

**Workshop - Biostatistical Reasoning for Health Research**

**9:00am-4:00pm 26-29 January, 2-5 February 2015**

**There will be a full day tutorial on 30 January and a half day tutorial of the 6 February in the use of the statistical package, Stata.**

**Venue: Coastlands on The Ridge, 315 Peter Mokaba Road (Ridge Road), Durban.**

\*\*Please see the application form on Pg 3 of this document

**Description**

The field of biostatistics is concerned with the development and application of statistical methods to research in health-related fields, including medicine, public health, and biology. This workshop in biostatistics is intended to give participants the tools to critically evaluate and interpret the design and results of a biomedical study. Participants will be introduced to the basic concepts of study design, data summaries and presentation, statistical inference (including hypothesis testing, p-values, and confidence intervals) and modelling approaches such as regression analysis. The workshop material will include examples of the use and abuse of statistical methods from the current biomedical literature. The workshop is appropriate for students who want to develop skills for critical reading of the literature and reviewing of research proposals. It aims to provide a broad overview of biostatistical methods relevant to the health sciences, emphasizing interpretation and concepts rather than computation or mathematical details. The workshop will be delivered by Professor Mary Lou Thompson, Department of Biostatistics, School of Public Health, University of Washington with support from UKZN School of Mathematics, Statistics and Computer Science, UKZN School of Nursing and Public Health and Medical Education Partnership Initiative (MEPI).

**Learning objectives:**

This workshop covers a broad range of topics in biostatistics. While the workshop does not involve mathematical details or computing, it is nevertheless demanding on a conceptual level. Upon completion of the workshop, participants should be able to:

* recognize relevant study design features and explain how they impact interpretation of results;
* interpret the key data displays and statistical results commonly found in medical research reports;
* judge whether the conclusions drawn from a study are justified.

In particular, participants should be able to:

* translate scientific questions into measurable outcomes and associated statistical goals;
* explain the difference between observational and experimental studies;
* identify and describe the key features of different study designs (e.g. randomized trials, cohort, case-control and cross-sectional studies);
* explain the concept of bias and how a given study design does or does not control for types of bias;
* identify sources of random variation for a given study;
* explain how sample size, variability and effect size interact to determine the power of a study;
* explain the concepts of confounding and effect modification;
* explain the distinction between association and causation;
* interpret and critique graphical displays of data (e.g. box plots, scatter plots, Kaplan-Meier curves);
* interpret and critique numerical summaries of data;
* explain the key elements of statistical hypothesis testing;
* identify common statistical tests that might be applied to specific research questions;
* explain and interpret p-values and confidence intervals and their implications for the research question under consideration;
* explain the distinction between statistical significance and practical significance;
* identify questions that can be addressed with regression models and interpret regression coefficients in different settings (linear, logistic, Cox proportional hazards);
* identify common abuses of statistical methods in the literature
* enter data into the statistical package Stata, and calculate appropriate exploratory data analyses, including graphical displays using Stata.

**Deadline for applications:** Monday, 15th December 2014

**Maximum number of participants:** 20

**\*\*If you wish to be considered for this workshop, please complete the application form on the next page and send to Aruna Sevakram:** [**Sevakrama@ukzn.ac.za**](mailto:Sevakrama@ukzn.ac.za)**. Contact number: 031-2604781.**

**Application form**

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I am interested in attending (please indicate one of the following):

1. the Biostatistical Reasoning workshop only
2. the software tutorials only
3. both the Biostatistical Reasoning workshop and the software tutorials.

Name:

Student or staff number:

Department:

School:

Contact number:

Email:

Highest degree attained:

Occupation:

Current place of employment:

Have you attended any previous biostatistics courses?

If yes, please list them below:

Experience using statistical software:

Please provide a short motivation below as to why you would like to attend this workshop and how it will benefit you and/or your department.