

Presenting Numerical Data



LECTURE 7

Objectives



- ▶ Define terms.
- ▶ Explain the basic principles of presenting numerical data.
- ▶ Present numerical data (group project).

Overview



- ▶ Most biologists at some point in their career will have to present (in written or oral form) the results of their work.
 - ▶ Your ability to present your work will greatly influence the perception of your work and of you as a professional.
 - ▶ I am just going to mention some of the basic ideas to consider.
 - ▶ There are no rules – you will have to make choices.

Basic Principles



- ▶ Establish a context for your facts.
- ▶ Pick simple, useful examples.
- ▶ Select the right tool.
- ▶ Select your terms carefully and define them.
- ▶ Report and interpret.
- ▶ Specify direction and magnitude of associations.
- ▶ Summarize patterns.

Basic Principles



- ▶ Establish a context for your facts.
 - ▶ The reporters' W's
 - ▶ Who
 - ▶ What
 - ▶ When
 - ▶ Where
 - ▶ Do not over report the W's, state them and then restate only when a W changes.
 - ▶ Units

Basic Principles



- ▶ Pick simple, useful examples.
 - ▶ Examples and often communicate more effectively than declarative statements.
 - ▶ Relate calories burned to how many extra cookies a person could eat or pounds lost over a period of time.
 - ▶ Objectives of examples
 - ▶ Represent broad themes
 - ▶ Illustrate deviations or exceptions from a pattern

Basic Principles



- ▶ Select the right tool.
 - ▶ Three tools
 - ▶ Prose – Can handle a few numbers and should only be used to present a few numbers.
 - ▶ Graphs – Can handle many numbers and should be used when you need to present many numbers.
 - ▶ Tables – Can handle many numbers, but should only be used to present a moderate set of numbers (unless in written form and that level of detail is necessary).
 - ▶ Mix tools
 - ▶ Do not duplicate effort

Basic Principles



- ▶ Select your terms carefully and define them.
 - ▶ Unfamiliar terms – Know your audience
 - ▶ Terms with multiple meanings.
 - ▶ Different terms for the same concept.
 - ▶ Do you need technical terms.
 - ▶ Jargon
 - ▶ Audience specific
 - ▶ Mastery
 - ▶ Define your terms.

Basic Principles



- ▶ Report and interpret.
 - ▶ Report the numbers and then interpret them.
 - ▶ Establishes relationships.
 - ▶ Facilitates comparisons.

Basic Principles



- ▶ Specify direction and magnitude of associations.
 - ▶ An association (a relationship between two variables) can be statistically significant:
 - ▶ In either direction
 - ▶ As A increases B increases (positive association)
 - ▶ As A increases B decreases (negative association)
 - ▶ Be a tight association or a loose association.
 - ▶ Discuss r^2

Basic Principles

- ▶ Summarize patterns.
 - ▶ Select examples and highlight parts of the data that illustrate underlying patterns in the data.
 - ▶ State/summarize the pattern.
 - ▶ Generalize
 - ▶ Example
 - ▶ Exception