

Section 1.2: Variables and Data

Wednesday, May 01, 2013
11:44 AM

definitions :

a variable is a characteristic that either

- ① changes over time
- ② changes for different individuals or objects under consideration

example of ① : the height of an individual tree measured over a period of years

② : at a particular time, the heights of all trees within a certain area

experimental unit : individual or object on which a variable is measured

⇒ results in a measurement

univariate data - result of a single variable measured on a single experimental unit

bivariate data - two variables

multivariate data - more than two

qualitative variable - measure is a quality or

characteristic

⇒ does not result in a numerical value

example: political party
nationality
favourite colour

quantitative variable - measure is a numerical quantity

example: height
number of students in a class
shoe size

for quantitative variables, two types:

discrete - can only assume finite or countable number of values
(- can't always go halfway between two measurements)

number of students: 22, 23, 24, ...
↑
22½ not allowed

discrete variables behave like integers - there's a step size involved

example: shoe size 7, 7½, 8, 8½, 9...

continuous - can be any real number

examples: speed
mass
density

note: although height is indeed a continuous variable which has a value which is a real number, practically speaking we usually round our measurement (for example, to nearest mm) due to

→ limitations of our measuring instrument

→ limitations on object being measured (fuzziness of a tennis ball)

