

Preface

While the survey is still running, you may work on these task in pairs (put both names on the submission), but not in larger groups. If you want, you can also work alone.

Task 11-1: Statistical Data Analysis

⌘ / ⌘

- a) The following data comes from a company with 50 employees. The table shows how many employees (NE) had how many absence days (AD) during the past year:¹

AD	0	3	5	9	12	18	21
NE	5	9	13	9	8	4	2

Use R to answer the following questions (helpful: `rep`):

1. Central tendencies: What are the arithmetic mean, the mode, and the median for absence days of employees in that company?
2. Calculate the 3rd quartile and the 9th decile.
3. Variability: Calculate the average absolute deviation, the variance, and the standard deviation.
4. Which proportion of the company’s total sick-leave time is represented by the 8 most frequently ill employees?

Before rushing to use any R functions, make sure you understand their purpose and applicability for the given scenario. Submit your R code along with your answers.

- b) What exactly is a “significant result”? What exactly is the difference between a “significant effect” and a “big effect”?

Task 11-2: Evaluating quantitative data analyses

⌘ / ⌘

Similar to task 9-2, find a computer-science study that used *quantitative data analysis*, answer the questions from the “Evaluation Guide” below (explain your answers) and be prepared to give an elevator pitch introducing the piece of research you studied.

Evaluation Guide: Quantitative Data Analysis

(from “Researching Information Systems and Computing” by Briony J Oates)

1. What kinds of quantitative data were analyzed (for example: nominal, ordinal)?
2. Do the researchers use appropriate visual aids to explain their data and data analysis?
3. What means do the researchers use, if any, for describing the central tendency, distribution and relationships in the data?
4. Do the researchers justify their choice of statistical measures and tests, or assume that the reader will know what they are and why they are used?
5. Do the researchers discuss the null hypothesis?
6. How much of the report is concerned with analysis, and how much with interpretation of the results? Do you think the balance is appropriate?
7. Are the researchers’ conclusions justified on the basis of the data they have presented?
8. What limitations in their quantitative data analysis do the researchers recognize?
9. Can you identify other flaws or omissions in the researchers’ use of quantitative data analysis?
10. Overall, how effectively do you think quantitative data analysis has been reported and used?

¹ Example: The first column means “5 employees had 0 absence days”.