

SYNOPSIS of BIO/HST 104 DATA ANALYTICS ASSIGNMENTS

SUNY BROOME COMMUNITY COLLEGE

BINGHAMTON, NEW YORK

BIO/HST 104 HEALTH FOR HAITI

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EXCEL DATA ANALYTICS AND THE SCIENTIFIC METHOD IN GLOBAL PUBLIC HEALTH

THIS SERIES OF ACTIVITIES WILL SUPPORT THE FOLLOWING STUDENT LEARNING OUTCOME:

DEMONSTRATE UNDERSTANDING OF SCIENTIFIC METHODS FOR OBSERVATION, HYPOTHESIS DEVELOPMENT, DATA COLLECTION AND ANALYSIS, AND EVALUATION OF EVIDENCE.

UNDERSTANDING THE USE OF EXCEL DATA ANALYTICS TOOLS IN THE SCIENTIFIC METHOD

UNDERSTANDING THE DIFFERENCE BETWEEN EXPERIMENTAL AND NONEXPERIMENTAL RESEARCH

In this portion of the project, students will learn about the difference between experimental and nonexperimental research. This is an introduction to the scientific method as is typically presented in natural sciences, with an additional discussion on how the method is varied in public global health where true experimental practices are either inappropriate or infeasible. An introduction to hypothesis testing and inferential statistics will be included.

LAB ASSIGNMENT EXPERIMENTAL RESEARCH: PREDICTING GRAVITY

Using the experimental approach, students will complete a home lab in which they time dropped nickels in order to determine the acceleration of gravity. The accuracy of the results increases with the volume of data collected. In this lab students will perform an experiment, graph their individual results in Excel including descriptive statistics, then perform a statistical analysis on aggregate data from a much larger data set.

LAB ASSIGNMENT NON-EXPERIMENTAL RESEARCH: GLOBAL HEALTH: EXAMINING EYE ISSUES FROM COLLECTED DATA

As an introduction to nonexperimental research in public global health, students will follow a step by step tutorial analyzing vision issues using data collected by **Unite For Sight®**, a non-profit organization that empowers communities worldwide to improve eye health and eliminate preventable blindness. The analysis will introduce additional Excel analytic tools such as tables, sort function, pivot tables.

APPLICATION OF THE SCIENTIFIC METHOD TO ANALYZE THE RELATIONSHIP BETWEEN HEIGHT AND NUTRITION IN HAITIAN CHILDREN

LAB ASSIGNMENT NON-EXPERIMENTAL RESEARCH: HEALTH AND NUTRITION IN HAITIAN CHILDREN

In this assignment, students will apply scientific method and key data analysis functions in order to test a hypothesis regarding the relationship between nutrition and height. Students will begin with a survey of articles discussing human height and its relationship to environmental factors. They will then proceed to develop a hypothesis, extract and scrub data from the Health for Haiti Database (a database of health data collected by Health for Haiti for over 6 years), evaluate the evidence through the use of Excel descriptive statistic functions to determine the mean, median and mode height of children in Haiti by age and gender, chart the results to explore the differences between the Haitian population and a similar data set from the United States, and perform a time analysis of the data to look for changes over the past 6 years. Students will employ mathematical analysis to predict the height of a child at a given age, compare the descriptive statistics of the entire pool of Haitian children to those of US children, and determine if there is a statistically significant difference between the two populations. Finally, students will be asked to accept or reject their null hypothesis and discuss their findings and suggest improvements or additions to the data collection tools used in Health for Haiti.