ESSEC BUSINESS SCHOOL

RESEARCH PROJECT WITH PUBLIC FUNDING 2023

From healthcare accessibility to health outcomes: a statistical and machine learning approach to large scale graphs (GRAPH4HEALTH)
€17,000

WHAT IS THE AIM OF THE RESEARCH PROJECT?

The project intends to build a platform that can manage the massive SNDS dataset usable for researchers. The goal is to use the tools of graph theory to describe the healthcare system and to develop new machine learning tools to understand the shape of the graphs. Lastly, the project will shed light on those policy issues that affect the efficiency of the French healthcare system.

WHO IS THE PRINCIPAL INVESTIGATOR?

Guillaume Lecué professor of statistics and machine learning at the IDS department. Academic director of the BSc AIDAMS.

WHO ARE THE STAKEHOLDERS?

ESSEC is a partner of the project togeher with CREST-ENSEA (coordinator), CASD and INSERM.

ENSAE | INSTITUT POLYTECHNIQUE DE PARIS | Inserm — La science pour la santé — From science to health

ABSTRACT:

- The French SNDS *(système national de santé)* dataset will be looked as a series of time-evolving, geolocated, and bipartite graphs. This type of graph has two types of nodes: patients and doctors. A patient and a doctor are connected if they have met at least once during the current year. Bipartite graph projections provide valuable insights into how patient-sharing and referral networks operate.

- The goal is to develop econometric and machine learning methods to explain and/or predict the matching between patients and providers based on patients' and providers' characteristics. The two main goals are to understand the formation of the graphs and to use these graphs to estimate the causal impact of the healthcare system on utilization and health outcomes. We will examine whether certain local configurations are more effective at delivering better outcomes for patients.