

1. Collect sample data, include the data, and use statistical methods of Ch. 7 to construct a confidence interval to estimate a population proportion. Include at least 30 data points/observations, include all steps for a confidence interval, and use a confidence level of 95%. Here are some suggestions for parameters:

Population Proportion (Ch 7):

- Proportion of students at your college who can correctly identify the president, vice president, and secretary of state.
- Proportion of students at your college who are over the age of 18 and are registered to vote.
- Proportion of students at your college who can raise one eyebrow without raising the other eyebrow.
- Proportion of people who wear a mask in the car.
- Proportion of a numerical variable from project 1 data, such as proportion of males at a 2 year college.

2. Collect sample data, include the data, and use statistical methods of Ch. 9 to construct a confidence interval to estimate a population mean. Include at least 30 data points/observations, include all steps for a confidence interval, and use a confidence level of 95%. Here are some suggestions for parameters:

Population Mean (Ch 9):

- Mean age of cars driven by statistics students and/or the mean age of cars driven by faculty.
- Mean length of words in New York Times editorials and mean length of words in editorials found in your local newspaper.
- Mean lengths of words in a magazine.
- Mean age of full-time students at your college.
- Mean number of hours that students at your college study each week.
- Mean of a numerical variable from project 1 data, such as mean number of hours of studied per week.

3. (Ch 8) On-Time Flights: All flights are American Airlines flights from New York (JFK) to Los Angeles (LAX), and all flights occurred in January of a recent year. Arr Delay is the arrival delay time (minutes), and negative numbers correspond to flights that arrived early (before the scheduled arrival time). Data are from the Bureau of Transportation. Consider a flight to be on time if it arrives no later than 15 minutes after the scheduled arrival time. Use the sample data (see data below: Arr Delay) to test the claim made by CNN that 79.5% of flights are on time. Use a 0.05 significance level. Use the methods of Ch. 8 to conduct a hypothesis test. Make sure to include all the steps for the hypothesis test including the conclusion statements. (See Arr Delay data set below):

4. (Ch 9) Blood Pressure: Use the systolic blood pressure measurements (see SB Female data below) for females to test the claim that the female population has a mean systolic blood pressure level less than 120.0 mm Hg. Use a 0.05 significance level. Use the methods of Ch. 9 to conduct a hypothesis test. Make sure to include all the steps for the hypothesis test including the conclusion statements.

5. (Ch 9) Weights of Quarters: Vending machines reject coins based on weight. Refer to the pre-1964 and the post-1964 data sets below to test the claim that the mean weight of pre-1964 quarters is equal to the mean weight of post-1964 quarters. Use a 0.05 significance level. Given the relatively small sample sizes from the large populations of millions of quarters, can we really conclude that the mean weights are different? (Note: The “pre-1964 silver quarters” are 90% silver and 10% copper. The “post-1964 quarters” are made with a copper-nickel alloy.) Make sure to include all the steps for the hypothesis test including the conclusion statements.

Arr Delay	SBFemale	Pre-1964 Quarters	Post-1964 Quarters
-32	122	6.2771	5.7027
-25	120	6.2371	5.7495
-26	90	6.1501	5.705
-6	150	6.0002	5.5941
5	132	6.1275	5.7247
-15	88	6.2151	5.6114
-17	100	6.2866	5.616
-36	114	6.076	5.5999
-29	94	6.1426	5.779
-18	100	6.3415	5.6841
-12	110	6.1309	5.6234
-35	188	6.2412	5.5928
2	106	6.1442	5.6486
-33	130	6.1073	5.6661
-5	126	6.1181	5.5361
0	90	6.1352	5.5491
0	168	6.2821	5.7239
-1	110	6.2647	5.6555
-33	98	6.2908	5.6063
-5	112	6.1661	5.5709
-14	116	6.2674	5.5591
-39	128	6.2718	5.5864
-21	116	6.1949	5.6872
-32	112	6.2465	5.6274
-5	126	6.3172	5.6157
-32	94	6.1487	5.6668
-13	120	6.0829	5.7198
-9	94	6.1423	5.6694
-19	120	6.197	5.5454
49	148	6.2441	5.6646
-30	126	6.3669	5.5636
-23	126	6.0775	5.6485
14	112	6.1095	5.6703
-21	120	6.1787	5.6848
-32	110	6.213	5.5609
11	98	6.1947	5.7344
-23	130	6.194	5.6449
28	114	6.0257	5.5804
103	174	6.1719	5.601
-19	108	6.3278	5.6022
-5			
-46			
13			
-3			
13			
106			
-34			
-24			

10,9,9,6,8,7,9,8,7,9,16,11,10,14,13,18,10,11,10,10,11,9,11,9,11  
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