HW 07 Written Work

● Graded

Student

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Total Points

19 / 19 pts

Question 1

Q1.5

9 / 9 pts

✔ **+ 9 pts** Correct histogram

– 2 pts Incorrect number of repetitions

+ 4.5 pts Didn't run the cell (code is correct, but histogram does not show up)

+ 0 pts Incorrect/blank

Question 2

Q2.1

10 / 10 pts

✔ **+ 5 pts** Correct matches
70%: [52.1, 54]
90%: [50.97, 54.99]
99%: [50.03, 55.94]

✔ **+ 5 pts** Reasonable explanation -- Higher confidence levels lead to wider intervals because we include more of the statistics. We become less confident that the population parameter is within some smaller interval (or anything along these lines that shows understanding of the concept)

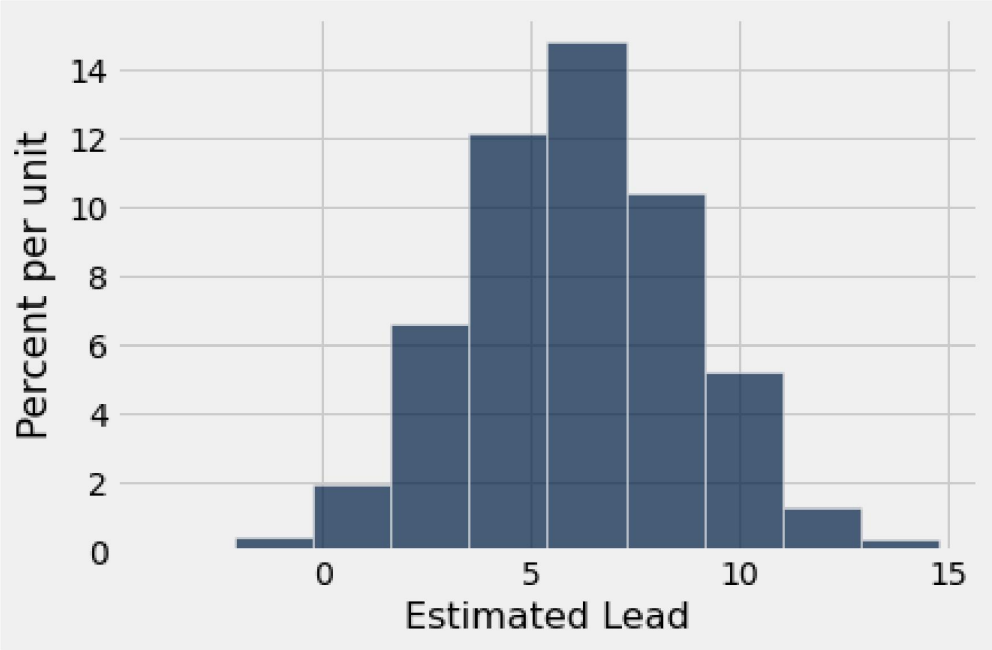
+ 0 pts Incorrect/blank

Question 1.5. Write a function called `leads_in_resamples` that returns an array of 2022 elements representing the bootstrapped estimates (the result of calling `one_resampled_difference`) of Imm Thai's lead over Lucky House, Thai Temple, and Thai Basil combined. Afterwards, run the cell to plot a histogram of the resulting samples. **(9 Points)**

Hint: If you see an error involving `NoneType`, consider what components a function needs to have!

```
In [13]: def leads_in_resamples():
             leads= make_array()
             for i in np.arange(2022) :
                 bootstrap_lead= one_resampled_difference(votes)
                 leads= np.append(leads, bootstrap_lead)
             return leads

         sampled_leads = leads_in_resamples()
         Table().with_column('Estimated Lead', sampled_leads).hist("Estimated Lead")
```



Question 2.1. The staff also created 70%, 90%, and 99% confidence intervals from the same sample, but we forgot to label which confidence interval represented which percentages! **First**, match each confidence level (70%, 90%, 99%) with its corresponding interval in the cell below (e.g. ___ % CI: [52.1, 54] → replace the blank with one of the three confidence levels). **Then**, explain your thought process and how you came up with your answers. **(10 Points)**

The intervals are below:

- [50.03, 55.94]
- [52.1, 54]
- [50.97, 54.99]

For each confidence level, 70% CI: [52.1,54] 90% CI: [50.97,54.99] 99% CI: [50.03,55.94] As the percent of confidence interval increases, the bigger chance that the number would be found in the confidence interval. It gives more confidence as the interval gets wider and there is more chance that unknown population is contained within the interval. That is why 50.03, 55.94 is matched with 99% confidence interval, 50.97,54.99 for 90%, 52.1,54 for 70%, by finding the difference between the numbers. 99 percent would have the biggest difference between the numbers.