

You may work with one other person on this assignment, submitting one report with both names, provided that both of you contribute substantially to the work.

Native Californians?

As a transplant to California, I have wondered whether California residents were more or less likely to have been born in California (i.e., native Californians) back in 1950 or more recently, say in 2000. To investigate this question, I took a random sample of 500 CA residents from the 1950 Census and an independent random sample of 500 CA residents from the 2000 Census. The results are shown in the table below:

	1950	2000
Born in California	219	258
Not born in California	281	242
Total	500	500

- For each year, calculate the proportion of California resident who were born in California. Use appropriate symbols to represent them. Also calculate the (absolute) difference between these proportions.
- Produce a segmented bar graph to display the conditional proportions who were born in California in these two years. Comment on what the graph, along with your calculations from (a), reveal.
- State the appropriate null and alternative hypotheses, in words and in symbols, to address the research question in the first paragraph.
- Use R or Minitab to conduct a simulation analysis to approximate a p-value for this significance test. Be sure to report the appropriate parameter values (n and π) for the binomial distribution that you simulate from. Also submit a well-labeled histogram of your simulation results. Finally explain how you calculate the approximate p-value and report its value.
- Check the conditions for whether the normal approximation is appropriate for this significance test.
- Calculate the z -test statistic and p-value based on the normal distribution.
- Summarize your conclusion from these analyses, with regard to the research question in the first paragraph. Also explain the reasoning process that leads to your conclusion.