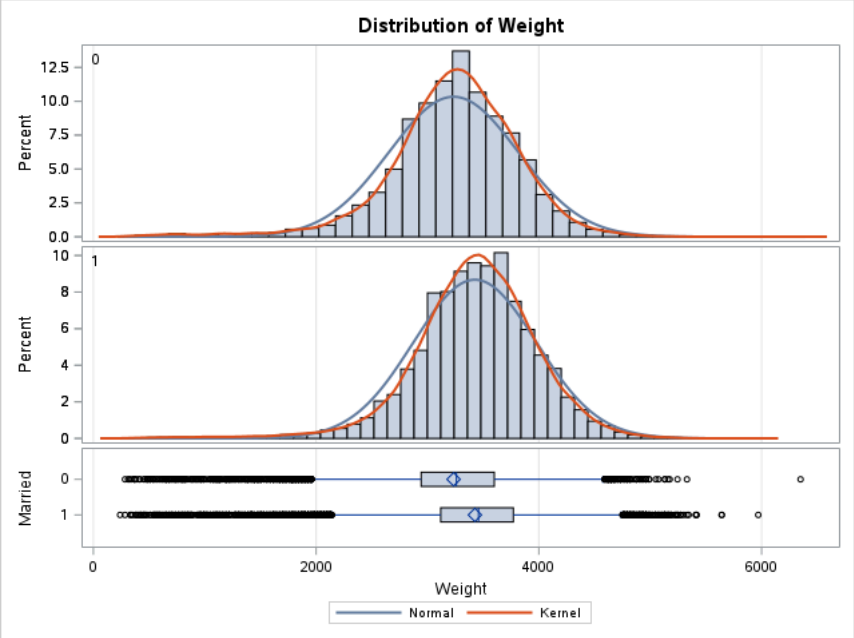
Variable: Weight (Weight)

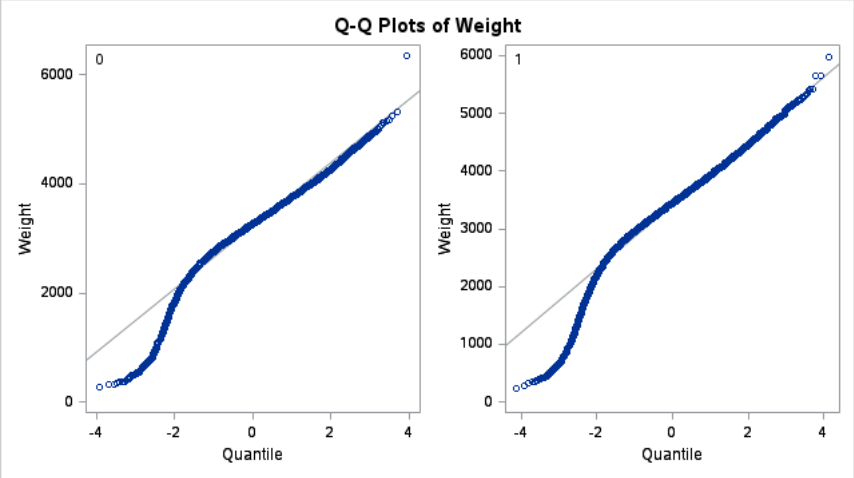
Married	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
0		14369	3234.4	579.0	4.8302	284.0	6350.0
1		35631	3425.7	551.8	2.9231	240.0	5970.0
Diff (1-2)	Pooled		-191.3	559.7	5.5315		
Diff (1-2)	Satterthwaite		-191.3		5.6459		

Married	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		3234.4	3225.0	3243.9	579.0	572.4	585.8
1		3425.7	3420.0	3431.5	551.8	547.8	555.9
Diff (1-2)	Pooled	-191.3	-202.1	-180.5	559.7	556.3	563.2
Diff (1-2)	Satterthwaite	-191.3	-202.4	-180.2			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	49998	-34.58	<.0001
Satterthwaite	Unequal	25443	-33.88	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	14368	35630	1.10	<.0001





The TTEST Procedure

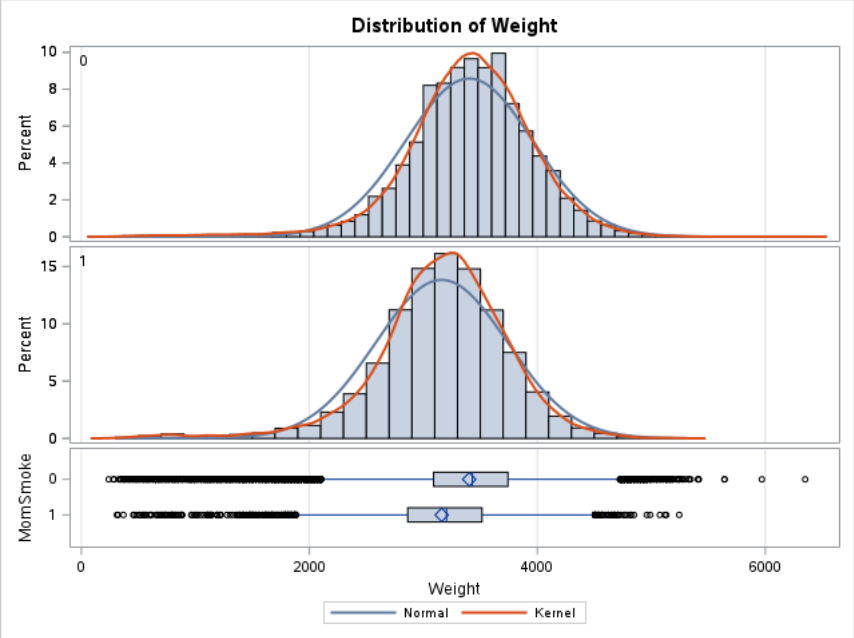
Variable: Weight (Weight)

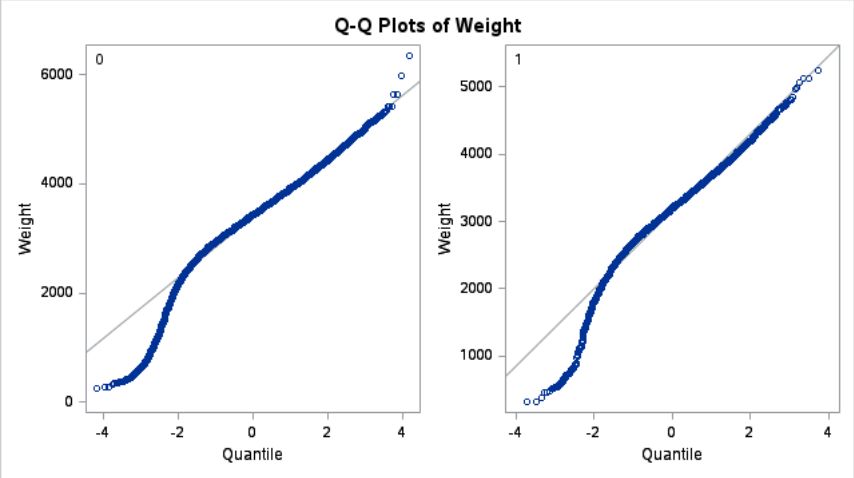
MomSmoke	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
0		43467	3402.3	558.0	2.6766	240.0	6350.0
1		6533	3160.9	576.8	7.1358	312.0	5245.0
Diff (1-2)	Pooled		241.5	560.5	7.4376		
Diff (1-2)	Satterthwaite		241.5		7.6213		

MomSmoke	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
0		3402.3	3397.1	3407.6	558.0	554.3	561.8
1		3160.9	3146.9	3174.8	576.8	567.0	586.8
Diff (1-2)	Pooled	241.5	226.9	256.0	560.5	557.1	564.0
Diff (1-2)	Satterthwaite	241.5	226.5	256.4			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	49998	32.46	<.0001
Satterthwaite	Unequal	8474.1	31.68	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	6532	43466	1.07	0.0004





The CORR Procedure

6 Variables:	Weight MomAge CigsPerDay MomWtGain Visit MomEdLevel

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum	Label
Weight	50000	3371	566.38506	168537832	240.00000	6350	Weight
MomAge	50000	0.41614	5.72845	20807	-9.00000	18.00000	MomAge
CigsPerDay	50000	1.47662	4.65407	73831	0	60.00000	CigsPerDay
MomWtGain	50000	0.70922	12.87612	35461	-30.00000	68.00000	MomWtGain
Visit	50000	2.69998	0.71550	134999	0	3.00000	Visit
MomEdLevel	50000	1.21892	1.08991	60946	0	3.00000	MomEdLevel

Pearson Correlation Coefficients, N = 50000
Prob > |r| under H0: Rho=0

	Weight	MomAge	CigsPerDay	MomWtGain	Visit	MomEdLevel
Weight Weight	1.00000	0.09750 <.0001	-0.12706 <.0001	0.20786 <.0001	0.06706 <.0001	0.00027 0.9511
MomAge MomAge	0.09750 <.0001	1.00000	-0.05418 <.0001	-0.05777 <.0001	0.14235 <.0001	0.04780 <.0001
CigsPerDay CigsPerDay	-0.12706 <.0001	-0.05418 <.0001	1.00000	-0.03226 <.0001	-0.07573 <.0001	0.01725 0.0001
MomWtGain MomWtGain	0.20786 <.0001	-0.05777 <.0001	-0.03226 <.0001	1.00000	0.04953 <.0001	-0.02808 <.0001
Visit Visit	0.06706 <.0001	0.14235 <.0001	-0.07573 <.0001	0.04953 <.0001	1.00000	-0.04114 <.0001
MomEdLevel MomEdLevel	0.00027 0.9511	0.04780 <.0001	0.01725 0.0001	-0.02808 <.0001	-0.04114 <.0001	1.00000

The MEANS Procedure

Variable	Label	Mean	Std Dev
Weight	Weight	3370.76	566.3850556

Variable	Label	Mean	Std Dev
Boy	Boy	0.5158400	0.4997540
Married	Married	0.7126200	0.4525448
MomSmoke	MomSmoke	0.1306600	0.3370315
MomAge	MomAge	0.4161400	5.7284539
CigsPerDay	CigsPerDay	1.4766200	4.6540656
MomWtGain	MomWtGain	0.7092200	12.8761168
Visit	Visit	2.6999800	0.7154986
MomEdLevel	MomEdLevel	1.2189200	1.0899072

Descriptive Statistics for Cooperation Approach

The MEANS Procedure

Analysis Variable : cooperation					
Mean	Median	Std Dev	Variance	Skewness	Kurtosis
75.3571429	73.0000000	5.1680549	26.7087912	0.8181303	-0.7898024

Descriptive Statistics for Competition Approach

The MEANS Procedure

Analysis Variable : competition					
Mean	Median	Std Dev	Variance	Skewness	Kurtosis
77.7857143	80.0000000	9.0057979	81.1043956	-0.3969923	-1.1717322

Statistics for Cooperation Approach

Obs	_TYPE_	_FREQ_	mean_coop	median_coop	std_coop	var_coop	skew_coop	kurt_coop
1	0	14	75.3571	73	5.16805	26.7088	0.81813	-0.78980

Statistics for Competition Approach

Obs	_TYPE_	_FREQ_	mean_comp	median_comp	std_comp	var_comp	skew_comp	kurt_comp
1	0	14	77.7857	80	9.00580	81.1044	-0.39699	-1.17173