Multiple linear regression: Ordinary Least Squares

Week 1

* Purpose of the course
* Introduction
* Regression lines
* Assumptions
* Diagnostics

Week 2

* Methodological issues
* Variable selection
* Assessment of model fit
* Missing data
* Interactions
* Nonlinearty

Week 3

* Weighted Least Squares Regression
* Aggregated data
* Data reduction
* Model validation: Calibration and Discrimination
* Additional topics: Extensions of the linear model.

Week 4

* Case Study 1: Hypothesis testing, effect size measurement, and predictive modeling.
* Predictive modeling: Maximum forced expiratory volume (breathing test).
* Hypothesis testing and effect sizes: Very low birthweight.

Week 5

* Case Study 2: Health economics, cost, and time.
* Diagnostic cost model: Seriously ill hospitalized patients. SUPPORT (Study to Understand Prognoses Preferences Outcomes and Risks of Treatment).
* Prognostic time model: Seriously ill hospitalized patients’ length of stay.

Week 6

* Case Study 3: Intervention studies and causal models.
* Intervention study: Covid 19 ICU bed utilization after the vaccine began.
* Intervention study and Differences-in-Differences: Minimum wage laws and employment rates.