HW5: American exceptionalism?
(assigned on Wed April 19, due by 4pm on Mon April 24)

You may work with in a group of as many as three students on this assignment, handing in one report with all names, provided that you all contribute to the work. You must submit a word-processed report, with computer output integrated into your report as appropriate.

The Gallup organization conducted a survey with a random sample of 1019 American adults on December 10-12, 2010. They found that 80% of the respondents agreed with the statement that the United States has a unique character that makes it the greatest country in the world.

a) Use this sample result to determine a 99% confidence interval with a one-proportion z-procedure.

b) Interpret what this interval says; be sure to describe the relevant parameter of interest in your interpretation.

c) Does this confidence interval mean that if the Gallup organization were to take a new random sample of 1019 adult Americans, there’s a 99% chance that the sample proportion who would agree with the statement would fall within the confidence interval? Explain your answer.

d) The Gallup poll also reported that 91% of the respondents who identified themselves as Republicans agreed with the statement. What further information would you need to know in order to determine a 99% confidence interval for the population proportion of Republicans who agree with the statement?

e) Even without knowing this information (that you identified in part d), think about the 99% confidence intervals asked about in parts a) and d). Comment on how the midpoints and margins-of-error for these two confidence intervals would compare to each other. Explain your answers.

f) Suppose that you want to conduct a follow-up study that will estimate the population proportion who agree with the statement to within ± .05 with 90% confidence. Determine how many people would need to be sampled. Please show the steps in how you determine this sample size.

g) The same Gallup poll of December 10-12, 2010 also asked respondents whether they think the U.S. has a special responsibility to lead in world affairs, and 66% of the 1019 respondents answered “yes.” Determine 90%, 95%, and 99% confidence intervals based on this sample result. (Feel free to use the “Theory-Based Inference” applet.)

h) Comment on how the three confidence intervals in part g) compare, in terms of their midpoints and margins-of-error.