7.20

a. The parameter of interest is the curbed carapace (shell) length of green sea turtles inhabiting the Grand Cayman South Sound lagoon.

b. x (bar) = 55.47 s = 11.339 n = 76

c.

α = .05 α/2 = .025 Z.025 = 1.96

x (bar) +/- z α/2 s/√n = 55.47 +/- 1.96 x 11.339/√76

[55.921, 58.019]

We can be 95% confident that the curbed carapace (shell) length of green sea turtles is between 55.921 and 58.019 cm.

d.

We can be 95% confident that the curbed carapace (shell) length of green sea turtles is between 55.921 and 58.019 cm. The biologist claim that the mean shell length is 60 cm is not consistent.

7.36

a.

x (bar) = 52.9 s = 6.8 n =6

degree of freedom = n- 1 = 5

α = .01 α/2 = .005 t.005 = 4.032

x (bar) +/- t α/2 s/√n = 52.9 +/- 4.032 x 6.8/√6

[41.7068, 64.093]

We can be 95% confident that the curbed carapace (shell) length of green sea turtles is between 41.7068 and 64.093 cm.

b.

1- the random sample was selected from the target population

2- The population has a relative frequency distribution that is approximate normal.

7.59

p(sleep) = 0.63

p(tv) = 0.18

n =1000

α = .05 α/2 = .025 Z.025 = 1.96

1000 \* 0.63 > 5 630 > 5 1000 \* .37 > 5 370 > 5

p(hat) +/- Z.025 √.63 .37 / 1000

[0.6001, 0.6599]

We can be 95% confident that the true percentage of all adults who would chose to sleep when they are at home sick is between 60.01% and 65.99%.

b. Yes I would be surprised that the true percentage is 70% because it is not in the 95% confidence interval. We can be 95% confident that the true percentage of all adults who would chose to sleep when they are at home sick is between 60.01% and 65.99%.

7.88

n = 18 p = 0.56

1. The sample size is too small and the z instead of t was used.

SE = √(.56 x .44 /18) = 0.117

N = 1.962 x 0.56 x 0.44/ 0.1172 = 69.1 48

We would need 70 asthma patients must be included in the study in order to estimate the true percentage of those who experience a significant drop in breathing capacity to

7.134

mean = 5.87 std dev = 1.51

n = 15 degree of freedom = 14

α = .05 α/2 = .025 t.005 = 2.145

5.87 +/- 2.145 x 1.51/√15

[5.0338,6.7062]

We can be 95% confident that the true mean of response of student is between 5.0338 and 6.7062

Width = 1.6724

2.145 x 1.51/√15 = 0.836

b.

0.418 = 2.145 x 1.51/√X

0.418 x 2.145 = 1.51/√X

X = 60

5.87 +/- 2.145 x 1.51/√60

2.145 x 1.51/√60 = 0.418

[5.452,6.288]

Width = 0.836

We can be 95% confident that the true mean of response of student is between 5.452 and 6.288 when 60 students are required to the sample.

Do textbook problems: #7.20, #7.36, #7.59, #7.88 and #7.134. **For each of the above questions, write the complete interpretation as introduced in the lecture notes and video lecture.**