

**AGCO Seminar**

**Speaker:** Felipe Subiabre, DII, U Chile.

**Title:** Optimal Disease Screening Policies Under Budget Constraints.

**Abstract:**

We study the problem of selecting screening policies for a given disease in a large population which is divided into risk groups, and where we have a measure of benefit and cost for each possible policy. We want to find a selection of them, one for each risk group so that the total benefit is maximized and a budget constraint per time period is satisfied.

To that end we start from an individual base model that accounts for the probabilistic appearance and evolution of the disease along stages. Our main result is an ergodic-like theorem which allows us to calculate the expected costs and benefits for each policy. This result is applicable to a rich class of individual models (discrete and continuous-time semi-Markov processes) currently used in the literature.

The presentation is grounded in the application to cancer screening, but can be extended to other non-contagious diseases. We will show examples of some individual models and how our methodology allows for the efficient evaluation and optimization of large families of policies. If time permits we will also discuss the relation between our methodology and some other approaches (Markov decision processes, flowgraph models), and some future work.

**When:** Nov 15, 3:00pm.

**Where:** Sala Multimedia, 6to piso, CMM, Beauchef 851, torre norte.

