

Biostatistics: Introduction

LECTURE 2

Objectives

- ▶ Define terms.
- ▶ Explain why an understanding of biostatistics is important for a biologist.
- ▶ Distinguish between descriptive and inferential statistics.

Statistics

- ▶ The analysis and interpretation of data for evaluation of the reliability of statements based on that data.
 - ▶ Let's break down that definition

- ▶ Contrast with the definition of statistic

Statistics

- ▶ Descriptive statistics – Organizing and summarizing of data in an orderly and informative manner.

- ▶ Inferential statistics – Infer the characteristics of the whole (population) from characteristics of its parts (sample).

Biostatistics



- ▶ The application of statistics to biology
- ▶ How does this class differ from Math 250 Statistics
 - ▶ Examples and applications are biological
 - ▶ Application to a specific discipline can be difficult
 - ▶ Application will be fundamentally scientific
 - ▶ Hence the prior unit focusing on the scientific method.
 - ▶ Speed
 - ▶ Amount of material covered
- ▶ Biometry

Why biostatistics?



- ▶ Biologists must contend with the demands of keeping up with the changes in their primary field and ensure that the professional tools are current.
 - ▶ Primary field
 - ▶ Professional tools
 - ▶ Statistics is a tool.

Why biostatistics?

- ▶ Biology typically progresses by
 - ▶ Pattern description – Descriptive statistics
 - ▶ Design and analysis of experiments
 - ▶ Statistical knowledge is important for designing experiments
 - ▶ e.g. What is an adequate sample size?
 - ▶ Inferential statistics
 - ▶ Concise and informative presentation of results
 - ▶ Descriptive statistics
 - ▶ Inferential statistics

Why biostatistics?

- ▶ To understand the scientific literature and keep current with develops in your field.

Why biostatistics?

- ▶ Facilitate communication with statisticians or other scientists.