

# Development of method to analyze and evaluate urban structures based on diversifying living support functions

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Urban Facilities Division, Urban Planning Department

Head **Hiroyasu Shingai** Senior Researcher **Jundo Yoshida**

Urban Planning Division

Head (Dr. Eng.) **Nozomu Kiuchi**

Urban Development Division

Head (Dr Eng.) **Wataru Katsumata**

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## 1. Background and objective of the study

An important issue of individual cities is how they would realize compact urban structures as a function to deal with population changes as the overall population in Japan rapidly decreases and ages while the need for the development of sustainable cities increases.

Meanwhile, methods to supply living support services (living support functions) have rapidly been developed in recent years. Such developments are not limited to demand response services linked to ICT and the field of transportation, such as automatic driving and drone technologies, they also include increased functions of convenience stores for use as social infrastructures. In addition, there are also rapid developments in the field of land use. The National Institute for Land and Infrastructure Management (NILIM) has been focusing on ways to combine modes of transportation systems based on new technologies, such as the automatic driving mentioned above, and clarified how transportation networks and component technologies should be developed to realize compact cities and the feasibility of the entire transportation systems.<sup>1</sup> This study expands its perspectives and determines various possibilities of urban structures associated with the advancement and uses of living support functions in the fields of transportation and land uses. This study then aims to develop technologies to analyze and evaluate the effects of improving compactness and the quality of life as a function of cities based on urban structures.

## 2. Main contents of the study

In this fiscal year, the first year of the study, the authors first gathered and organized information



Figure 1: Example of diversifying living support functions

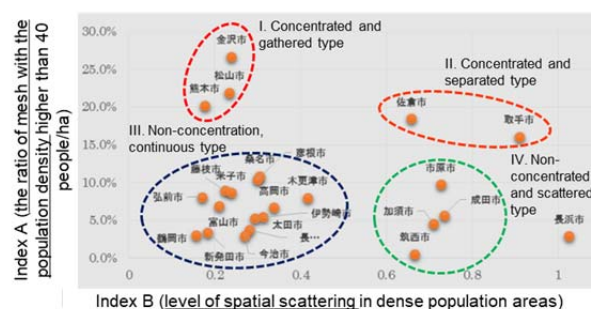


Figure 2: Characteristics of cities seen based on the level of population density and how they are scattered concerning the new technological development of living support functions, as well as the trend and outlook of the spread of such technologies (figure 1).

The authors also analyzed the current urban structures using the level of population densities in the main cities in Japan and the scattering of dense population areas as the scale of evaluation and successfully categorized them into groups with certain characteristics (figure 2).

The authors are further categorizing and organizing options of possibly sustainable urban structures while linking them to living support functions. They are also organizing fundamental structures of indexes for the effects of using living support functions and methods to analyze their effects on urban structures.

## 3. Future perspectives

The authors are going to set analytical indexes to measure the effects of using the diversifying and advancing living support functions and their effects on urban structures and perform case studies using actual cities as subjects. At the same time, the authors are going to construct methods to analyze and evaluate what types of urban structures would realize compact cities based on regional characteristics and develop methods to analyze and evaluate what kind of living support functions would become factors for realizing compact cities.

☞ For more detailed information

1) Study of methods to plan urban transportations using new technologies. Urban Infrastructure Technology Promotion Council, the 29<sup>th</sup> Technical Research Presentation, B01, UIT, Nov. 2017