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1. The data that I wanted to examine for this project was the divorce rate in 2015 for most countries. I hypothesized that the divorce rate for most countries in 2015 using a 95% confidence interval is 0.4. To find a valid survey that collected this data, I visited this dataset: <https://ourworldindata.org/marriages-and-divorces> and examined the graphs titled ‘Divorces per 1,000 people’ and ‘Marriages per 1,000 people’. Since the graphs included the divorce rates for more than 25 nations for several years before 2018 and I specifically only wanted to focus on 25 countries in 2015, I exported the data into this Excel sheet: [https://docs.google.com/spreadsheets/d/1l-4iN82C6U6occW0CI0Mv32FFb5HgBHtj2QDEWGtbnA/edit.](https://docs.google.com/spreadsheets/d/1l-4iN82C6U6occW0CI0Mv32FFb5HgBHtj2QDEWGtbnA/edit?usp=sharing)
2. The value I wanted for the null hypothesis, , was 0.4 because I know that the divorce rate on average is around 40-50%, so I aimed for the lower range.
3. For the confidence interval, I decided on a 1 sided-upper confidence interval because I was examining if the divorce rate exceeds the threshold, which is 40%.
4. The values that I needed to determine was , , and . I first computed . I used the formula . Then, from the excel sheet with the specific data I wanted to examine, I saw that 11 countries had a divorce rate of 40% or higher out of 25 countries, so . Then, since I was using a 95% confidence interval, I plugged 0.05 in for and got . From step 2, I already had a null hypothesis, , which was 0.4. Plugging all these values into the equation from step 4, I derived the specific equation which is equal to 0.6033. Now, I focussed on finding the test statistic for the hypothesis test, . I used the equation and plugged in the values I derived earlier for and and got which is equal to 0.40824. We I compared and and saw that 0.4084 < 1.645.
5. Since , we fail to reject the null hypothesis. This means that the data suggests that the divorce rate does not exceed 40% for most countries in 2015. The results did not surprise me, since I realized that the divorce rate may be 40% or higher nowadays now that it has become more normalized, but in 2015, most countries were still not as progressive, and divorce was viewed as a last resort. Nowadays, countries are more progressive, so this hypothesis would make more sense in 2024.