

1 Introduction

STAT 161: Statistics for the Social Sciences

- Course Outline (Information concerning this course)
 - Email preferred way of contact!
 - Text Book: It is a good source of information and help doing assignments. This text book is truly good.
Another (recommended) more wordy text book: Fundamental Statistics for the Behavioral Sciences by David C. Howell
 - Assignment: Assignments will be posted on my website (academic/macewan.ca/burok). Most are taken from the text book. Check schedule. Hand in before class starts. I am serious!
 - Labs: Start in the second week of the term.
- Website: Class notes, more information than I will put on the board. In process of updating.
Solutions for assignments, Additional stuff (practise exams, Greek alphabet,...)
- **Get involved!** Ask questions, comment, give feedback, ...

Statistics is the science of Collecting, Analyzing and Exploring Data

- **Data:** We collect data to find answers to questions that can not be answered otherwise (example: what is the long term effect of a specific medication?) or because an experiment results in different outcomes (variability) and we want to study the reason for the variability (example: different concentrations of chemical in water samples at a sewage treatment plant).
- **Collecting:** If the data shall provide us with answers, we need to have data that was collected (sampled) in a way, so that the data will contain the answers. (example: goal:predict outcome of an election, usually not appropriate to ask all your friend and neighbors (the sample won't be representative).
- **Analyzing and Exploring** We are not done after collecting the data (Example: Age distribution in this class, number by themselves don't help to much. Relationship between house price and square footage, Is one medication generally better than the other?)

Its methods are used in e.g.

- Biology: flight of bees, area where they collect nectar. → Variability
- Medicine: Look for good doses of specific medication. Measure effect of different doses in different patients and draw conclusion.
- Psychology

- Social Science: Changes in proportion of women working outside their homes
- Engineering: Difference in attrition in different tires depending on the material included.
- Business: Stock market, predictions possible?

Statistics can be found in a big variety of publications:

Journals, Scientific Journals, news papers, government publications, advertisements, educational brochures, statistic class ;).

Example 1

A new study suggests that a physical for patients that show no symptoms has no medical benefit to the patient. How can this study be evaluated!

Question for evaluation of the claim:

- How many people did they investigate?
- For how long did they follow up on different individuals?
- Which age group did they include in the study? etc.

Goal of the class

- Become an informed information consumer (Study: Extra PhysEd reduces obesity in children)
- Become capable of making decisions based on data (example: cereal packing, packing amount)
- Evaluating decisions effecting your life (Example: How early to get up for being punctual in class?)