

# Developing an "accessibility calculation index" to evaluate public transportation convenience in cities

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## 1. Overview of the accessibility index

At NILIM, an "accessibility index" was developed and an "accessibility index utilization guide (plan)" was issued indicating its calculation procedures on May 2014. The "accessibility index" indicates the ease of access by public transport from one's place of residence to the site where administrative services facilities are located. A characteristic of this index is that it includes not just the amount of time required for the movement, but wait times affected by the frequency of the public transport system. As well, the amount of time in the calculation results are indicated in "minutes," and is devised so that the calculation method and results can be understood easily without expert knowledge.

## 2. Overview of the accessibility index calculation program

Recently at NILIM, an "accessibility index calculation program" that automatically calculates numerical values of all mesh (100m mesh) of subjected survey areas, where data regarding public transportation operations were input, was created and is scheduled for release in the near future.

The data input in the program generally uses data that has been released. For example, position coordinates of facilities like bus stops are acquired from the digital national land information of the Ministry of Land, Infrastructure and Transport, while basic map information is acquired from the Geographical Survey Institute of Japan and timetable data is attained from the homepages of various transportation projects. While each data is essentially input one by one using the interface as shown in Figure 1, it is also possible to collectively input data that has been arranged as text files. Regarding input methods, a separate guide is scheduled for release.

Furthermore, regarding the separate GIS software and data management software required to operate this program, all applications used are freely available to the public.

In this way, local public bodies etc. can easily perform calculations without purchasing additional accessories to input the data or run the software.

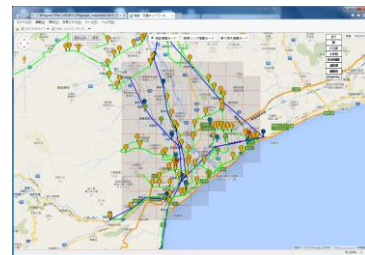


Figure 1: Inputting route data using the interface

## 3. Regarding the application of the calculated results

The index-calculation results are indicated in color-coded mesh as seen in Figure 2 in a manner that is easy to understand.

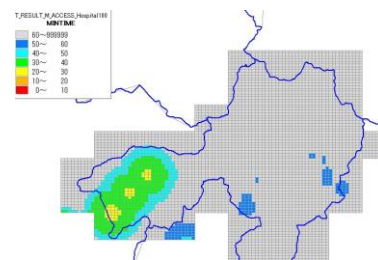


Figure 2: Output results (access to a hospital) image

While the indexed target facilities are presumably hospitals, city centers etc., it is also possible to set multiple points for various facilities. As well, any "transport hub that allows transfers" can also be set.

As a result, its application for developing placement plans for the locations of public service facilities such as hospitals, as well as land adaptability plans and examinations into reorganizing public transportation networks is anticipated.

(Reference)

1). Accessibility index utilization guide (plan)

<http://www.nilim.go.jp/lab/jcg/index.files/accessibility.pdf>