

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEM 2414: RESEARCH AND STATISTICAL METHODS IN DEMOGRAPHY

DEM 2414 TUTORIAL EXERCISE ON THE NORMAL CURVE

The Normal Distribution and Z-Scores

1. In the unit normal distribution, what proportion of the area under the curve lies below each of the following z-scores and what proportion lies above?
a. -1.24 b. -0.18 c. 0 d. 1.72 e. 2.86
2. Given a score point located:
 - a. 1.58 standard deviations above the mean
 - b. 1.58 standard deviations below the mean
 - c. 2.81 standard deviations above the mean
 - d. 2.81 standard deviations below the mean

Determine the following:

- a. The area between the mean and score
- b. The total area to the left of the score
- c. The total area to the right of score
3. Given percentile ranks of (a) 22, (b) 91 and (c) 50 in a normal distribution, determine the corresponding z-scores.
4. Assume that the heights of men are normally distributed with a mean of 68" and a standard deviation of 4".
 - a. John is 71" tall. What is his percentile rank on the height variable.
 - b. Bill is 65" tall. What proportion of the adult male is taller?
 - c. What proportion of the same population falls between John and Bill?
 - d. Edward claims he is taller than 75% of the men in this population. How tall is he?
5. The mean waist measurement of fifteen people is 33.53" and the standard deviation is 3.58".
 - a. What z-score is associated with a waist of size 36"?
 - b. What z-score is associated with a waist of size 29"?
 - c. What z-score is associated with a waist of size 32"?
6. What percentage of a normal distribution is included between:
 - a. The mean and 1.54 standard deviations from the mean?
 - b. 0.66 and 1.78 standard deviations from the mean?
 - c. -1.73 and 0.56 standard deviations from mean?
7. In a sample of 1000 cases, the mean of a certain test is 14.4 and the standard deviation is 2.5. assuming normality of distribution

- a. How many individuals score between 12 and 16?
- b. How many score above 18? Below 18?