RPubs *brought to you by RStudio*

Title: "HW4"

Comments (–)   Share   Hide Toolbars

author: "anjal hussan"

date: "10/14/2017"

output: html_document

4.4 Heights of adults.

Researchers studying anthropometry collected body girth measurements and skeletal diameter measurements, as well as age, weight, height and gender, for 507 physically active individuals. The histogram below shows the sample distribution of heights in centimeters.

Min 147.2 Q1 163.8 Median 170.3 Mean 171.1 SD 9.4 Q3 177.8 Max 198.1

a. What is the point estimate for the average height of active individuals? What about the median? Ans: point estimate for average height: 171.1 cm median: 170.3 cm

b. What is the point estimate for the standard deviation of the heights of active individuals? What about the IQR? Ans: standard deviation: 9.4cm IQR: 177.8cm – 163.8cm = 14cm

c. Is a person who is 1m 80cm (180 cm) tall considered unusually tall? And is a person who is 1m 55cm (155cm) considered unusually short? Explain your reasoning. Ans: A person 180 cm tall would be on the first standard deviation from the mean (171.1cm + 9.4cm = 180.5cm) which is slightly above average. The person 155 cm tall is more than one standard deviation, but less than two below the mean. This would make the person below average in height, but not unusually short

d. The researchers take another random sample of physically active individuals. Would you expect the mean and the standard deviation of this new sample to be the ones given above? Explain your reasoning. Ans: No a random sample will included many but not all individuals that were not in the first sample, the second sample will have a different mean and standard deviation than the first sample. We can expect that the second mean and standard deviation will be close to the first.

e. The sample means obtained are point estimates for the mean height of all active individuals, if the sample of individuals is equivalent to a simple random sample. What measure do we use to quantify the variability of such an estimate (Hint: recall that $SD_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$ $SD_{\bar{x}} = \sigma n$)? Compute this quantity using the data from the original sample under the condition that the data are a simple random sample.

Ans: standard error which is the standard deviation divided by the square root of the sample size(nn). $SD_{\bar{x}} = \frac{9.4cm}{\sqrt{507}} = 0.4174687cm$ $SD_{\bar{x}} = \frac{9.4cm}{507} = 0.4174687cm$

4.14 Thanksgiving spending, Part I.

The 2009 holiday retail season, which kicked off on November 27, 2009 (the day after Thanksgiving), had been marked by somewhat lower self-reported consumer spending than was seen during the comparable period in 2008. To get an estimate of consumer spending, 436 randomly sampled American adults were surveyed. Daily consumer spending for the six-day period after Thanksgiving, spanning the Black Friday weekend and Cyber Monday, averaged $84.71. A 95% confidence interval based on this sample is ($80.31, $89.11).