

Course Syllabus

Adjunct Professor: Marcello Pagano

Course	Biostatistics: A Short Course in Monitoring and Evaluation		
Credit	1	Method of Teaching	Lecture
Objective This course is an introduction to the common and innovative quantitative methods used for monitoring and evaluation (M&E) targeted at students who have had an introductory course in statistics.			
Outline By the end of the course, the students will be able to achieve the following. <ol style="list-style-type: none">1. Design an appropriate M&E system for the task at hand.2. Identify appropriate sources of data, including the limitations and necessary interpretations for each.3. Employ the most basic, common statistical tools used in program M&E.4. Integrate multiple methods for a comprehensive M&E system.5. Describe how to extend basic components to more complex M&E methods.			
Class Schedule (90 minutes each) 1. Introduction to Monitoring and Evaluation. (Tue., 13 Jan., 13:15-14:45) This first lecture introduces students to the basic concepts of Monitoring and Evaluation, including the role that M&E systems play in ongoing health program implementation and policy. 2. Framework for Evaluation/Indicators. (Tue., 13 Jan., 15:15-16:45) This lecture provides a brief overview on developing a framework for program monitoring and evaluation via logic models, determining the key activities and outcomes that require monitoring, and developing indicators. Indicators are core metrics of a M&E system, and imply a strict definition of what will be measured. This lecture will discuss how to develop and evaluate appropriate indicators, and the different types of indicators commonly used in M&E. 3. Measuring Populations. (Wed., 14 Jan., 13:15-14:45) Ideally, a census and/or a registry provide complete information on everyone in the population of interest. This lecture concentrates on the value of a census together with a registry of vital statistics in order to properly monitor a population. 4. Review of Statistical Models. (Wed., 14 Jan., 15:15-16:45) This lecture reviews basic statistical concepts, such as the Binomial Model and the Normal distribution and associated			

inference. Frequentist and Bayesian inference that form the foundation of the methods discussed in subsequent lectures are presented.

5. Surveys 1 (Thu., 15 Jan., 13:15-14:45) & 6. Surveys 2 (Thu., 15 Jan., 15:15-16:45)

Surveys are commonly used to collect data in M&E systems. The survey design impacts the precision and interpretation of results, but also has logistical implications as well. These lectures discuss the most basic sampling designs of surveys – simple random sampling, stratified sampling, and cluster sampling – and the implications of each. More complex study designs, such as multistage and EPI surveys, will also be discussed.

7. Methods for correcting common sources of error in M&E. (Fri., 16 Jan., 15:15-16:45)

Many of the inferences from the methods covered in this course are vulnerable to bias from missing data or poor data quality. This lecture highlight the most common sources of error in M&E systems, and discuss methods to improve or adjust for these errors.

8. Quality Control in Health Systems. (Fri., 16 Jan., 15:15-16:45)

Lot Quality Assurance Sampling is a commonly used tool to classify health catchment areas based on performance, which helps program managers determine most effective local use of resources. These lectures describe the basic mechanics of LQAS as well as tools to subsequently aggregate the data collected in catchment areas via stratified sampling or cluster sampling in order to obtain the usual statistics that allow health services to be monitored and evaluated.

We may add seminars by Japanese teachers for each to assist students with difficulty in language/background knowledge.

Text

Principles of Biostatistics, Marcello Pagano, Kimberlee Gauvreau, Duxbury Press 2000.

Related readings

Will be made available prior to the lecture.

Achievement evaluation

There will be a written final exam upon completion of the course.