



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DEPARTMENT
OF STATISTICAL SCIENCES
"PAOLO FORTUNATI"

Statistics Seminars 2025/2026

Giovedì 23 Aprile 2026 alle ore 14.30

Sia in presenza, presso l'aula Seminari (ex aula III) in Via Belle Arti, 41, a Bologna, sia in modalità telematica, mediante sistema di videoconferenza su piattaforma Microsoft Teams

"Valid F-screening in linear regression"

Prof. Daniela Witten
(University of Washington)

Abstract

Suppose that a data analyst wishes to report the results of a least squares linear regression only if the overall null hypothesis—namely, that all non-intercept coefficients equal zero—is rejected. This practice, which we refer to as F-screening (since the overall null hypothesis is typically tested using an F-statistic), is in fact common practice across a number of applied fields. Unfortunately, it poses a problem: standard guarantees for the inferential outputs of linear regression, such as Type 1 error control of hypothesis tests and nominal coverage of confidence intervals, hold unconditionally, but fail to hold conditional on rejection of the overall null hypothesis. In this talk, I will present an inferential toolbox for the coefficients in a least squares model that are valid conditional on rejection of the overall null hypothesis. I will present selective p-values that lead to tests that control the selective Type 1 error, i.e., the Type 1 error conditional on having rejected the overall null hypothesis. Furthermore, they can be computed without access to the raw data, using only the standard outputs of a least squares linear regression, and therefore are suitable for use in a retrospective analysis of a published study. I will also present confidence intervals that attain nominal selective coverage, and point estimates that account for having rejected the overall null hypothesis. I will illustrate this selective procedure via re-analysis of a published result in the biomedical literature, for which the raw data is not available. This is joint work with Olivia McGough (U. Washington) and Daniel Kessler (UNC Chapel Hill).

L'Organizzatore
Prof. Luca Scrucca

Il Direttore
Prof. Carlo Trivisano

La S.V. è invitata

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