

# HPS201 - Research Methods A

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Week 1 - Introduction

Learning Objectives:

- **Understand the differences between population and sample.**
- **Distinguish between parameters and statistics (descriptive vs inferential)**
- **Distinguish between discrete and continuous variables**
- **Explain the differences between categorical and measurement data**
- **Distinguish between independent and dependent variables**
- **Understand the different types of measurement scales (nominal, ordinal, interval and ratio).**
- **Understand how to construct frequency distributions, histograms and stem-leaf plots.**
- **Understand positive skew, negative skew and kurtosis.**

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- **Understand the differences between population and sample.**

**Population:** entire collection of events in which you are interested. (eg. Deakin University Students).

**Sample:** small portion drawn from the interested population (eg. 1st year Psychology students).

- **Distinguish between parameters and statistics (descriptive vs inferential)**

**Descriptive aka Parameters:** used when we want to describe the data, describes a key characteristic of the **population**. Might consist of calculating the means and examining the data for extreme scores (Measures of Central Tendency and Measure of spread). DOES NOT allow us to reach any conclusions of any hypotheses we might have.

**Inferential aka Statistics:** used after the data is described when we want to answer specific research questions, describes a key characteristic of the **sample**. Allow us to reach conclusion of hypotheses by **inferring**. (eg. In our sample, did motivational program improve positive feelings and work performance. Inferential statistics to specifically test this. If the program is

effective then answering this, we would be **inferring** something about a population. Based on the results obtained with our sample).

- ***Distinguish between discrete and continuous variables***

**Discrete:** only have a limited number of variables. (eg. Gender [dichotomous variable], categories). When we are dealing with discrete variables have have **categorical data** (eg. People are in categories, male/female, high/low anxiety).

**Continuous:** can take on many different values. (eg. age, IQ score, height). When we are dealing with continuous variables we have **measurement data**. Scores have been **measured** along a continuum.

- ***Explain the differences between categorical and measurement data***

**Categorical/frequency data:** represent categories, usually have less than 7 categories. (eg. black hair, blonde hair etc.)

**Measurement/numerical data:** data is counted or measured using a numerically defined method.

- ***Distinguish between independent and dependent variables***

In psychological studies, we test hypotheses by having operationalised research questions that contained testable elements:

**Independent Variable:** is the variable or factor that we are manipulating. Controlled by the researcher. The IV causes differences/changes in the dependent variable. (eg. Group membership - researcher assigns participants to either high or low anxiety groups, researcher randomly allocates people to either treatment or control group).

**Dependent Variable:** variable that is changed or depended on the independent variable. It is the actual measured data. Is observed for differences/changes. DV is influenced by IV. (eg. levels of depression in control vs. treatment groups).

Basically, the study is about the IV's and the results (data) of the study are the DV's.

- ***Understand the different types of measurement scales (nominal, ordinal, interval and ratio).***

**Nominal Scales:** labels for categories of data. No order. (eg. religion is measured on a nominal scale, Muslim, Christian, Jewish, Other). Categorical data usually measured on nominal scale. Numbers have no meaning other than convenient labels to distinguish one from another.