Chapter Project

A Random Sampling of College Life

Everyone has heard about the "Freshmen 15", referring to the number of pounds gained by a typical freshman during their first year of college. Recent studies show that students on average gain 3 to 10 pounds during their first 2 years of college, with most of that weight gain occurring during the first semester of their freshman year.

If a study conducted by a local university showed that on average a college student gains 10 pounds with a standard deviation of 2 pounds during their freshmen year, and student weight gain is normally distributed, answer the following questions.

1. What is the probability that a randomly selected student will gain between 6 and 8 pounds?

2. If 25 students are randomly selected, what is the probability that the average weight gain of the students is between 6 and 8 pounds?

Another study on college students says that the average college student credit card debt is around $3200 with a standard deviation of $500. Assuming that credit card indebtedness is normally distributed, answer the following questions.

3. What is the probability that a randomly selected student owes more than $3500 in credit card debt?

4. If 25 students are randomly selected, what is the probability that the average credit card indebtedness is more than $3500?

A recent news article stated that only 17% of college students between the ages of 18 to 24 years old voted in the last presidential election.

5. Assuming the voting rate stays the same, what is the probability that from a random sample of 500 college students from a local university, at least 20% will vote in the next presidential election?

Suppose you are taking a statistics class and you must conduct a survey of the students at your college as part of an assignment. Describe how you would go about sampling students using each of the sampling methods listed below.

6. Cluster sample

7. Stratified sample

8. Systematic sample

9. Random sample

10. Convenience sample