Data

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Data

Discrete observations of variables

Information

Summarisation of data by reducing data into tables, etc.

Variables

- Characteristic of an entity (i.e. person, organism, object or phenomenon), which is measurable
- Example: Height, weight, etc.

Microsoft Excel - Book1.xls

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	A	B	C	D	E	F	G	H
1	Name	Address	Age	Sex	Pulse	Smoking		
2	HLA	No. 22, Jln. MJ6, Melaka	25.00	Male	82.00	Yes		
3	HLB	No. 24, Jln. MJ6, Melaka	27.00	Female	62.00	No		
4	HLC	No. 26, Jln. MJ6, Melaka	35.00	Male	84.00	Yes		
5	HLD	No. 28, Jln. MJ6, Melaka	21.00	Female	85.00	Yes		
6	HLE	No. 30, Jln. MJ6, Melaka	22.00	Male	70.00	No		
7	HLF	No. 32, Jln. MJ6, Melaka	25.00	Male	66.00	Yes		
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Sheet1 Sheet2 Sheet3

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Variables

- Importance in identifying variables:

1. To avoid unnecessary collection of data
2. To ensure that all data that are relevant to the study are collected.

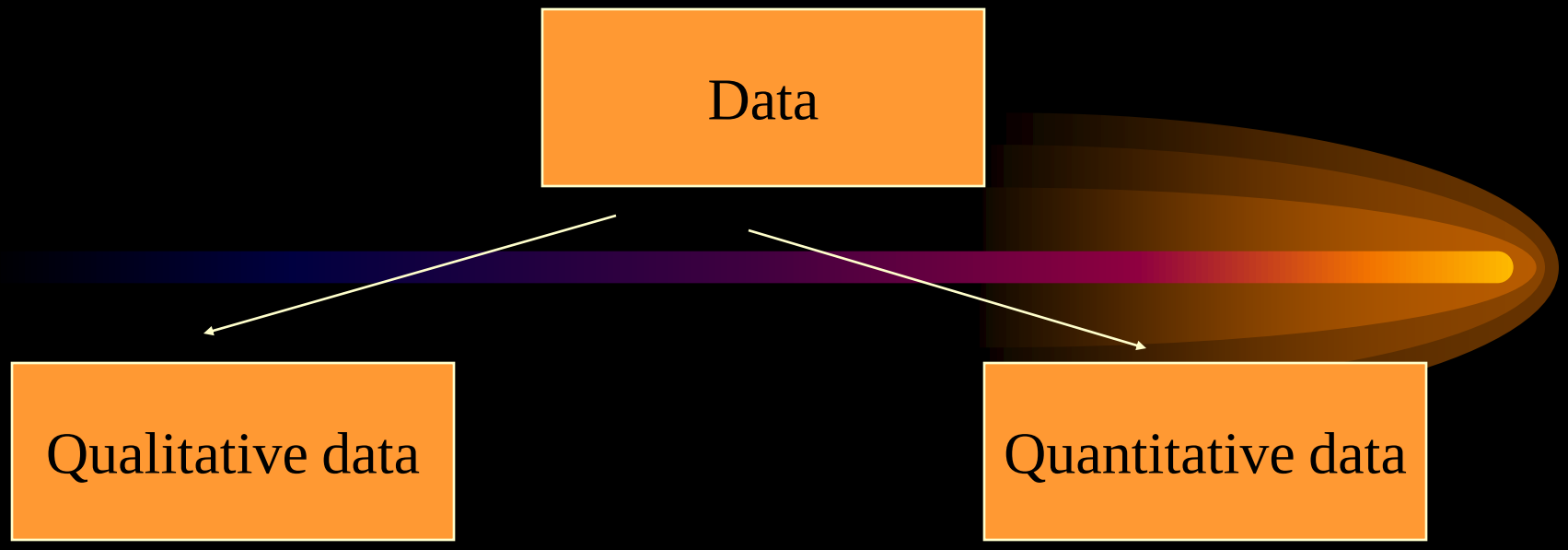
Independent- dependent variables

- Analytical studies
- - 2 variable relationship:

- independent variable → dependent variable

Causal factor

Outcome-disease, etc.


Data
Qualitative data
Quantitative data

Qualitative Data

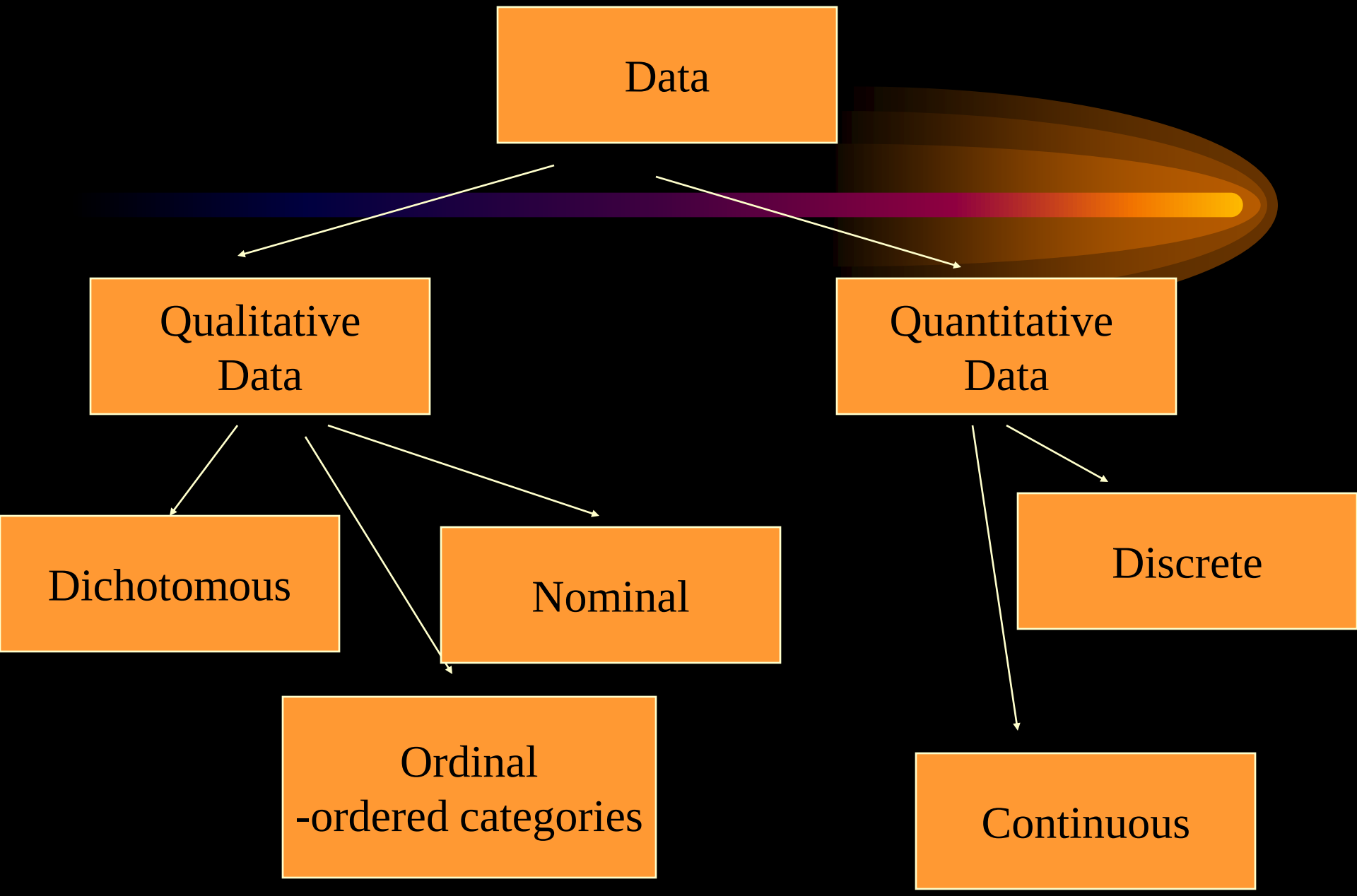
- Dealing with frequencies of different categories

- Colour of eye, sex, severity of disease, etc.
- Cannot make any statements about relative size of their differences

Quantitative Data

- Dealing with frequencies of ONE category

- Height (in cm), speed (in km/h), etc.
- Can make statements about relative size of their differences


Data
Qualitative Data
Quantitative Data
Dichotomous
Nominal
Ordinal
-ordered categories
Discrete
Continuous

Dichotomous - qualitative

- Availability of 2 categories only:

- Examples:
- Sex - male/ female
- Disease – presence / absence of disease
- Treatment – received / did not receive treatment

Nominal - qualitative

- 1) Where the measurement of a variable involves involves the naming of variables
- 2) Availability of more than 2 categories:

- Example:
- Nationality - Malaysian, Thai, Japanese, etc.
- Ethnicity
- Blood type- A, B, AB, O

Ordinal - qualitative

- 1) Involves rank ordering values of a variable.
- 2) The numbers assigned on an ordinal scale signify order/ rank

- Example:
- Severity of condition: Mild-1; Moderate-2; Severe-3
- Education level: No school-1; Primary-2; Secondary-3; Tertiary-4

Ordinal - qualitative

- Severity of condition: Mild-1; Moderate-2; Severe-3

- Note:
- a) Statements about ranks can be made- 3>2>1
- B) Cannot make any statements about relative size of their differences

Discrete - quantitative

- The frequency of a variable in whole numbers

- Example:
- Number of children
- Number of cars

- Note:
- Statements can be made about relative size of their differences

Continuous - quantitative

- The measurement of a variable which include decimals

- Example:
- Height in cm
- Weight in kg.

- Note:
- Statements can be made about relative size of their differences

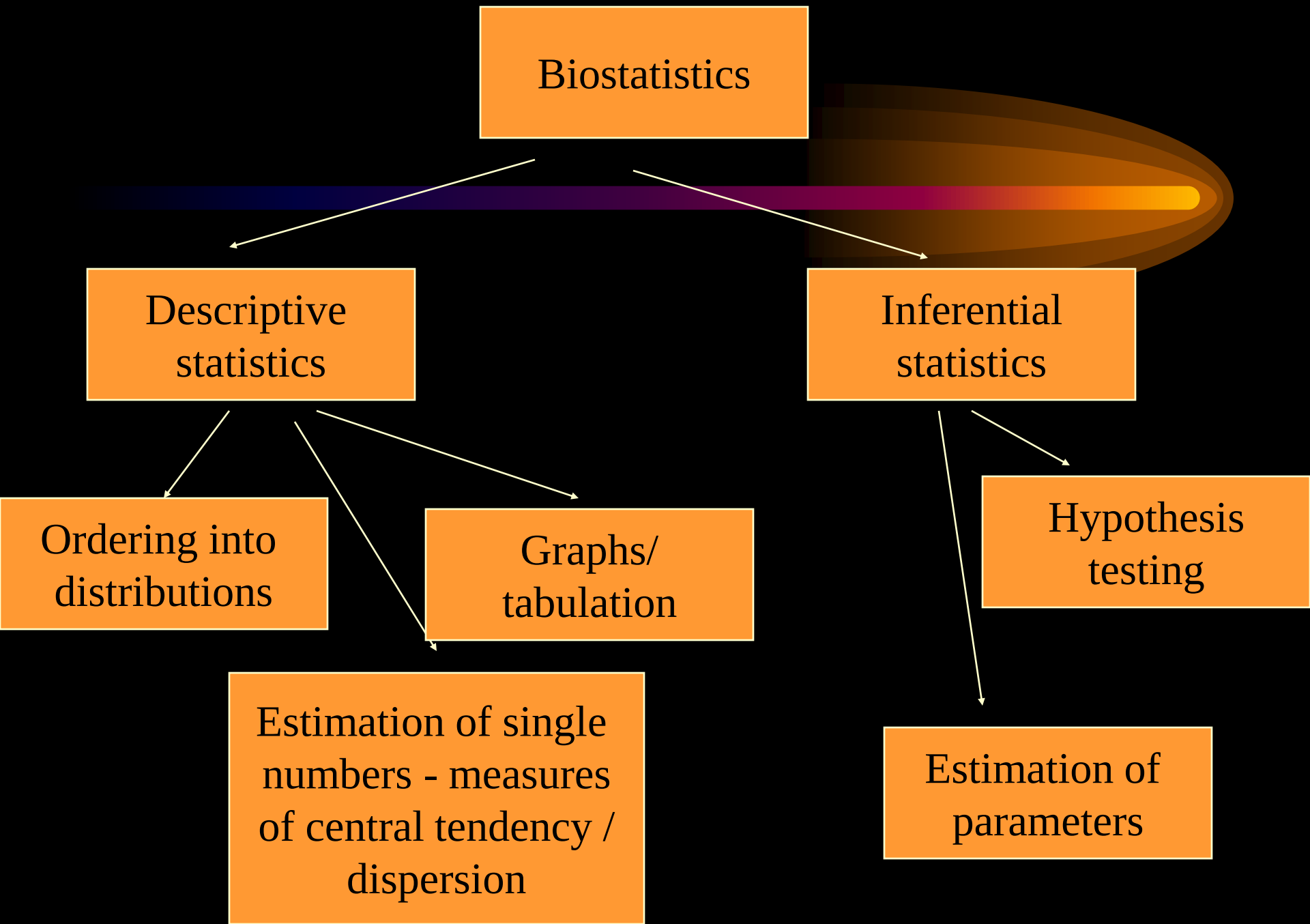
Biostatistics

Descriptive statistics

Inferential statistics

Organisation and summarisation of data

Inferences are made about the population by examining a small group of sample


Biostatistics
Descriptive statistics
Inferential statistics
Ordering into distributions
Graphs/ tabulation
Estimation of single numbers - measures of central tendency / dispersion
Hypothesis testing
Estimation of parameters

Which Statistical Test to use?

- Knowing the type of data for - Independent variable
- Knowing the type of data – Dependent variable

Independent variable → Dependent variable

Causal factor

Outcome-disease, etc.

		Dependent Variable	
		Categorical	*Continuous*
Independent Variable	*Categorical*	Chi Square	t-test, ANOVA
	Continuous	**Log Reg**	Regression