

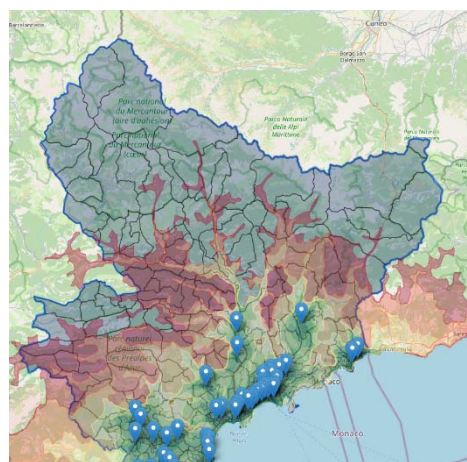
Estimating accessibility to health care facilities by public transport

The Métropole Nice Côte d'Azur (NCA) is committed to the fight against social inequalities in health in all domains where innovation can improve health, well-being, safety, access to employment and, more broadly, the environment and quality of life of citizens. In this context, it participates in a so-called syndemic approach that takes into account all the socio-economic and environmental determinants of health. This is done in partnership with academic partners (Univ. Côte d'Azur, 3IA CA, Faculty of Medicine), with companies (Instant System) and with relevant data providers (INSEE, CPAM...).

One of the public health cases studied by the NCA Metropolis and its partners concerns breast cancer screening and, more specifically, the determinants that influence the decision of women between the ages of 50 and 74 to undergo screening at accredited radiology centers throughout the territory. One of these determinants is the ability to access these centers by car or by public transportation.

The objective of the project is to estimate the access time by public transport to the nearest accredited radiology center from several hundred points in the NCA metropolis. The mode of transportation considered here is a combination of walking and bus and/or streetcar transportation. For this purpose, open data will be provided describing the public transport network of the Metropolis with their timetables as well as the location of geographical points evenly distributed on the territory from which the access time to the nearest structure will have to be calculated at 4 distinct moments of the day (2 timetables in the morning and 2 in the afternoon). This information on access times, which vary according to geographical location, will make it possible to test the hypothesis that the difficulty of accessing screening centers influences the population's screening rate.

In parallel to the calculation of travel time, it is also necessary to investigate an estimation method of the average access time to the nearest accredited radiology center by public transport at a fine geographical grid called IRIS. Those IRIS territories correspond to a division of each city or village into entities of 2000 to 5000 inhabitants. For this purpose, the contours of each IRIS will be provided as well as a map of the population density of the département at a fine scale. It will be necessary to sample each IRIS appropriately in order to have a reasonable estimate of the average time per IRIS.



Location of radiology centers approved for breast cancer screening in the département "Alpes Maritimes"

Instant System is partnering with 3IA Côte d'Azur and Métropole Nice Côte d'Azur (NCA) by providing its multimodal and intermodal journey planner, as well as its know-how to calculate the average travel time by transport to reach radiology centers. Instant System has developed a new generation journey planner based on the Connection Scan Algorithm (CSA), an algorithm created by the Karlsruhe Institute of Technology (KIT) to address public transport issues. The Instant System journey planner is also the subject of research projects in collaboration with INRIA (Multimod project for the rapid calculation of routes in large multimodal public transport networks associated with dynamic carpooling). Instant System provides integrated mobility solutions (Mobility as a Service or MaaS) in white label to more than 70 local authorities and public transport operators, including the Régie Ligne d'Azur which operates the public transport network on NCA territory. Founded in 2013, the company employs nearly 100 researchers at the Sophia Antipolis site, including a team of 6 PhDs working full time on the journey planner.