

1.5: Statistics and Science

Statistics are important to many fields, including social, behavioral, and health sciences such as psychology, sociology, nursing, and education to name just a few. They are also used in many areas of the physical sciences. This is because of their important position in the scientific method.

What distinguishes sciences from other fields is their empirical nature and use of the scientific method. To be empirical is to be evidence-based or evidence-focused. Statistics is an empirical field focused on the use of data which is often used as an important step in the scientific method. The scientific method is a method of inquiry in which questions, assumptions, and/or hypotheses are tested through the collection and analysis of data before conclusions are drawn. In keeping, the use of statistics is an important part of research in a diversity of fields.

Statistics is so central to the field of psychology, for example, that the standard format for research articles in psychology includes a section detailing from whom and how data were collected, followed by a section summarizing how the data were analyzed and what the results of the analyses were, and, finally, a section discussing the implications of the findings. These sections are titled as Method, Results, and Discussion, respectively, when following the recommended format known as American Psychological Association (APA) format. The focus of this book is the analysis step of research and how it is applied. Therefore, a review of the proper way to report results in APA-format will be included in several chapters throughout this book. This will provide us some of the necessary skills to read the results from, and participate in the process of, science.

Reading Review 1.3

1. When inferential statistics are used, the goal is to _____ results from samples to the populations from which they were drawn.
2. _____ statistics include calculations such as the mean, median, and mode to summarize data from samples univariately.

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