האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

How not to Lie with data - 57319

Last update 14-08-2023

HU Credits: *2*

Degree/Cycle: *1st degree (Bachelor)*

Responsible Department: *Economics*

Academic year: *0*

Semester: *1st Semester*

Teaching Languages: *Hebrew*

Campus: *Mt. Scopus*

Course/Module Coordinator: *Dr. Sarit Agami*

Coordinator Email: *sarit.agami@mail.huji.ac.il*

Coordinator Office Hours:

Teaching Staff:

Dr. Sarit Agami

Course/Module description:

The course presents common errors and mistakes in statistics that can lead to misleading conclusions. The possible mistakes can start already at an early stage of data collection, and continue with the visual presentation of the data or the description of the data with indicators, until a statistical inference is made from the sample to the population.

Course/Module aims:

To present common mistakes made in statistics, which will allow the student to distinguish between incorrect results reported in the data and valid results.

Learning outcomes - On successful completion of this module, students should be able to:

** Learn about identifying a valid causal relationship between two phenomena*
** Learn about proper data collection that properly represents the target population*
** Learn about valid measurement of variables in the data collection process*
** Identify incorrect graphical presentation of data*
** Identify incorrect numerical description of data*

Attendance requirements(%):

Teaching arrangement and method of instruction: Hybrid teaching in Zoom

Course/Module Content:

Part I: Descriptive Statistics.
Deceptive graphics
Measuring deception in graphs (Lie factor, data-ink ratio)
Misleading uses of measures of central location (average, median, common), and percentages. Misleading use of conditional probability.
Correlation versus causation, confounding, non-causal correlations
(Will Rogers effect, Hawthorne Effect, Gambler's fallacy, The Healthy Worker Effect, Super-Bowl indicator)
Determining a causal relationship (propensity scores, Hill's criteria
regression to the mean, abnormal observations and their treatment
Part II: The data collection.
Sample - correct sample. Types of errors (random, systematic). selection bias.
Data collection methods: Method 1: survey/poll. Survey biases: non-return bias,

return bias, Internet survey biases, telephone survey biases.
Data collection methods: Method 2: observational research: selection bias, information bias, confounding bias.
Data collection methods: Method 3: Experimental research. Fallacies: Hawthorne effect, placebo effect, John-Henry effect. Biases: selection, response, measurement, execution, sampling. Validity of experimental research and observational research. Validation and reliability of measurements.
Part III: Statistics on Public Issues.
Missing numbers, confusing numbers.
False comparisons: between-group differences versus within-group differences. Within-subgroup differences versus interaction.

Required Reading:
There is no required reading material

Additional Reading Material:

Grading Scheme:
Essay / Project / Final Assignment / Home Exam / Referat 100 %

Additional information: