Andrew Celli - PS2

QPM – February 2019

**Question 1** (done)

* No. In the case of congressional bills, the population is known to us and, thus, the population mean is known to us. We do not need to estimate.

**Question 2** (done)

1. The population distribution is skewed to the right. The mean is 5.2 and SD is 3.
2. The sample distribution likely also skewed to the right. The mean is 4.6 and SD is 3.2.
3. The sampling distribution of the mean is approximately normal. The mean would near 5.2 and the SE = 3/√36 or (.5). Standard error reflects the SD of the mean and it also accounts for sampling size. As sampling size increases, SE lowers, signifying the statistic is becoming closer to the parameter.
4. Z-score (±.5/ (3/√36)) 🡪 68.28% [work for d and e problems at end of this doc]
5. Z-score ((±.5/ (3/√100)) 🡪 90.44%
6. It is extremely unlikely for the researcher to get the value 4, considering how far it is from the population mean (5.2) relative to the Standard Error (.3). Z-score(-1.2/.3) 🡪 is in 0.0064% of means farthest from average mean.

**Question 3** (done)

1. 1. = 4.15, 4.30
2. 95% of sampled means fall between 4.15 and 4.30.
   1. i. It would be narrower, since less means are included in the region and the Z-score is lower.
   2. ii. It would depend on the sample size. Assuming similar sample size, a lower standard deviation would make it narrower. But since the SD for “Strong Democrats” is bigger, the confidence interval would be larger

**Question 4** (on “PS2 R Code – Andrew Celli”) (done)

1. .90
2. .47
3. .29

**Question 5** (salaries.pdf) (done)

**Question 6** (Plots.pdf and Plots2.pdf) (done)

* Note: par() command learned from statmethods.net

**Question 7** (on “PS2 R Code – Andrew Celli”) (need to go over)

a.

b. Approval rating has a more normal spread. Much of the data in the drug media coverage falls outside of quantile.

c. For the first graph, the relationship between unemployment rate and media coverage is unclear. In the second, it seems like increased media coverage may be correlated to approval rating.

d.1) the data doesn’t seem to follow a cyclical pattern, and 2) it looks like there are a lot of outliers.

**Question 8**

1. See “PS2 R Code – Andrew Celli”
2. The median changed from -.236 to -.472; meaning the democrats got more liberal by .236.
3. The median changed from .458 to .718; meaning the republicans got more conservative by .260.
4. The standard deviation changed from 0.289 to 0.241; meaning the democrats became more closely aligned ideologically
5. The standard deviation changed from 0.170 to 0.132; meaning the republicans became more closely aligned ideologically
6. See “PS2 R Code – Andrew Celli”
7. See “PS2 R Code – Andrew Celli”
   1. Both parties moved in opposite directions, farther from 0, meaning polarization did increase. According to changes in the median (see parts a and b), republicans moved more to the right than democrats to the left, making them more responsible numerically and proportionately.
   2. Both parties became more cohesive, as their standard deviation lowered. The democrats change in SD is greater, but their absolute SD is higher, meaning they became closer ideologically but are still more heterogenious than the republicans.

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