

Chapter 17 - Comparison

31. Used Cars These data indicate the prices of 155 used BMW cars. Some have four-wheel drive (the model identified by the Xi type) and others two-wheel drive (the model denoted simply by the letter i).

- (a) If we treat the data as samples of the typical selling prices of these models, what do you conclude? Do four-wheel drive models command a higher price as used cars, or are differences in average price between these samples typical of sampling variation?
- (b) These cars were not randomized to the two groups. We also know that newer cars sell for more than older cars. Has this effect distorted through confounding the confidence interval in part (a)?

33. Based on data collected in 2010, 23 percent of women wanted to buy a Google Android smart phone or tablet. Among men, 33 percent were interested in an Android purchase next. The survey contacted 240 women and 265 men.

- (a) Might the comparison between these two samples be confounded with a hidden factor? If so, identify such a factor.
- (b) Find the 95% confidence interval for the difference between the proportion of men and the proportion women interested in buying an Android device.
- (c) What are the implications of the confidence interval for sales executives at Google?

35. Decoy. A retail chain is considering installing devices that resemble cameras to deter shoplifting. The devices only look like cameras, saving the expense of wiring and recording video. To test the benefit of this decoy system, it picked 40 stores, with half to get the decoy and the other half to serve as comparison group (control group). Stores were matched based on typical levels of sales, local market size, and demographics. The comparison lasted for 3 months during the summer. At the end of the period, the retailer used its inventory system to compute the amounts lost to theft in the stores.

- (a) Why is it important that all of the stores measure theft during the same time period?
- (b) Compute separate 95% confidence intervals for the amount lost to theft with and without the decoy cameras. Is there evidence of a statistically significant difference?
- (c) Perform the appropriate comparison of the decoy system versus stores without this potential deterrent. Is there a statistically significant difference in the average amount lost to theft? Be sure to check the conditions for the method used.