PES University, Bangalore

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UE19CS203 – STATISTICS FOR DATA SCIENCE

Unit-1 - Introduction to Data Science

QUESTION BANK – SOLVED

Sampling Methods

Exercises for Section 1.1

1. **True or false:**

a. A simple random sample is guaranteed to reflect exactly the population from which it was drawn.
b. A simple random sample is free from any systematic tendency to differ from the population from which it was drawn.
[Text Book Exercise – Section 1.1 – Q. No.3 – Pg. No. 12]

Solution:

(a) False

- Because of sampling variation
- Hence a simple random sampling is not guaranteed to reflect exactly the population from which it was drawn.

(b) True

- A simple random sampling is guaranteed to free from systematic tendancy to differ from the population which it was drawn.

2. **(i) A shipment of apples is to be tested for quality. A quality inspector draws a simple random of 40 apples and tests the condition of each. She finds that 6 of them, or 15%, are rotten. She concludes that exactly 15% of the shipment is rotten. However, her supervisor claims that the proportion of rotten apples is close to 15%. Whose conclusion is more statistically appropriate?**

(ii) Now, a different inspector conducted the same experiment but found that 4 apples, or 10%, are rotten. The first inspector claims that he must have done something wrong, since her results showed 15% and not 10%. Is she right?

[Other Sources]

Solution:

(i) The supervisor is right. Because of sampling variation, a simple random sample does not reflect the population perfectly.

(ii) She is wrong. Because of sampling variation, two different simple random samples can differ from each other and from the population