ADM2304-Winter 2016

Assignment 1

Question 1

a)

Ho: P =.3189
Ha: P<0.3189
Z=.28-.3189/√((.3189)(.6811)/(1500))=-3.233
3.233>1.64
So 3.233 is not >1.64 is not valid we must reject the null hypothesis.

b)

95CL=1.96 p-hat=.28 qhat=.72
SE(p-hat)= √(.28)(.72)/420
=0.0219
Lower bound
P-hat ±2^x SE(p)
=.28 + 1.96 (0.0219)
= .322924
Upper bound
=.28-1.96 (0.0219)
=0.237076
Mt= ± 1% 95%CL= 1.96
P-hat= .28 P-hat= .72
N=(z/me)^z p-hat q-hat
=28)(.72)((1.96)/(0.01)^2)
=**7744.6656 would be required.**

c)

p=.3189
n=17
p-hat=2/17 = 0.1176
np-hat = 17(0.1176)=1.9992 <10
nq- hat = 17(.8824)= 15.0008 >10
Ho:p-hat=p
Ha:p-hat <p (left tail test)
Np <10, the normal hypothesis can't be used we should use the binomial distribution
(17c0)(.3189^0)(.6811^17)+(17c0)(.3189^1)(.6811^16)+(17c0)(.3189^2)

(.6811^15)
=.0566 or 5.66%
Don't reject Ho, since P is not <0.05. There is not enough evidence to say it has dropped below 31.89%

Question 2

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
maleBMI	39	0	25.787	0.556	3.474	19.000	22.900	25.200	28.300	32.200
femaleBMI	34	0	24.718	0.930	5.421	16.800	21.250	23.800	25.950	40.00

Sample p

Difference = p (OWmale) - p (OWfemale)
Estimate for difference: 0.203620
95% CI for difference: (-0.0215017, 0.428742)
Test for difference = 0 (vs ≠ 0): Z = 1.77 P-Value = 0.076

Fisher's exact test: P-Value = 0.103

a)

Ho: p1-hat– p2-hat = Δ0
Ha: p1-hat– p2-hat ≠ Δ0

zcalc:(p1-hat-p2-hat)/SE (p1-hat-p2-hat)
p-bar=(24+14)/(39+34)=38/73= 0.52
q-bar= 1-0.52= 0.48
SE(p1hat-p2hat)
=√(.52)(.48)(1/39+1/34)
=0.117222
zcalc =(24/39–14/34)/ 0.117222
=1.737
two tail test LS=0.05
CI=1-LS = 95%
Zcrit=1.960
(zcalc =1.737) < (zcrit =1.960)
` **Therefore do not reject H0.**

b)

p-val=(z >zcalc =1.7737) *2
= (1-.9582)*2
= 0.0418*2
=.0836

c)

CI=((0.41176-0.61538) –1.960(√(0.41174)(0.58826)+√(0.61538)(0.38462))

= -0.0215017
=((0.41176- 0.61538)+1.960(√ (0.41174)(0.58826)+√(0.61538)(0.38462))
=0.428742
(-0.0215017,0.428742)
Therefore the CI is (-0.0215017, 0.428742).

d)

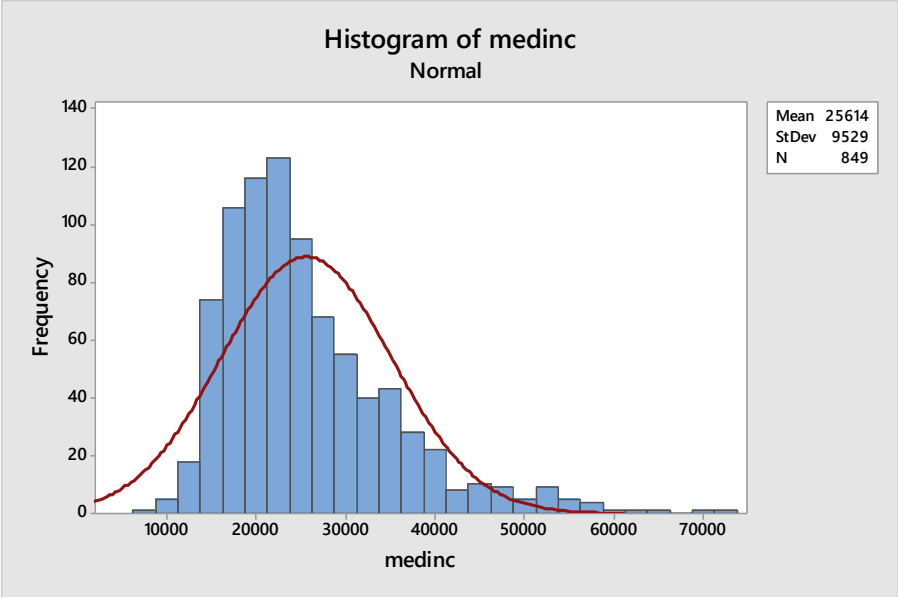
P value is > 0.05 and the 95% CI cover is zero, this means that we have to not reject.

Question 3

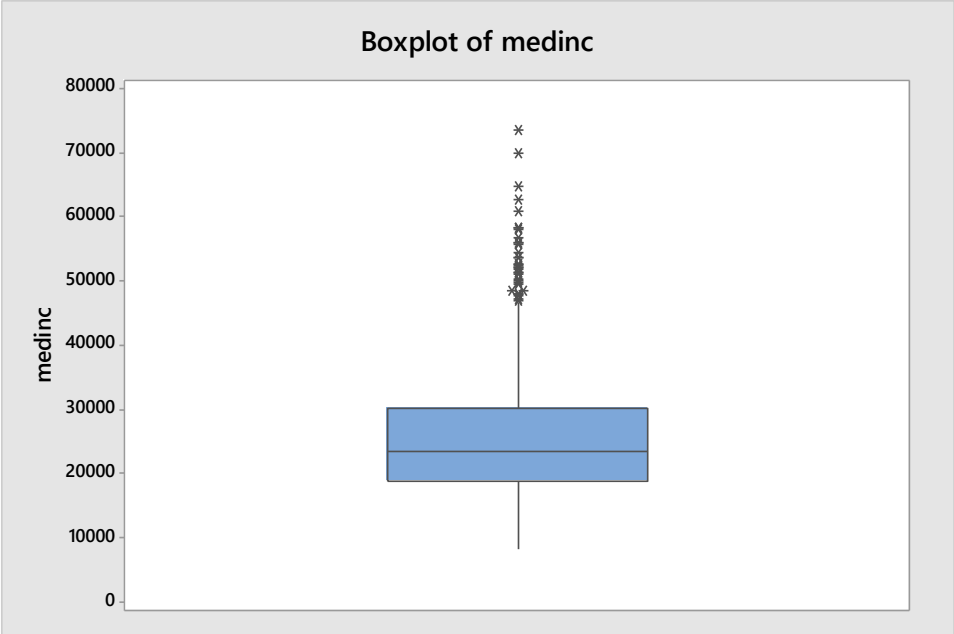
a)

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
medinc	849	7	25614	327	9529	8332	18924	23429	30127	73435

b)



This historgram dispays a triangular distribution that is skewed to the right, the shape of the distribution is becoming bell shaped. This means it is approaching the Normal model.



c)

One-Sample T: C3, C4, C5, C6, C7, C8, C9, C10, ...

Variable	N	Mean	StDev	SE Mean	95% CI
C3	31	26152	8877	1594	(22896, 29408)
C4	30	25660	10645	1944	(21685, 29635)
C5	31	28906	13435	2413	(23978, 33834)
C6	31	25022	9132	1640	(21673, 28372)
C7	31	24336	7914	1421	(21433, 27239)
C8	31	23239	8250	1482	(20213, 26265)
C9	31	26917	10622	1908	(23021, 30813)
C10	31	24227	8289	1489	(21187, 27268)
C11	31	27706	14199	2550	(22498, 32914)
C12	31	28995	10749	1931	(25052, 32938)
C13	31	23805	10016	1799	(20131, 27479)
C14	31	25666	10596	1903	(21779, 29552)
C15	31	22209	8039	1444	(19260, 25158)
C16	31	25092	10221	1836	(21343, 28841)
C17	31	28099	10874	1953	(24111, 32088)
C18	31	24133	9746	1750	(20558, 27708)
C19	30	27460	10229	1868	(23640, 31280)
C20	31	25660	7160	1286	(23034, 28287)
C21	31	26347	11325	2034	(22193, 30501)
C22	31	25313	10665	1916	(21401, 29225

d)

95%CI=1.96

SE(X-bar)= S√(n)=2.043

CI= 26152+ 2.043* 1594=29408

CI= 26152- 2.043* 1594=22896

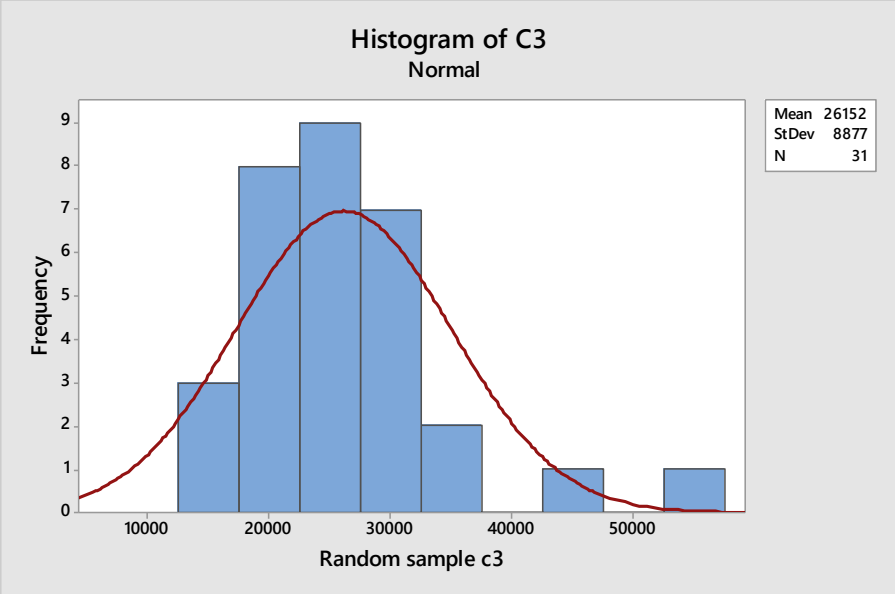
CI: (22896,29408)

So, CI95% is (22896,29408)

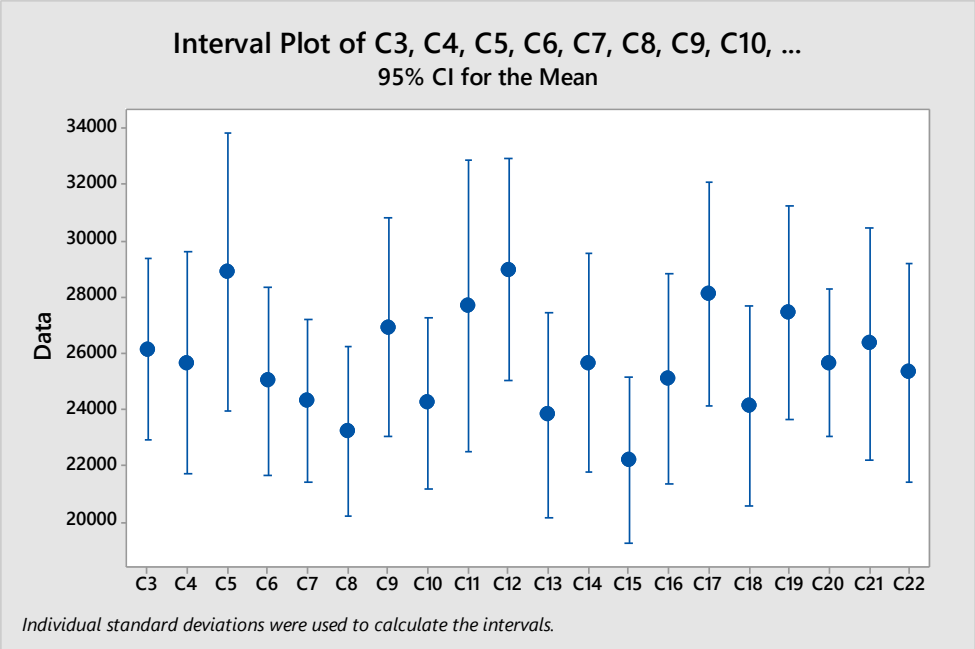
Data Display

C3

30601 19969 18491 23435 30062 17629 45892 34883 19383 56892 24572
26499 30347 28973 21434 19357 23413 36682 24265 17466 24443 13057
19143 29816 27605 27176 24709 23446 16218 32413 22430



e)

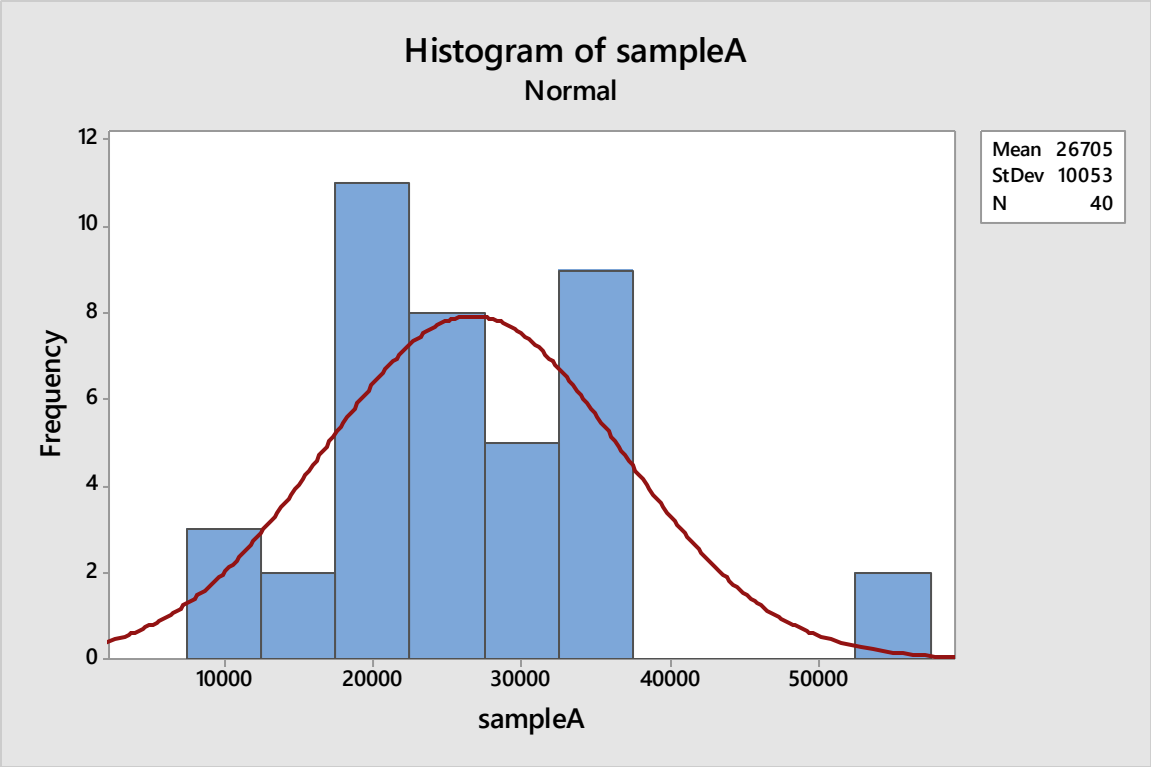


Mean: 25614

This graph shows that C15 are not in reach of the mean line. There are 19 out 20 intervals that contain the true value of population mean from part a.

Question 4

n=40
Mean=26705
SD=10053
Ho:p-hat=p Ha: p-hat > 24000
Z=(26705-24000)/(10053/√40)
=1.70
z=0.9554
Therefore the z value would be 0.9554.


Histogram of sampleA
Normal
Mean 26705
StDev 10053
N 40
Frequency
sampleA
0
2
4
6
8
10
12
10000
20000
30000
40000
50000