

Statistics: Review
Comparing Two Populations

1. Harvard University conducted a study which sought to decide the effectiveness of aspirin in reducing heart attacks. Since the chance that any one individual has a heart attack in a given year, it was decided to test a large number of subjects (22,071 to be precise). The subjects were randomly assigned to group A, which took an aspirin like placebo, and group B which took one aspirin a day. The results are summarized in the table below:

	Attack	No Attack
A Placebo	239	10,795
B Aspirin	139	11,037

Find the heart attack rate for group A and for group B.

Complete the sentence: Members of the placebo group were _____ times likelier to suffer a heart attack than members of the aspirin group.

Determine the 95% confidence level of the difference in heart attack rates between the placebo and aspirin groups. Does this interval allow you to make any statements about the effectiveness of aspirin in reducing heart attacks?

Perform the significance test to see if aspirin does reduce the rate of heart attack.

Does these statistics allow you to make any statements about the effectiveness of aspirin in reducing heart attacks?

2. BMC is testing the repair costs of its new vehicle, the Chameleon, against the repair costs of MMC's new vehicle, the Iguana. Each company is donating seven of their vehicles to the study (the high cost of destroying good automobiles limits the sample size). Unfortunately, only five of the Chameleon's were delivered to the testing grounds on time. The study team compiled the following data:

Vehicle number	Repair cost of Chameleon	Repair cost of Iguana
1	\$150	\$50
2	\$400	\$200
3	\$720	\$150
4	\$500	\$400
5	\$930	\$750
6		\$400
7		\$150

Find the number of data points, mean repair cost, and standard deviation for each vehicle.

Determine the 95% confidence level of the difference in mean repair cost for each vehicle. Does this interval allow you to make any statements concerning the costs of repairing the vehicles after a collision?

Use the following to find the test statistic and p-value:

$$H_0: \mu_{\text{chameleon}} = \mu_{\text{iguana}}$$

$$H_a: \mu_{\text{chameleon}} \neq \mu_{\text{iguana}}$$

$$\alpha = .05$$

Does these statistics allow you to make any statements concerning the costs of repairing the vehicles after a collision?