MATH 3316: Project

Due Time/Date: Central Time (CT) 23:59 Aug 9, 2023

Please submit your project report online in .pdf format. Only one file is allowed to be submitted. Please do not send the report by email or hand in the report in person. Teamwork is strongly recommended, with the maximal size of each team as THREE. All project reports should be type written. No hand-written version will be accepted.

For this project, we will use the North Carolina birth data set ncbirth1450.csv. In this assignment you will test hypotheses relating to mage, weeks, tounces, low, and smoke.

Variable	*Label Description*
plurality	Number of children born of the pregnancy
sex	Sex of child (1=Male, 2=Female)
mage	Age of mother (years)
weeks	Completed Weeks of Gestation (weeks)
marital	Marital status (1=married, 2=not married)
racemom	Race of Mother (0=Other Non-white, 1=White, 2=Black 3=American Indian, 4=Chinese, 5=Japanese, 6=Hawaiian, 7=Filipino, 8=Other Asian or Pacific Islander)
hispmom	Mother of Hispanic origin (C=Cuban, M=Mexican, N=non-Hispanic, O=Other and Unknown Hispanic, P=Puerto Rican, S=Central/South American, U=Not Classifiable)
gained	Weight gained during pregnancy (pounds)
smoke	0=mother did not smoke during pregnancy 1=mother did smoke during pregnancy
drink	0=mother did not consume alcohol during pregnancy 1=mother did consume alcohol during pregnancy
tounces	Weight of child (ounces)
tgrams	Weight of child (grams)
low	0=infant was not low birth weight 1=infant was low birth weight
Premie	0=infant was not premature 1=infant was premature premature defined at 36 weeks or sooner

1. Please begin the assignment by deleting the items with missing values ("#NULL!") in it and do analysis only on the remaining data set (hint: use the code provided in class). Please provide a frequency table for the percentage of low birth weights and a frequency table for the percentage of smokers. Create a summary table (mean, median, standard deviation, minimum, maximum) for the continuous variables of mage, weeks, and tounces.

2. With the information that you gather from this summary, test the following:

(a) Determine if there is sufficient evidence to conclude the mean age of mothers giving birth in North Carolina is over 25 years of age at the 0.05 level of significance.

H0: $\mu = 25$ $\alpha = .05$ R = {t:t > 1.64591} t = 10.983 > tc = 1.64591

H1: $\mu > 25$ tc = 1.64591 $t = \frac{\bar{X} - u_0}{s/\sqrt{n}}$ $t = \frac{26.7586 - 25}{6.0973/\sqrt{1450}}$ t = 10.983

P-value = 4.4409e-16 Since p-value is ≤ α, H0 is rejected. (4.4409e-16 ≤ 0.05)

Since t = 10.983 > tc = 1.64591 this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the population mean μ is over 25 at the 0.05 level of significance. In the SAS Hypothesis Test, the mean μ is also stated in the results at 26.7586 which further backs our H1.

(b) Determine if there is sufficient evidence to conclude the mean weeks of gestation of mothers giving birth in North Carolina are below 39 weeks.

H0: $\mu = 39$ $\alpha = .01$ R = {t:t < -2.3288381} t = -5.3455 < tc = -2.3288381

H1: $\mu < 39$ tc = -2.3288381 $t = \frac{\bar{X} - u_0}{s/\sqrt{n}}$ $t = \frac{38.6211 - 39}{2.69911/\sqrt{1450}}$ t = -5.3455

P-value = 5.23108e-8 Since p-value is ≤ α, H0 is rejected. (5.23108e-8 ≤ 0.01)

Since t = -5.3455 < tc = -2.3288381 this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the mean weeks of gestation μ is below 39 at a 0.01 level of significance. In the SAS Hypothesis Test results, the mean weeks μ is also stated in the results at 38.621 weeks which further backs our H1 hypothesis.

(c) Determine if there is sufficient evidence to conclude that the mean weight of babies born to mothers in North Carolina is above 7 lbs. (112 oz). (Note that there are 16 ounces in a pound.)

H0: $\mu = 112$ $\alpha = .01$ $R = \{t:t > 2.32892\}$ $t = 7.2484 > tc = 2.32892$

H1: $\mu > 112$ $tc = 2.32892$ $t = \frac{\bar{X} - u_0}{s/\sqrt{n}}$ $t = \frac{116.25 - 112}{22.327/\sqrt{1450}}$ $t = 7.2484$

P-value = 3.40394e-13 Since p-value is $\leq \alpha$, H0 is rejected. (3.40394e-13 $\leq$ 0.01)

Since $t = 7.2484 > tc = 2.32892$ this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the mean weight of babies μ is above 7 lbs. (112 oz) at a 0.01 level of significance. In the SAS Hypothesis Test results, the mean weight μ is also stated in the results at 116.248 oz which further backs our H1 hypothesis.

(d) Construct a side-by-side boxplot for tounces for smokers and non-smokers. Comment on whether you believe you will reject or fail to reject the null hypothesis. Determine if there is sufficient evidence to conclude the mean tounces of smoking mothers is lower than the mean birth weight for non-smoking mothers.

H0: $\mu 1 - \mu 2 \geq 8.353$ $\alpha = .01$ $Z = 5.0995$ P-value = .00000017 $\mu d = 8.353$

H1: $\mu 1 - \mu 2 < 8.353$ $Z = \frac{(\overline{x_1} - \overline{x_2})}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$ $Z = \frac{(117.4628 - 109.11005)}{\sqrt{\frac{22.191316^2}{1236} + \frac{21.850725^2}{209}}}$ $\mu 1 - \mu 2 = 8.353$

Since p-value is $< \alpha$, H0 is rejected. (.00000017 $\leq$ 0.01)

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the mean weight of babies μ of smoking mothers is lower than the mean birth weight for non-smoking mothers. In the SAS Hypothesis Test results, the mean weight μ difference is also stated in the results at 109.1101 oz < 117.463 oz which further backs our H1 hypothesis.

(e) Determine if there is sufficient evidence to conclude the percentage of low birth weight children in North Carolina are above 6%.

H0: $p \leq 0.06$ $\alpha = .01$ $R = \{z:z > 2.32892\}$ $z = 4.201 > zc = 2.32892$

H1: $p > 0.06$ $zc = 2.32892$ $z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$ $z = \frac{0.0862 - 0.06}{\sqrt{\frac{0.06(0.94)}{1450}}}$ $z = 4.201$

P-value = 0.0000132953 Since p-value is $\leq \alpha$, H0 is rejected. ($0.0000132953 \leq 0.01$)

Since $z = 4.201 > zc = 2.32892$ this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the percentage of low birth weight children is above 6% at a 0.01 level of significance. In the SAS Hypothesis Test results, the percentage of low birth weight children is also stated in the results at 8.62% which further backs our H1 hypothesis.

(f) Determine if there is sufficient evidence to conclude the percentage of mothers who smoke in North Carolina is above 10%.

H0: $p \leq 0.10$ $\alpha = .01$ $R = \{z:z > 2.32892\}$ $z = 5.6513 > zc = 2.32892$

H1: $p > 0.10$ $zc = 2.32892$ $z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$ $z = \frac{0.1446 - 0.10}{\sqrt{\frac{0.10(0.90)}{1445}}}$ $z = 5.6513$

P-value = 0.000000007962 Since p-value is $\leq \alpha$, H0 is rejected. ($0.000000007962 < 0.01$)

Since $z = 5.6513 > zc = 2.32892$ this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the percentage of mothers who smoke in North Carolina is above 10% at a 0.01 level of significance. In the SAS Hypothesis Test results, the percentage of mothers who smoke is also stated in the results at 14.46% which further backs our H1 hypothesis.

(g) Determine if there is sufficient evidence to conclude the percentage of low birth weight for smoking mothers is **different** than the percentage of low birth weight for non-smoking mothers.

H0: p1 = p2 α = .01 R = {z:z > 2.32892} z = 5.6513 > zc = 2.32892

H1: p1 ≠ p2 zc = 2.32892 $z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\frac{\hat{p}(1-\hat{p})}{n_1+n_2}}}$ $z = \frac{0.1446 - 0.10}{\sqrt{\frac{0.10(0.90)}{1445}}}$ z = 5.6513

P-value = 0.000000007962 Since p-value is ≤ α, H0 is rejected. (0.000000007962 < 0.01)

Since z = 5.6513 > zc = 2.32892 this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the percentage of mothers who smoke in North Carolina is above 10% at a 0.01 level of significance. In the SAS Hypothesis Test results, the percentage of mothers who smoke is also stated in the results at 14.46% which further backs our H1 hypothesis.

(h) Determine if there is sufficient evidence to conclude the percentage of low birth weight for smoking mothers is **lower** than the percentage of low birth weight for non-smoking mothers.

H0: p1 ≥ p2 α = .01 R = {z:z < 2.32892} z = -23.3 < zc = -2.3263479

H1: p1 < p2 zc = -2.3263479 $z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}(1-\hat{p})\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$ $z = \frac{0.187 - 0.678}{\sqrt{.087(1-.087)\left(\frac{1}{209}+\frac{1}{1236}\right)}}$ z = -23.3

P-value = 0e-9 Since p-value is ≤ α, H0 is rejected. (0e-9 < 0.01)

Since z = -23.3 < zc = -2.3263479 this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude that the percentage of low birth weight for smoking mothers is lower than the percentage of low birth weight for non-smoking mothers. In the SAS Hypothesis Test results, the percentage of low birth weight for smoking mothers is also stated in the results at 1.87% which is lower than the low birth weight for non-smoking mothers at 6.78%. This further backs our H1 hypothesis.

(i) Determine if there is sufficient evidence to conclude the percentage of low birth weight for mothers who did not consume alcohol during pregnancy is **lower** than the percentage of low birth weight for mothers who did consume alcohol during pregnancy.

H0: p1 ≤ p2 α = .05 R = {z:z > 1.6449} z = 11.477 > zc = 1.6449

H1: p1 > p2 zc = 1.6449 $z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\frac{\hat{p}(1-\hat{p})}{n_1+n_2}}}$ $z = \frac{0.0858 - 0.0007}{\sqrt{\frac{0.0865(0.9135)}{1445}}}$ z = 11.477

P-value = 0 Since p-value is < α, H0 is rejected. (0 < 0.05)

Since z = 11.477 > zc = 1.6449 this also concludes that H0 is rejected.

It is concluded that H0 the null hypothesis is rejected. There is enough evidence to conclude the percentage of low birth weight for mothers who did not consume alcohol during pregnancy is actually higher than the percentage of low birth weight for mothers who did consume alcohol during pregnancy. In the SAS Hypothesis Test results, the percentage of low birth weight for non-drinking mothers is also stated in the results at 8.58% which is higher than the low birth weight for drinking mothers at 0.07%. This further backs the H1 hypothesis.

(j) Determine if there is sufficient evidence to conclude the percentage of low birth weight has any relation with the races of mothers?

H0: There is no relation between the percentage of low birth weights with race of mothers.

H1: There is a relation between the percentage of low birth weights with race of mothers.

df = 5 $X^2 = \sum \frac{(observed\ count - expected\ count)^2}{expected\ count}$ X^2 = 10.84 (manually calculated by hand)

α = .01 P-value = 0.055 Since p-value is > α, H0 is not rejected. (.055 > 0.01)

It is concluded that H0 the null hypothesis is not rejected. There is insufficient evidence to conclude the percentage of low birth weight has any relation with race of mothers. In the SAS Hypothesis Test results, the frequency of low birth weight by race of mothers is very small in the results. Based on the data and the chi square test, I would say there is no relation.

For each of the tests above, in your report, be sure to

1. Clearly state a null and alternative hypothesis
2. Check the necessary assumptions.
3. Give the value of the test statistic
4. Report the P-value
5. Clearly state your conclusion (i.e., Reject the Null is not sufficient)

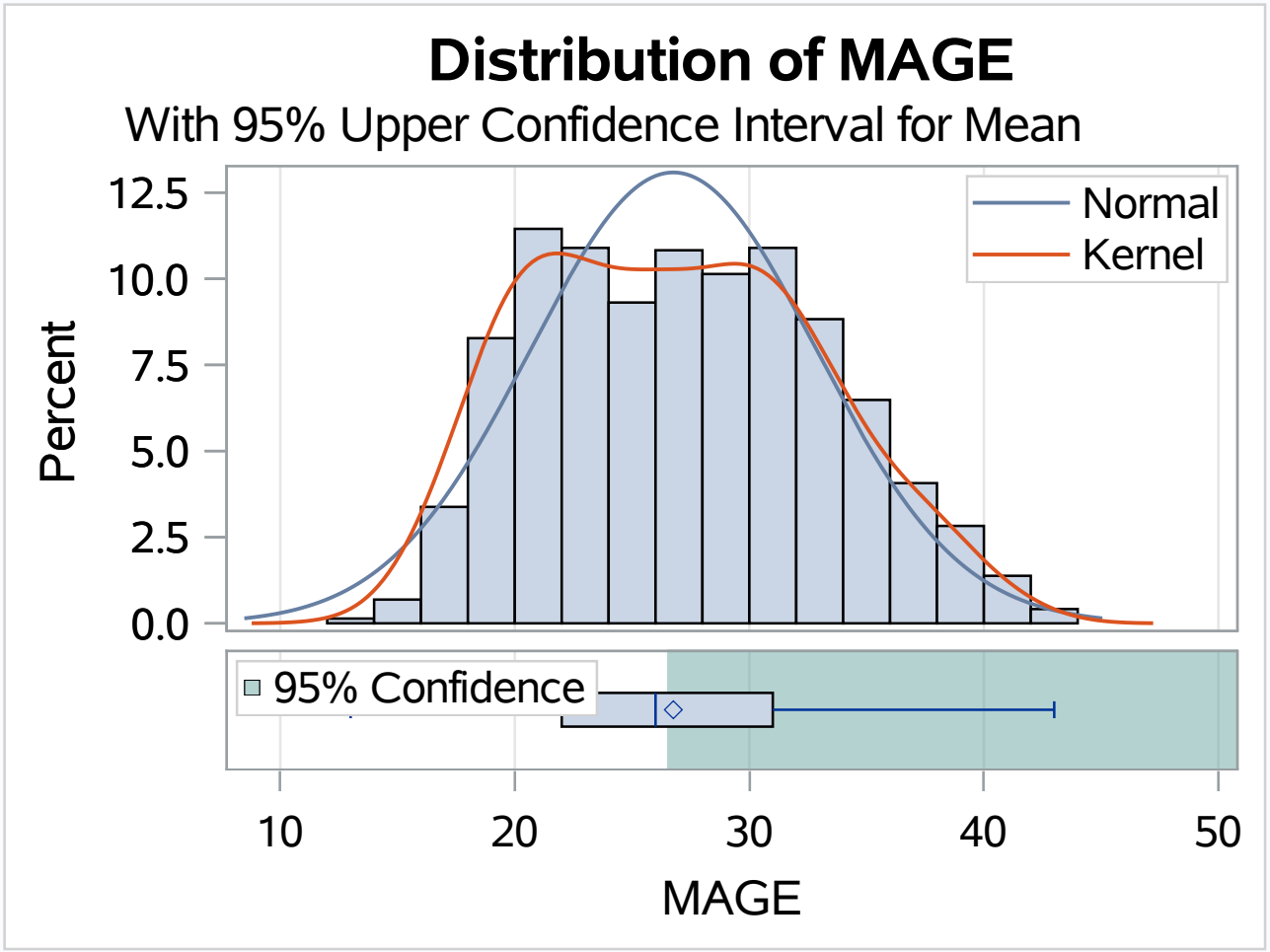
The TTEST Procedure

Variable: MAGE

N	Mean	Std Dev	Std Err	Minimum	Maximum
1450	26.7586	6.0973	0.1601	13.0000	43.0000

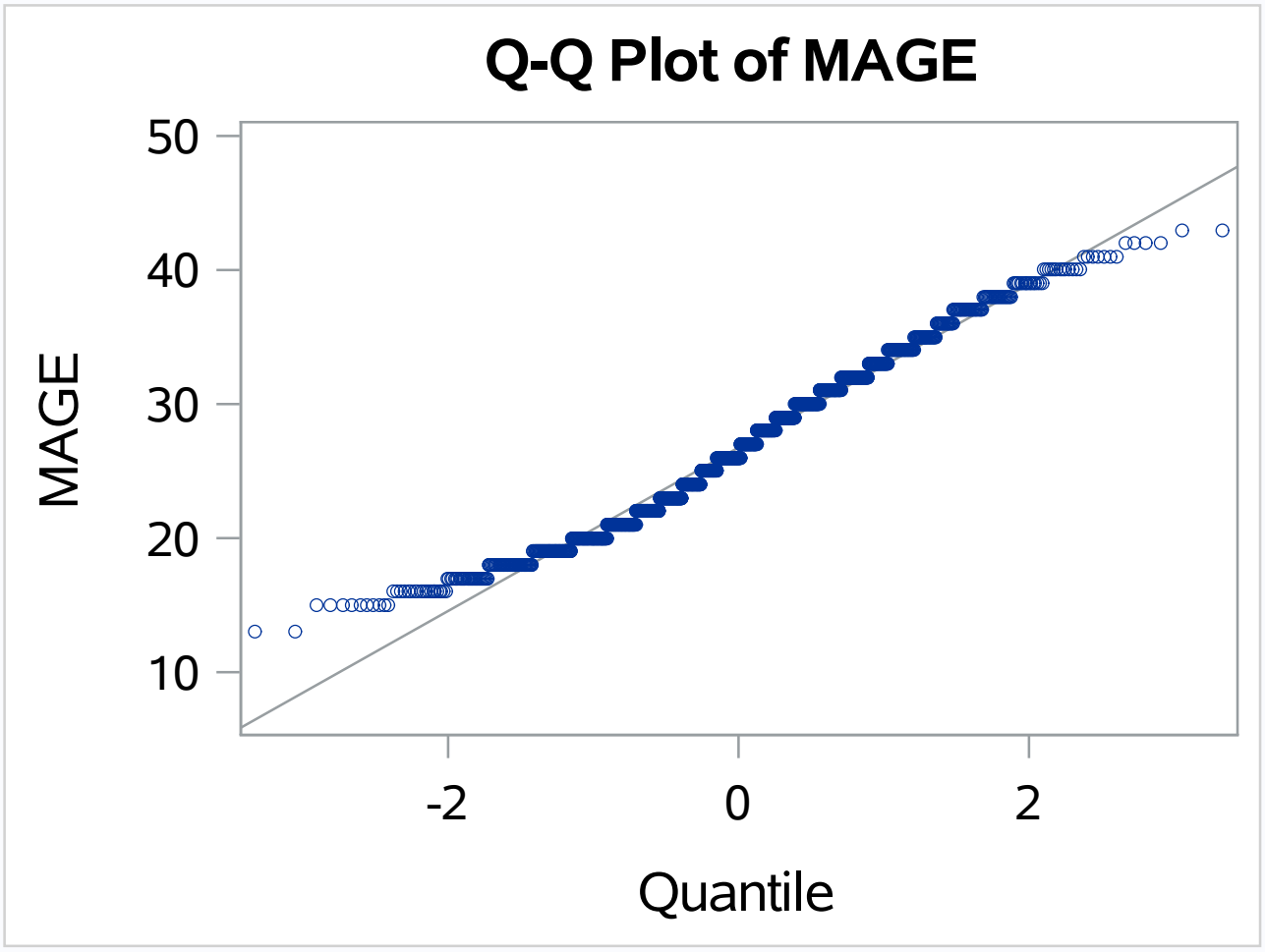
Mean	95% CL Mean		Std Dev	95% CL Std Dev	
26.7586	26.4951	Infty	6.0973	5.8832	6.3277

DF	t Value	Pr > t
1449	10.98	<.0001



The TTEST Procedure

Variable: MAGE



The UNIVARIATE Procedure
Variable: MAGE

Moments			
N	1450	Sum Weights	1450
Mean	26.7586207	Sum Observations	38800
Std Deviation	6.09729699	Variance	37.1770305
Skewness	0.22498823	Kurtosis	-0.7332435
Uncorrected SS	1092104	Corrected SS	53869.5172
Coeff Variation	22.7862903	Std Error Mean	0.16012286

Basic Statistical Measures			
Location		Variability	
Mean	26.75862	Std Deviation	6.09730
Median	26.00000	Variance	37.17703
Mode	26.00000	Range	30.00000
		Interquartile Range	9.00000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	167.1131	Pr > |t|	<.0001
Sign	M	725	Pr >= |M|	<.0001
Signed Rank	S	525987.5	Pr >= |S|	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	43
99%	40
95%	37
90%	35
75% Q3	31
50% Median	26
25% Q1	22

The UNIVARIATE Procedure
Variable: MAGE

Quantiles (Definition 5)	
Level	Quantile
10%	19
5%	18
1%	16
0% Min	13

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
13	1149	42	232
13	859	42	333
15	1281	42	959
15	1266	43	1012
15	1113	43	1025

Obs	tc
1	1.64591

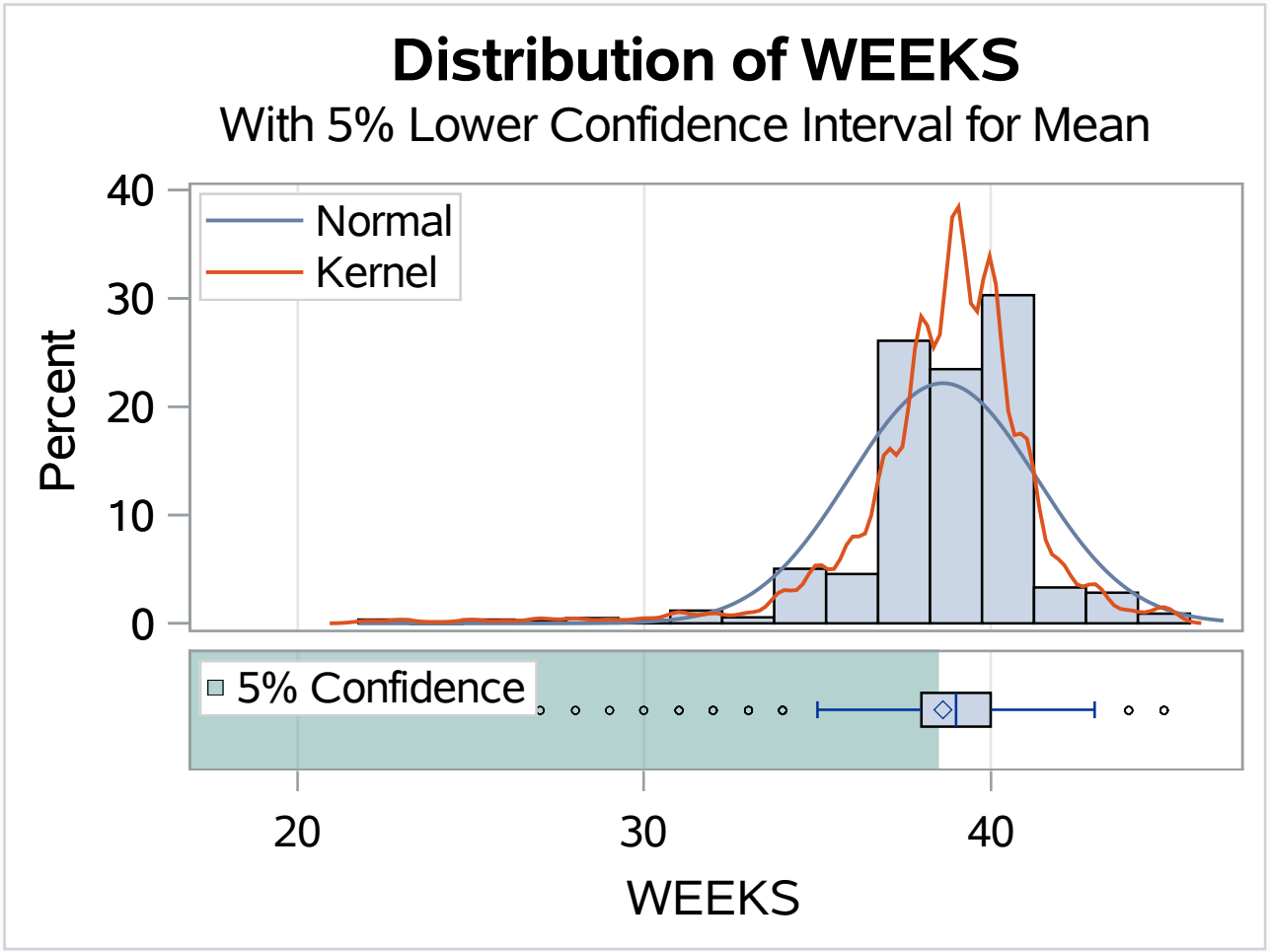
The TTEST Procedure

Variable: WEEKS

N	Mean	Std Dev	Std Err	Minimum	Maximum
1449	38.6211	2.6991	0.0709	22.0000	45.0000

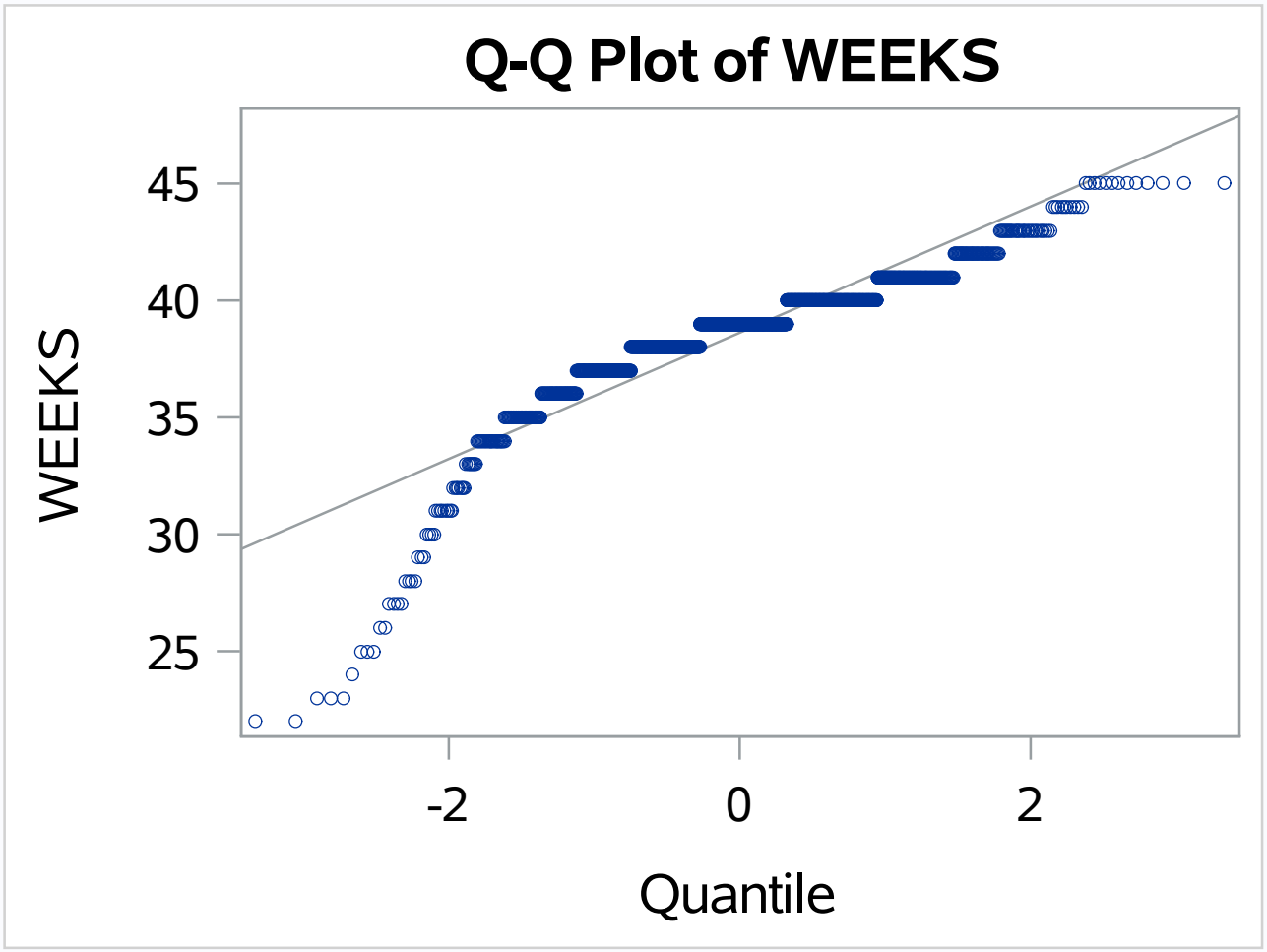
Mean	5% CL Mean		Std Dev	5% CL Std Dev	
38.6211	-Infty	38.5044	2.6991	2.6966	2.7029

DF	t Value	Pr < t
1448	-5.34	<.0001



The TTEST Procedure

Variable: WEEKS



The UNIVARIATE Procedure
Variable: WEEKS

Moments			
N	1449	Sum Weights	1449
Mean	38.621118	Sum Observations	55962
Std Deviation	2.69911406	Variance	7.2852167
Skewness	-1.8940848	Kurtosis	7.88794228
Uncorrected SS	2171864	Corrected SS	10548.9938
Coeff Variation	6.98869996	Std Error Mean	0.07090666

Basic Statistical Measures			
Location		Variability	
Mean	38.62112	Std Deviation	2.69911
Median	39.00000	Variance	7.28522
Mode	39.00000	Range	23.00000
		Interquartile Range	2.00000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	544.6754	Pr > |t|	<.0001
Sign	M	724.5	Pr >= |M|	<.0001
Signed Rank	S	525262.5	Pr >= |S|	<.0001

Quantiles (Definition 5)	
Level	Quantile
100% Max	45
99%	44
95%	42
90%	41
75% Q3	40
50% Median	39
25% Q1	38

The UNIVARIATE Procedure
Variable: WEEKS

Quantiles (Definition 5)	
Level	Quantile
10%	36
5%	34
1%	27
0% Min	22

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
22	1366	45	1223
22	350	45	1283
23	627	45	1307
23	556	45	1334
23	469	45	1400

Missing Values			
Missing Value	Count	Percent Of	
		All Obs	Missing Obs
.	1	0.07	100.00

Obs	tc
1	2.32892

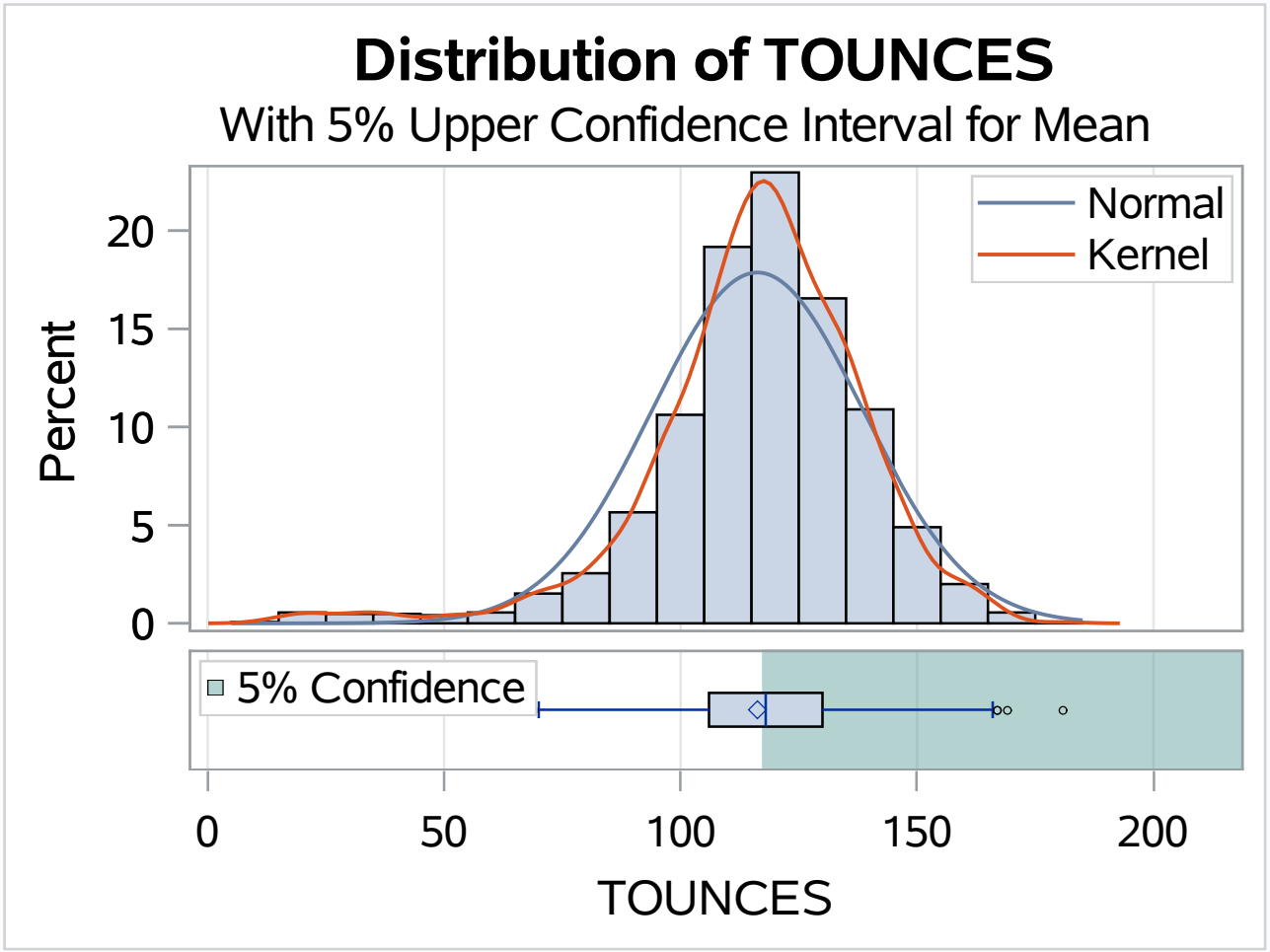
The TTEST Procedure

Variable: TOUNCES

N	Mean	Std Dev	Std Err	Minimum	Maximum
1450	116.2	22.3272	0.5863	12.0000	181.0

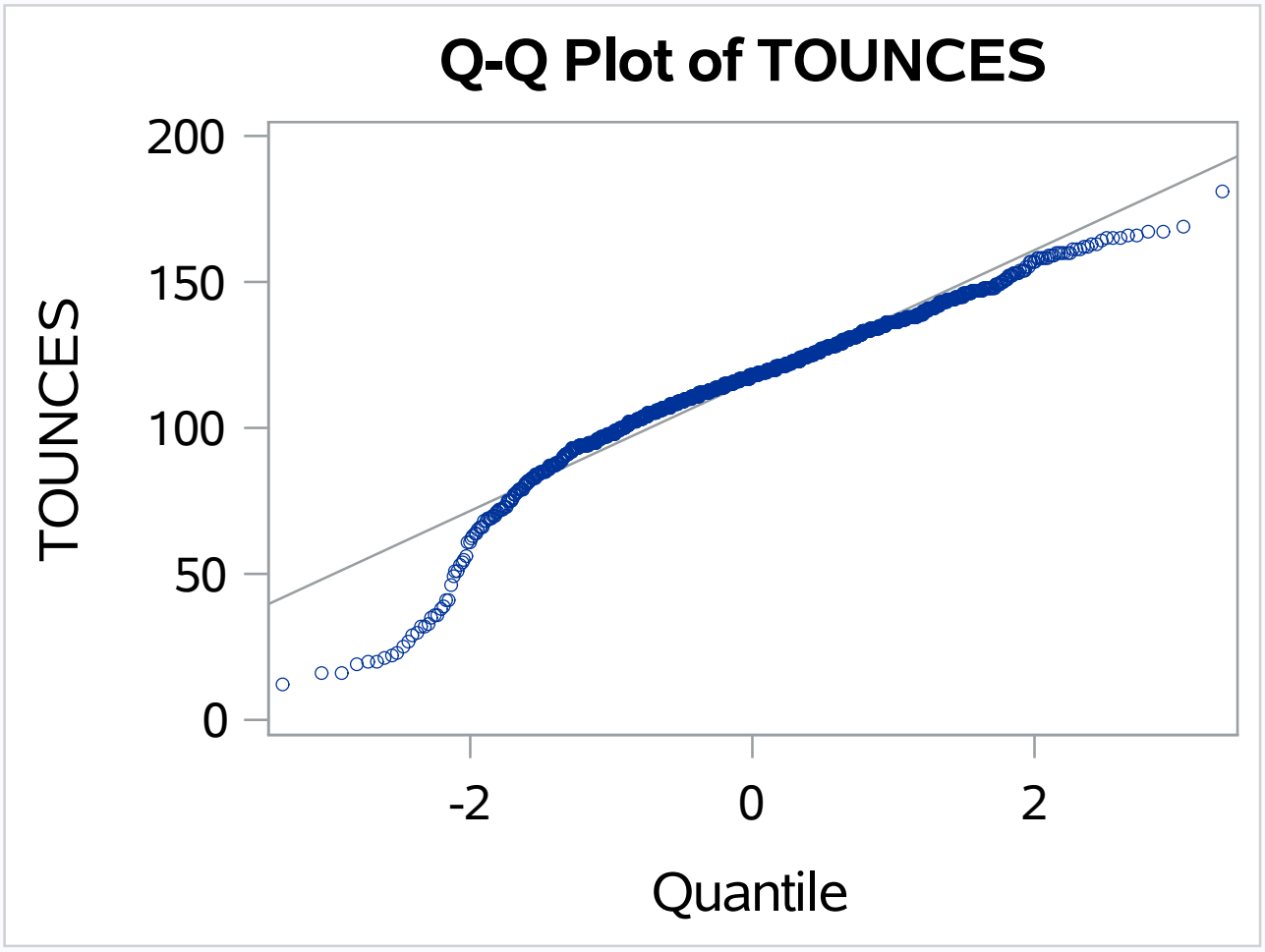
Mean	5% CL Mean		Std Dev	5% CL Std Dev	
116.2	117.2	Infty	22.3272	22.3064	22.3584

DF	t Value	Pr > t
1449	7.24	<.0001



The TTEST Procedure

Variable: TOUNCES



The UNIVARIATE Procedure
Variable: TOUNCES

Moments			
N	1450	Sum Weights	1450
Mean	116.247586	Sum Observations	168559
Std Deviation	22.3272313	Variance	498.505256
Skewness	-1.0706578	Kurtosis	3.10782371
Uncorrected SS	20316911	Corrected SS	722334.117
Coeff Variation	19.2066193	Std Error Mean	0.58634182

Basic Statistical Measures			
Location		Variability	
Mean	116.2476	Std Deviation	22.32723
Median	118.0000	Variance	498.50526
Mode	117.0000	Range	169.00000
		Interquartile Range	24.00000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	198.2591	Pr > |t|	<.0001
Sign	M	725	Pr >= |M|	<.0001
Signed Rank	S	525987.5	Pr >= |S|	<.0001

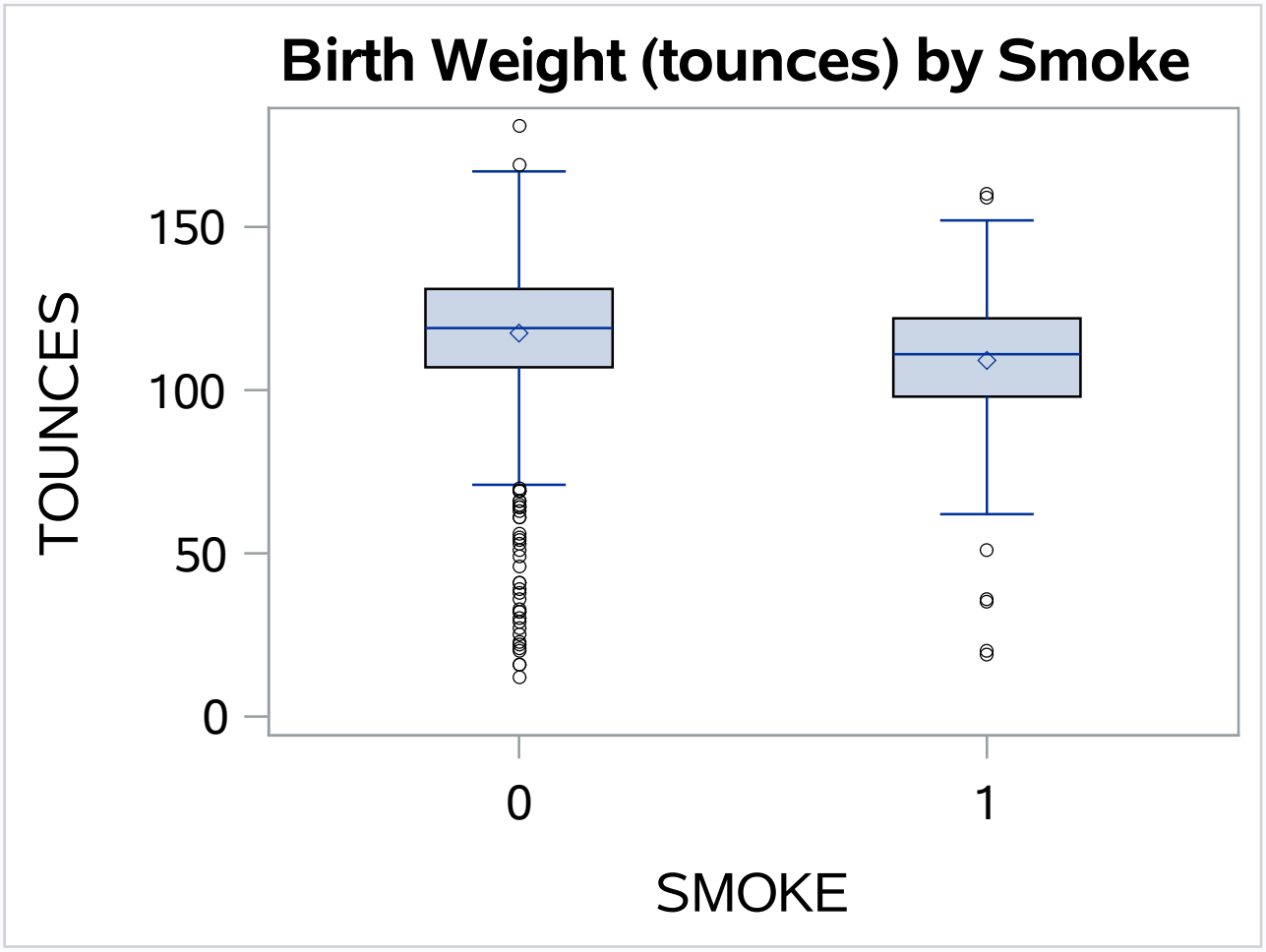
Quantiles (Definition 5)	
Level	Quantile
100% Max	181
99%	161
95%	148
90%	141
75% Q3	130
50% Median	118
25% Q1	106

The UNIVARIATE Procedure
Variable: TOUNCES

Quantiles (Definition 5)	
Level	Quantile
10%	92
5%	79
1%	32
0% Min	12

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
12	350	166	527
16	556	167	495
16	56	167	970
19	469	169	134
20	1366	181	1351

Obs	tc
1	2.32892


Birth Weight (tounces) by Smoke
TOUNCES
150
100
50
0
0
1
SMOKE

Birth Weight by Smoke

The MEANS Procedure

Analysis Variable : TOUNCES						
SMOKE	N Obs	Mean	Std Dev	Minimum	Maximum	N
0	1236	117.4627832	22.1913155	12.0000000	181.0000000	1236
1	209	109.1100478	21.8507249	19.0000000	160.0000000	209

Low Birth Weight

The FREQ Procedure

LOW	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	1325	91.38	1325	91.38
1	125	8.62	1450	100.00

Binomial Proportion	
LOW = 0	
Proportion	0.9138
ASE	0.0074
95% Lower Conf Limit	0.8993
95% Upper Conf Limit	0.9282
Exact Conf Limits	
95% Lower Conf Limit	0.8981
95% Upper Conf Limit	0.9277

Test of H0: Proportion = 0.06	
ASE under H0	0.0062
Z	136.8980
One-sided Pr > Z	<.0001
Two-sided Pr > |Z|	<.0001

Sample Size = 1450

Smoke vs Non-Smoke of Mother

The FREQ Procedure

SMOKE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	1236	85.54	1236	85.54
1	209	14.46	1445	100.00
Frequency Missing = 5				

Binomial Proportion	
SMOKE = 0	
Proportion	0.8554
ASE	0.0093
95% Lower Conf Limit	0.8372
95% Upper Conf Limit	0.8735
Exact Conf Limits	
95% Lower Conf Limit	0.8362
95% Upper Conf Limit	0.8731

Test of H0: Proportion = 0.1	
ASE under H0	0.0079
Z	95.7125
One-sided Pr > Z	<.0001
Two-sided Pr > |Z|	<.0001

Sample Size = 1445
Frequency Missing = 5

Smoke vs Non-Smoke by Low Birth Weight

The FREQ Procedure

Frequency Percent Row Pct Col Pct	Table of SMOKE by LOW		
	LOW		
SMOKE	0	1	Total
0	1138 78.75 92.07 86.21	98 6.78 7.93 78.40	1236 85.54
1	182 12.60 87.08 13.79	27 1.87 12.92 21.60	209 14.46
Total	1320 91.35	125 8.65	1445 100.00
Frequency Missing = 5			

Statistics for Table of SMOKE by LOW

Column 1 Risk Estimates						
	Risk	ASE	95% Confidence Limits		Exact 95% Confidence Limits	
Row 1	0.9207	0.0077	0.9056	0.9358	0.9042	0.9352
Row 2	0.8708	0.0232	0.8253	0.9163	0.8176	0.9131
Total	0.9135	0.0074	0.8990	0.9280	0.8978	0.9275
Difference	0.0499	0.0244	0.0020	0.0978		
Difference is (Row 1 - Row 2)						

Smoke vs Non-Smoke by Low Birth Weight

The FREQ Procedure

Statistics for Table of SMOKE by LOW

Risk Difference Test	
H0: P1 - P2 = 0	Wald Method
Risk Difference	0.0499
ASE (H0)	0.0210
Z	2.3734
One-sided Pr > Z	0.0088
Two-sided Pr > |Z|	0.0176
Column 1 (LOW = 0)	

Column 2 Risk Estimates						
	Risk	ASE	95% Confidence Limits		Exact 95% Confidence Limits	
Row 1	0.0793	0.0077	0.0642	0.0944	0.0648	0.0958
Row 2	0.1292	0.0232	0.0837	0.1747	0.0869	0.1824
Total	0.0865	0.0074	0.0720	0.1010	0.0725	0.1022
Difference	-0.0499	0.0244	-0.0978	-0.0020		
Difference is (Row 1 - Row 2)						

Sample Size = 1445
Frequency Missing = 5

Drink vs Non-Drink by Low Birth Weight

The FREQ Procedure

Frequency Percent Row Pct Col Pct	Table of DRINK by LOW		
	LOW		
DRINK	0	1	Total
0	1313 90.87 91.37 99.47	124 8.58 8.63 99.20	1437 99.45
1	7 0.48 87.50 0.53	1 0.07 12.50 0.80	8 0.55
Total	1320 91.35	125 8.65	1445 100.00
Frequency Missing = 5			

Statistics for Table of DRINK by LOW

Column 1 Risk Estimates						
	Risk	ASE	95% Confidence Limits		Exact 95% Confidence Limits	
Row 1	0.9137	0.0074	0.8992	0.9282	0.8980	0.9277
Row 2	0.8750	0.1169	0.6458	1.0000	0.4735	0.9968
Total	0.9135	0.0074	0.8990	0.9280	0.8978	0.9275
Difference	0.0387	0.1172	-0.1909	0.2683		
Difference is (Row 1 - Row 2)						

Drink vs Non-Drink by Low Birth Weight

The FREQ Procedure

Statistics for Table of DRINK by LOW

Risk Difference Test	
H0: P1 - P2 = 0	Wald Method
Risk Difference	0.0387
ASE (H0)	0.0997
Z	0.3884
One-sided Pr > Z	0.3489
Two-sided Pr > |Z|	0.6977
Column 1 (LOW = 0)	

Column 2 Risk Estimates						
	Risk	ASE	95% Confidence Limits		Exact 95% Confidence Limits	
Row 1	0.0863	0.0074	0.0718	0.1008	0.0723	0.1020
Row 2	0.1250	0.1169	0.0000	0.3542	0.0032	0.5265
Total	0.0865	0.0074	0.0720	0.1010	0.0725	0.1022
Difference	-0.0387	0.1172	-0.2683	0.1909		
Difference is (Row 1 - Row 2)						

Sample Size = 1445
Frequency Missing = 5

Low Birth Weight by Race of Mother

The FREQ Procedure

Table of LOW by RACEMOM

Frequency Percent Row Pct Col Pct	RACEMOM						
LOW	1	2	3	4	7	8	Total
0	991 68.34 74.79 92.62	289 19.93 21.81 87.05	20 1.38 1.51 90.91	2 0.14 0.15 100.00	1 0.07 0.08 100.00	22 1.52 1.66 95.65	1325 91.38
1	79 5.45 63.20 7.38	43 2.97 34.40 12.95	2 0.14 1.60 9.09	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.07 0.80 4.35	125 8.62
Total	1070 73.79	332 22.90	22 1.52	2 0.14	1 0.07	23 1.59	1450 100.00

Statistics for Table of LOW by RACEMOM

Statistic	DF	Value	Prob
Chi-Square	5	10.8082	0.0553
Likelihood Ratio Chi-Square	5	10.3082	0.0670
Mantel-Haenszel Chi-Square	1	0.4054	0.5243
Phi Coefficient		0.0863	
Contingency Coefficient		0.0860	
Cramer's V		0.0863	

WARNING: 50% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 1450