

Activity 14

Name: _____

In May of 1978, Brink's Inc. was awarded a contract to collect coins from some 70, 000 parking meters in New York City for delivery to the City Department of Finance. Sometime later the City became suspicious that not all of the money collected was being returned to the city.

The data provided by the City's attorney is in the Activities Folder.

The first column represents the month of the collection. The next column represents monthly parking meter collections by the principle contractor in New York City from May 1977 to March 1981. From May 1978 to April 1980 the contractor was Brink's Inc. Data from before and after Brink's employment is also given. This information is in the 3rd column. The city sued Brink's for negligent supervision of its employees, seeking to recover the amount they believed stolen. In 1983, the city presented evidence in court that Brink's employees has been stealing parking meter moneys - delivering to the city less than the total collections. The court was satisfied that theft has taken place, but the actual amount of shortage was in question.

1. First, lets get a picture of the data. Open the Excel file. Highlight the B column, and create a line graph. Click on the series tab, and for the Category (X) Labels, highlight the dates in the A column. Delete the Legend, add titles, etc. Locate the region on the graph where Brink was collecting. Try to recolor the individual dots where Brink begins collecting and the point where he stops collecting. This is somewhat hard to do: press and hold on the dot, then double click and an option window should open. Paste the graph below.

2. Does it appear that the collections are substantially lower in the region where Brink was collecting?

3. Open Minitab. Copy and the information in the total collections column and paste in into Minitab. Paste the collections made by the city into the first column, C1, and the collections made by the Brink into C2. This will take a couple copy and pastes. From the Stat menu, choose Basic Statistics and then Display Descriptive Statistics. In the Variable Box, enter in both City and Brink. Click OK. Copy and paste the output below.

a.) What is the average monthly amount the city workers collected?

b.) What is the average monthly amount that Brink collected?

c.) Is this evidence in favor of Brink or the prosecutors? Why?

4. From the Stat menu, choose Basic Statistics and then 2-Sample t. Choose Samples in Different Columns, then choose City for the First Column and Brink for the Second Column. Click the Graphs button and choose Boxplots of Data. Click OK twice. Paste the Boxplot below.

a.) Who was more consistent with in the amount of money collected each month?

b.) Is this suspicious? Why or why not?

c.) From the Boxplots, does it appear that Brink is guilty of stealing money? Explain.

5. Now, look at the Session window. Paste the output below.

a.) What is the estimated difference between the average amount the city collects and the average amount Brink collects per month?

b.) What is the 95% Confidence Interval for the difference between average monthly collections for Brink and the other collectors?

c.) Interpret the interval.

d.) If you were the judge, how much would you award the city? Why?

6. Do you think Brink was guilty? Provide an argument from what you have done in this activity.