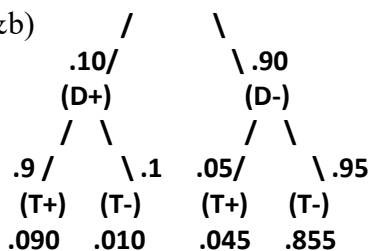


Exam 1 Spring 2018

Green Version

- 1a) The mean is less than the median (skewed negative)
 1b) Right Fence = $79 + (1.5)(10) = 94$ Yes, 99 is a possible outlier
- 2) a) $\mu = (10)(.65) = 6.5$ b) $P(X \geq 9) = 0.086$ (add up binomial values from 9 to 10)
- 3) a) $149 \pm (2)21 = 107$ to 191 grams
 c) 0.92 d) -0.81 e) Apple is more unusual, z-score further from zero
- 4a) i) $700/2000 = 0.35$ ii) $150/2000 = 0.075$ iii) $150/500 = 0.30$
 4b) Yes, Independent $P(\text{Juice}) = .20$ $P(\text{Juice}|\text{Stanford}) = .20$ they are equal
 4c) No, Not Independent $P(\text{Coffee}) = .35$ $P(\text{Coffee}|\text{Stanford}) = .30$ they are not equal

5a&b)



	Test+	Test-	Total
Diabetes	90	45	135
No Diabetes	10	855	865
Total	100	900	1000

5c) $90/135 = 0.667$

6a) $P(X < 4) = P(Z < -1.00) = 0.1587$

6b) $P(\bar{X} < 4) = P\left(Z > \frac{4 - 4.8}{0.8/\sqrt{9}}\right) = P(Z < 3.00) = 0.0013$ (uses Central Limit Theorem)

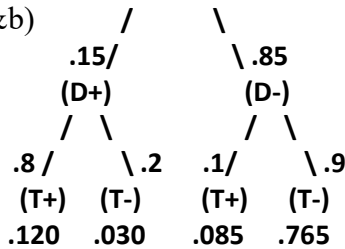
7) a) Graph E b) Graph C c) Graph A d) Graph D

- 8) a) Is staying up extra late the night before a statistics exam better than getting lots of rest?
 b) Explanatory: Time to bed (11PM or 2AM) Response: Exam Score
 c) Cluster sampling plus random assignment into groups creates representative samples
 d) 77% was average exam score for 2AM group.
 81% was average exam score for 11PM group.
 The researchers decided that this was a significant difference.
 e) The researchers concluded there was evidence that getting lots of rest the night before a statistics exam was better for student exam scores.

Blue Version

- 1a) The mean is less than the median (skewed negative)
 1b) Left Fence = $55 - (1.5)(21) = 23.5$ Yes, 13 is a possible outlier
- 2) a) $\mu = (10)(.8) = 8.0$ b) $P(X \geq 9) = 0.375$ (add up binomial values from 9 to 10)
- 3) a) $120 \pm (2)13 = 94$ to 146 grams
 c) 0.77 d) -0.90 e) Orange is more unusual, z-score further from zero
- 4a) i) $500/2000 = 0.25$ ii) $50/2000 = 0.025$ iii) $200/400 = 0.500$
 4b) No, Not Independent $P(\text{Tea}) = .25$ $P(\text{Tea}|\text{Stanford}) = .125$ they are not equal
 4c) Yes, Independent $P(\text{Juice}) = .20$ $P(\text{Juice}|\text{USF}) = .20$ they are equal

5a&b)



	Test+	Test-	Total
Diabetes	120	85	205
No Diabetes	30	765	795
Total	150	850	1000

5c) $120/205 = 0.585$

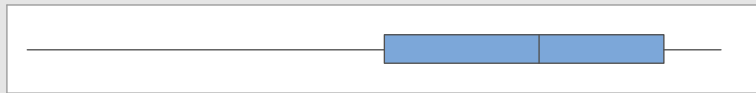
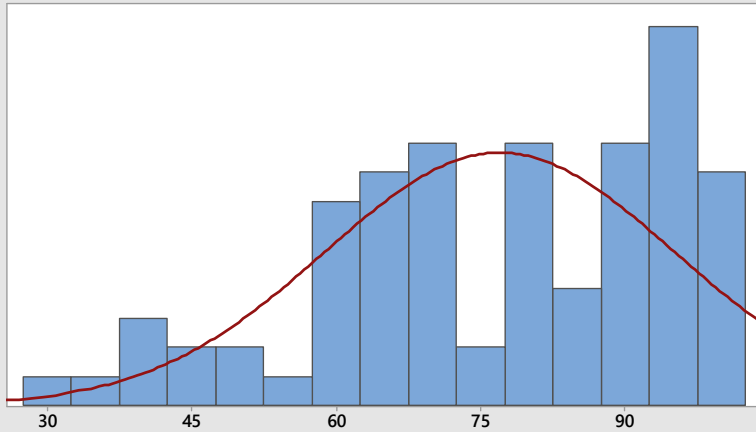
6a) $P(X < 4) = P(Z < -0.50) = 0.3085$

6b) $P(\bar{X} < 4) = P\left(Z > \frac{4 - 4.6}{1.2/\sqrt{16}}\right) = P(Z < 2.00) = 0.0228$ (uses Central Limit Theorem)

7) a) Graph C b) Graph E c) Graph D d) Graph A

- 8) a) Is staying up extra late the night before a statistics exam better than getting lots of rest?
 b) Explanatory: Time to bed (11PM or 2AM) Response: Exam Score
 c) Cluster sampling plus random assignment into groups creates representative samples
 d) 79% was average exam score for 2AM group.
 80% was average exam score for 11PM group.
 The researchers decided that this was too small of a difference to be significant.
 e) The researchers concluded there was **no** evidence that getting lots of rest the night before a statistics exam was better for student exam scores.

Summary Report for E1



Anderson-Darling Normality Test	
A-Squared	1.53
P-Value	<0.005
Mean	76.975
StDev	18.200
Variance	331.256
Skewness	-0.648390
Kurtosis	-0.325131
N	79
Minimum	28.000
1st Quartile	65.000
Median	81.000
3rd Quartile	94.000
Maximum	100.000
95% Confidence Interval for Mean	
	72.898 81.051
95% Confidence Interval for Median	
	71.336 87.000
95% Confidence Interval for StDev	
	15.738 21.583

95% Confidence Intervals

