POLITECNICO DI MILANO

PhD in DATA ANALYTICS AND DECISION SCIENCES - 37th cycle

THEMATIC Research Field: PROGETTO INNOVAZIONE POLIMI - REGIONE LOMBARDIA: ADVANCED HEALTHCARE ANALYTICS ON ADMINISTRATIVE DATA

Monthly net income of PhDscholarship (max 36 months)
€ 1400.0
In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	This research addresses the challenges that public administrations are facing in the digital era that was accelerated by the COVID-19 events.The PhD will contribute to renew competences and instruments with the final goal to improve public administration governance and management. Healthcare analytics is the process of analyzing current and historical healthcare data to predict trends, improve outreach, and better manage the spread of diseases. The field covers a broad range of data sources and related methodologies, and offers insights that complement the clinical and healthcare government experience. In fact, it can reveal paths to improvement in patient care quality, clinical data itself, diagnosis, and healthcare management. When combined with advanced statistical and Machine Learning methods, as well as data visualization tools, healthcare analytics help managers operate better by providing real-time information that can support decisions and deliver actionable insights.
Methods and techniques that will be developed and used to carry out the research	The research will be conducted in collaboration with the Regione Lombardia Directorate on Welfare. The research will focus on the design, development and application of novel statistical and machine learning methods to the healthcare administrative datawarehouse

	of Regione Lombardia.It will cover techniques spanning from traditional statistical methodologies, functional data analysis, pharmacoepidemiology, survival and multi-state modelling, to the novel and complex machine learning techniques in order to i) monitor and evaluate the effectiveness of different policies; ii) support scenario analyses; iii) develop policies evaluation strategies.
Educational objectives	The project will provide candidate with: knowledge of the sector in which they develop the research project; methodological competences at both the theoretical and applied level; capabilities to interact with people o diverse background; problem setting and solving capabilities. The successful candidate is expected to be able to collect, analyse and manage healthcare data available in the administrative datawarehouse of Lombardia Healthcare Regional District. Moreover, the candidate is expected to support the healthcare division management in pointing out potential and limitations of the data as well as to develop knowledge and evidences from data, through the use of advanced data analytics techniques.
Job opportunities	The profile of data scientist and the applications proposed in this project are of interest to of a broad range of actors, including (but not limited to): public and private institutions dealing with healthcare, hospitals, clinical and pharmaceutical companies, as well as international institutions and research centres working in healthcare research, and policy makers in charge with healthcare governance. In particular, Regione Lombardi healthcare district will be a favoured interlocutor for the discussion about job opportunities.
Composition of the research group	3 Full Professors 3 Associated Professors 6 Assistant Professors 6 PhD Students
Name of the research directors	Prof. F. Ieva and a tutor of Regione Lombardia

Contacts
francesca.ieva@polimi.it

Department of Mathematics
Politecnico di Milano
Via Bonardi 9, 20133, Milano (MI), Italy

02 2399 4578
https://sites.google.com/view/francesca-ieva/home

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	566.36 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research: 1.Regione Lombardia - DG Welfare 2.Center for Health Data Science (CHDS) - Human Technopole