Mel and Enid Zuckerman College of Public Health
University of Arizona

BIOS/EPID 452/552 Health Data Analysis and Communication Methods

Catalog Description: The course will bridge the concepts learned in introduction to epidemiology and biostatistics courses to teach students the skills to identify and implement the appropriate statistical methods to answer public health and biomedical research questions based on study and sampling designs. Students will apply these skills to large public health and biomedical databases. Students will learn how to present their results graphically to communicate findings to lay audiences. (3 units)

Course Topics:
- Descriptive Statistics
- Regression (Simple and Multiple Linear)
- Regression (Logistic/Odds Ratio)

Course Objectives: During this course, students will:

- Determine appropriate statistical analysis based on study design and sampling strategy.
- Analyze data using statistical modeling techniques in R to answer public health and biomedical research questions (including linear, logistic, and log-linear regression, Odds Ratios, and Machine Learning).
- Apply and justify appropriate graphical representation of analytical results (for scientific presentation).
- Translate statistical concepts, methods & results to a lay audience (e.g., Infographics).

Learning Outcomes (Competencies Obtained): Upon completion of this course students will be able to:

1. Communicate public health information, in both oral and written forms, through a variety of media and to diverse audiences.
2. Locate, use, evaluate and synthesize public health information.
3. Explain the role of data science in public health.
4. Execute dataset integration and conduct basic statistical analyses on existing datasets.
5. Assess limitations in data collection, management, and analysis as it impacts quality; interpret findings accordingly.
6. Communicate analytic findings – in oral and written format – including easily interpretable graphics to convey findings.