



15 minutes City Index

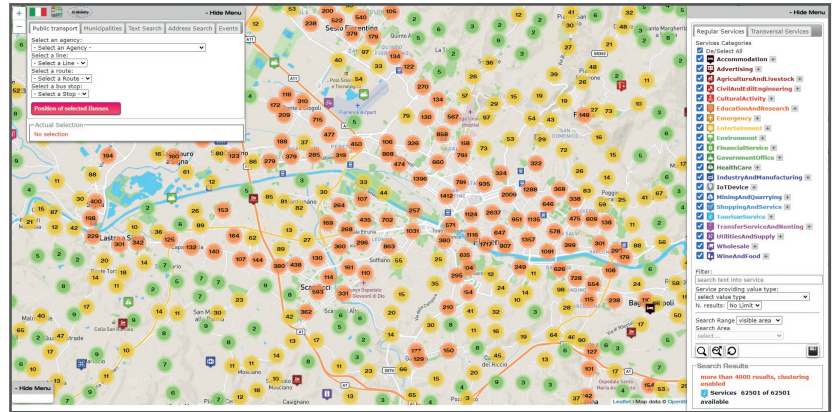
15 minutes
city concept

Snap4City
15MinCityIndex

Heatmaps and
Spider net
on business
intelligence
dashboard

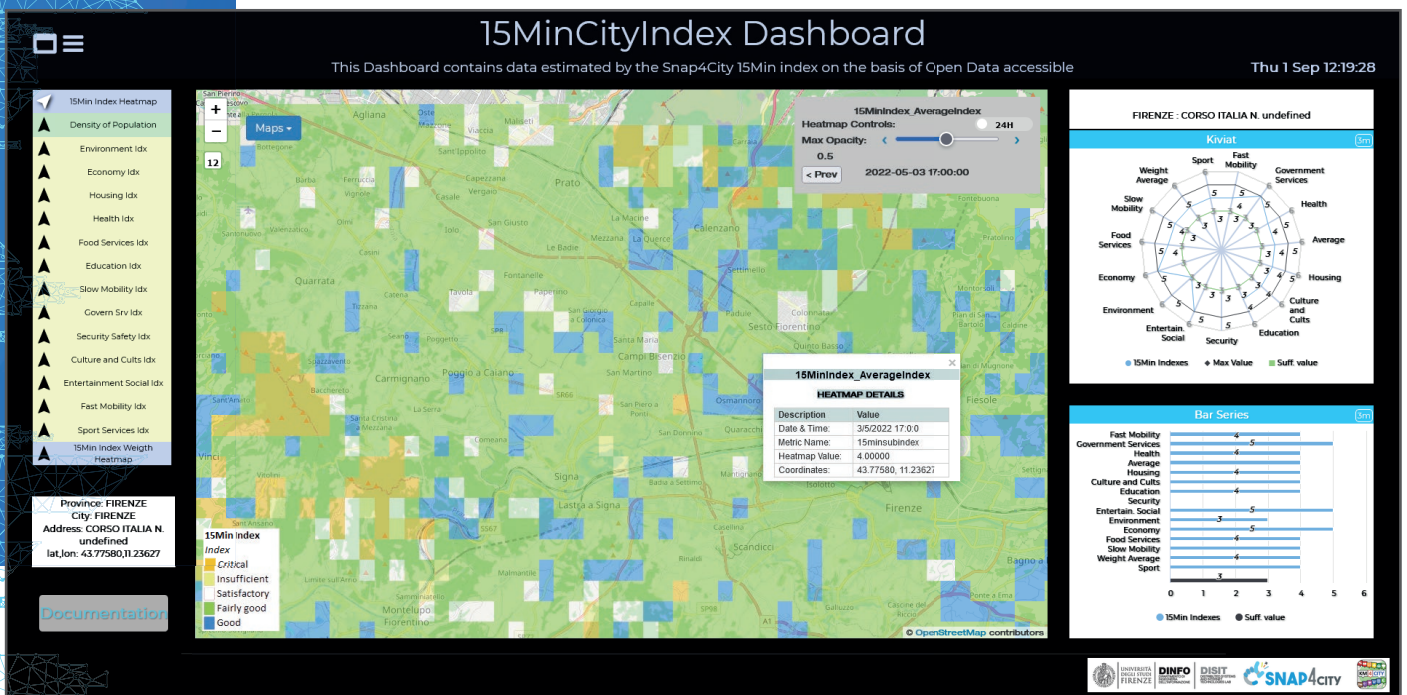
Municipalities are always looking for new solutions to make cities less polluted and more liveable for citizens, often facing issues as lack of essential services and job opportunities that force the inhabitants to travel for a long time.

C. Moreno has devised a new urban approach called "15 minutes city", it is based on structuring city areas will all the necessary services for citizens in a distance that can be covered in 15 minutes by walking. This solution would have a significant positive impact on the environment, on the time saved by citizens to commuting and on their lifestyle.



Before starting to change cities' layout it is necessary to have a precise assessment of the services status and of the livability in the neighbourhood, also considering the number and type of people are living in the same area. For this purpose, DISIT Lab implemented a tool named "15MinCityIndex", exploiting Snap4City platform for collecting and analysing several open data, needed to assess the huge number of aspects involved in the model as: **Housing, Safety, Culture and Cults Services, Environmental factors and green areas, Slow Mobility and Fast Mobility infrastructures, Sport places, Economy/sustainability, Food, Health services, schools and education, Entertainment.**

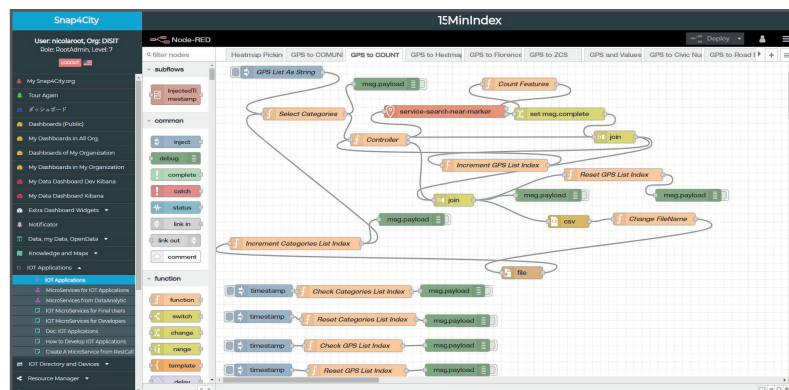
The proposed computational model allows to produce an index to assess 15-Minute concept compliance for each point of an area. The index is based on 13 different subindexes, each of which models a function computed basing on a set of features.



Each subindex function has been calculated via Node-RED IOTApp performing geo spatial query on Snap4city KB for each center point of a 700x700 meters grid. The value obtained has been normalized on the population density in each area, also accessible in the dashboard, and then the results has been visualised through heatmap considering a value range 1 to 5 in Likert scale.

The 13 subindexes assessed are: Environment Quality, Economy/sustainability, Housing viability, Health Services, Food Services, Education Services, Slow Mobility Services, Fast Mobility Services, Govern Services, Safety Services, Culture and Cults Services, Entertainment Services, Sport Services.

They can be grouped in 5 categories on the basis of the computational model adopted for their production, the combination of all of them has been used to obtain a global 15MinCityIndex, three different modelling computation has been proposed to find the best approach: the average of the subindex, the median, and the weighted average/median.



The **Snap4City 15MinCityIndex model** conquered the first-place award and grant of the international ENEL-X open data challenge 2020, in a first phase has been produced and validated on the Florence metropolitan area by DISIT Lab and then co-developed with ENEL-X on Bologna Metro Area exploiting data ingestion and computing capabilities of Snap4City infrastructure and tool, subsequently the solution has been scaled up by ENEL-X on the entire Italian territory.

Other connected materials:

- “15MinCityIndex Dashboard” is accessible from: <https://www.snap4city.org/dashboardSmartCity/view/index.php?iddashboard=MjkzOA==>
- 2021 paper: “Computing 15MinCityIndexes on the basis of Open Data and Services”: https://www.snap4city.org/drupal/sites/default/files/files/computing15minCityIndex_ICCSA_v0-3.pdf
- Slide: <https://www.snap4city.org/drupal/sites/default/files/files/ICCSA-15MinIndex-Slide-v0-2.pdf>
- 7th Italian Conference on ICT for Smart Cities and Communities:
Slide: <https://www.snap4city.org/download/video/iCities2021-15MinIndex-Slide-v0-5.pdf>
Video: <https://www.snap4city.org/download/video/iCities2021-15MinIndex-Slide-v0-5.mp4>
- ENEL X press release: <https://corporate.enelx.com/en/media/press-releases/2021/12/enel-x-launches-the-15-minute-city-index>
- ENEL X Italian 15 minutes city index: https://www.enelx.com/it/it/istituzioni/sostenibilita/15-minutes-city-index?ecid=Display-PressRelease-IT_eCity_2021_IT-link15min-CircularCityIndex&_gl=1*rbvqj0*_ga*NzA0NTcxMDQ3LjE2NjE4Njk2ODE.*_ga_RZ0KJXHE9E*MTY2MTg2OTY4MC4xLjEuMTY2MTg2OTg5OS4wLjAuMA

**KM4City
ontology and
Node-RED**

**ENEL-X Open
Data challenge
award winner**

Extended version accessible from: <https://www.snap4city.org/652>

Contact: <https://www.snap4city.org>

Partners: ENEL X