

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEM 2414: RESEARCH AND STATISTICAL METHODS IN DEMOGRAPHY

TUTORIAL EXERCISE NO. 2

1. Explain the concept of probability and briefly discuss some to its applications.
2. Discuss the major type of probability.
3. Discuss the axioms of probability.
4. What are the three main types of distribution?
5. Given below are data on the socio-economic status of SS241 students in their performance in an end of year examination.

| | Excellent | Good | Poor | Total |
|-------------------|------------------|-------------|-------------|--------------|
| High SES | 42 | 38 | 20 | 100 |
| Middle SES | 20 | 33 | 27 | 80 |
| Low SES | 17 | 31 | 12 | 60 |
| Total | 79 | 102 | 59 | 240 |

- a) What is the probability of a student recording an excellent performance given that he/she comes from a middle class background?
 - b) What is the probability of one recording a good performance of failing from a low class background?
 - c) What is the probability of one having poor results and coming from a high class background?
6. Demonstrate your understanding of the normal curve by answering the following questions:
 - a) What is a normal curve (distribution)?
 - b) What are the major characteristics of the normal curve?
 - c) What is the difference between an ordinary normal curve and a standard normal curve?
 - d) Give some common applications of the normal curve.

7. The mean age of a random sample of 100 DEM 2414 students is 23.5 years with a standard deviation of 10 years. Given this scenario, answer the questions below:
- a) If John Zulu is aged 27 and Peter Chanda is 19 years old, what is the percentage of students falling between these two students.
 - b) If Mary Nyambe is 24 years old, how many students are between her and John Zulu?
 - c) What percentage of students are younger than Mary Nyambe?
 - d) How many are older than Peter Chanda?
 - e) What is the point estimate for the age for the mean age of all DEM 2414 students.
 - f) Find the interval estimate for the mean age of all SS242 students. Use a 0.95 confidence coefficient.
8. Discuss the importance of the following in statistical inference:
- a) The law of large numbers
 - b) The central limit theorem and the sampling distribution
9. What determines the goodness of an inference?