Homework: Types of Data

MATH 150

Due: Jan 22, 2024

Sepehr Akbari

Problem 1

This problem refers to the erykah data set, available on Moodle, which includes Spotify metrics on every song available by neo-soul artist Erykah Badu. You can learn more about the variables in the set at https://developer.spotify.com/documentation/web-api/reference/get-audio-features.

Determine the type and level of measurement of each of the following variables in this data set. Briefly explain your choices.

- tempo

- mode

- key name

- liveness

Answer

tempo: Quantitative — Ratio

Tempo is a numerical value that can be measured on a ratio scale. This means that it has a meaningful zero point (0 BPM indicates no tempo), and the ratios of values are meaningful (for example 120 BPM is twice as fast as 60 BPM).

mode: Qualitative — Nominal

The data set uses mode as a identifier for a yes/no question regarding a song's mode. Therefore its a categorical variable with two categories (0 or 1). The zero and one is used similar to a label, and isn't in any specific order, as its value is simply used to represent, not enforce a claim.

key name: Qualitative — Nominal

Obviously this is a qualitative data type. Music theory has some standard order for keys (A, A#, B, etc.) however, the order does not have a value in organizing or ordering the data, therefore this data type would be nominal.

liveness: Quantitative — Ratio

In here, an absolute zero (meaning no liveness at all) exists, and although 1 is not concretly valueted, it can still be understood as maximum liveness. Moreover, the ratios between liveness levels exist (0.5 is double 0.25).