

Prepare short, typed answers to the following problems. Solutions should consist of at least two paragraphs describing:

1. The questions the given data can help you answer;
2. The hypothesis tests and statistical analyses that will answer those questions;
3. The results of your hypothesis tests/analyses and how those results relate to your questions;
4. Suggestions for more questions/research.

Include relevant plots. Your solutions will be evaluated using the Final Project Rubric.

1. Continue (and elaborate on) your regression analysis of the Calculus I exam scores, which gives scores on exams 1 and 4 for two sections of MATH 157 from the same semester.
2. Schaller (1972, *The Serengeti Lion*, U. Chicago Press, Chicago) published the following data on chases of different prey by groups of Serengeti lions:

group size	Gazelle		Wildebeest & Zebra		Other	
	no. hunts	no. successes	no. hunts	no. successes	no. hunts	no. successes
1	185	28	33	5	31	6
2	78	24	17	6	11	1
3	42	14	16	2	5	1
4-5	42	13	16	6	4	1
6+	15	5	21	9	7	0

Use the data to describe how lion group size affects hunting success for different prey.

3. While browsing the CIA World Factbook recently, I found data on contraceptive use and life expectancy, which made me wonder if there might be a connection. Use the CIA World Factbook data on Contraceptive Prevalence Rate and Life Expectancy at Birth to test my (implicit) hypothesis. Look for the gray Download Data link at the upper left of the Life Expectancy data. Unfortunately, I couldn't find an equivalent way of downloading data on Contraceptive Prevalence Rate; instead work with one or more friends to get a sample of at least 30 countries (or find a reasonable way of getting all the Contraceptive Prevalence Rate data into **R** for extra credit). Your discussion here should make the distinction between correlation and causation and speculate about possible confounding factors.

URLs: <https://www.cia.gov/library/publications/the-world-factbook/fields/2258.html>
<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html>