

1. A study in 2008 looked at the relationship between the race of the hiring manager of stores and the race of the person hired.

(a) Do you think the race of the hiring manager and the race of the person hired are likely to be independent? State yes or no and then a one sentence explanation for your answer.

No, the manager might prefer workers of a particular race.

(b) In southern stores, the study found that the probability that a new hire is black if the manager white is 0.21. What is the probability that a new hire is not black if the manager is white?

0.79

(c) In the previous question, what term best describes the relationship between "a new hire is black" and "a new hire is not black"?

Complement

(d) Suppose that in the study, 100 random hires in northern stores are reviewed. The goal is to count the number of hispanics who were hired. Is this a binomial setting?

- i. Fixed number? Yes, 100 random hires
- ii. Independent? Yes, random. (hopefully less than 10% of all hires)
- iii. Two outcomes? Yes, Hispanic or not
- iv. Counting one of the two? Yes, those who are hispanic
- v. Fixed probability? Yes, as long as there are at least 1000 hires for the 10% condition. We have randomness.

Yes, it is binomial.

2. A resident of Harrisburg was driving home late one night and noticed several homeless people who appeared to be setting up to sleep outdoors on a very cold night. She called local shelters and discovered that several of them had room for many more clients overnight. She decides that she and her roommate need to try to discover why the homeless people she saw were not taking advantage of the warm beds nearby. This quiz will ask questions about this setting.

(a) One thing she is interested in is whether the age of the homeless person affects their reason for staying on the street. Label this variable (age) according to each of our ways of classifying data. (No explanation is necessary.)

Quantitative, Continuous, Ratio

(b) If the resident is able to get enough support from her friends to be able to canvas her neighborhood and survey every homeless person in the area, what type of study would this be (assuming that this would be everyone of interest to her)? (Explain why in one sentence.)

Census, since all of the population of interest is going to be included.

(c) One of the subjects is embarrassed to use a shelter because she thinks of it as a sign of weakness. She doesn't want to admit this pride to the friend who questions her, so she lies and says that she didn't even know that there was a shelter nearby. What type of error is this?

Non-sampling