

An Introduction to Biostatistics through a Case Study

Dr. Farzaneh Tabnak

What is the first step in making sense of the data at hand? How can we explain the data before making a formal attempt to test any hypothesis or draw any conclusion about a population?

How can we infer properties of the underlying population distribution from the data? Which model best "fits" the data? How can we estimate specific population parameters and test whether such parameter estimates are statistically equivalent to one or more specific values?

What if we are interested in predicting one variable from another or interested in the relationship between two or more variables? How can we relate a Normally distributed outcome variable y to one or more predictor variables x_1, \dots, x_k where the x 's are continuous variables?

This short course attempts to answer the above questions. In the first hour, I will describe a case study that I will use, as applicable, throughout the course to demonstrate the different techniques discussed. A brief introduction to the concept of biostatistics will be given and several numeric and graphic methods to describe the data will be presented.

In the second hour, the concept of estimation and hypothesis testing will be discussed covering topics such as confidence intervals, paired t-test, power of a test, two-sample t test, interval estimation for the comparison of means and proportions and Chi-Square goodness of fit test.

In the last hour, methods such as Pearson correlation, Rank correlation, simple and multiple regression methods will be discussed.

The data analyses in this seminar will be done using SAS. Handouts will be provided for the data analyses, featuring the SAS codes and the outputs.

It would be helpful if the individuals taking this course have a basic knowledge of statistics and have access to SAS for data analysis.

Speaker biography:

Dr. Farzaneh Tabnak is a Research Scientist Supervisor at the Department of Health Services, leading the Evaluation and Research Unit of the Cancer Detection Section. She began her career as a Research Scientist with DHS in 1994. She holds an MS in Statistics and PhD in Epidemiology with emphasize in Biostatistics from UC Davis. Dr. Tabnak served as the President of the Sacramento Statistical Association in 2003 and as the Vice President and Chair of 23rd Annual Institute on Research and Statistics in 2002.