You may work with a group of as many as three people on this assignment, submitting one report with all names, provided that all of you contribute substantially to the work. Word-processed reports are preferred to hand-written ones. Integrate computer output into your report as appropriate.

**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:

<table>
<thead>
<tr>
<th></th>
<th>1950</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Born in California</td>
<td>219</td>
<td>258</td>
</tr>
<tr>
<td>Not born in California</td>
<td>281</td>
<td>242</td>
</tr>
<tr>
<td>Total</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

a) Does this study make use of random sampling, random assignment, both, or neither? Explain briefly.

b) For each of these two years, calculate the proportion of California resident who were born in California. Use appropriate symbols to represent them. Also calculate the difference between these proportions.

c) State the appropriate null and alternative hypotheses, in words and in symbols, to address the research question in the first paragraph.

d) Check the conditions for whether the normal approximation (two-proportion z-test) is appropriate here.

e) Calculate the z-test statistic by hand. (You may use the Theory-Based Inference applet to check your work.)

f) Use the Theory-Based Inference applet to determine the p-value based on the normal distribution.

g) What test decision would you make at the .10 significance level? What about the .01 significance level?

h) Produce (by hand; you can use the applet to check your work) a 95% confidence interval to estimate the difference in the proportion of California residents who were born in California, comparing 1950 to 2000. Also interpret what this interval reveals.

i) Summarize your conclusion from this analysis, with regard to the research question in the first paragraph.