Politecnico di Milano
Scuola di Ingegneria Industriale e dell'Informazione
Applied Statistics
Academic Year 2024/2025
Exam 2025-02-06 - Part B

Problem 1: Music Preferences and Emotional Well-being

We aim to explore the impact of different music preferences on emotional well-being. The dataset `music.txt` contains measurements of two key indicators:

- `relaxation`, representing a relaxation score (ranging from 0 to 100), where higher values indicate greater relaxation;
- `motivation`, representing a motivation score (ranging from 0 to 100), where higher values indicate greater motivation.

The dataset consists of data from 200 randomly selected individuals, along with information on whether they regularly listen to classical music (`classical`) and whether they listen to upbeat music (`upbeat`).

a) Do classical and upbeat music significantly influence emotional well-being indicators? Justify your answer using a MANOVA model.

b) Identify and check the assumptions of the model introduced in (a).

c) Based on the results from (a), would you propose a different model? Explain your reasoning.

d) Compute Bonferroni-adjusted confidence intervals (global level 95%) for the effects of classical and upbeat music on emotional well-being. How would you interpret these effects on relaxation and motivation?

Upload your results here: `https://forms.office.com/e/vPVbNbZQ6w`