

Food Accessibility Problems in Japan: Using a Food Accessibility Map Based on the Grid-Square Statistics of the 2015 Population Census

Katsuya TAKAHASHI

1. Introduction

Food accessibility problems, namely the lack of “access to affordable and nutritious food” [1], are not only caused by shopping difficulties, but also linked to a loss of community and nutrition problems. In this study, we create a “food accessibility map” using geographic information system data to specify and visualize these problems.

2. Food Accessibility Map

We use the food accessibility map to define “food access difficulties” for those aged over 65 years who live 500 meters or more away from stores, and who cannot use private cars in food accessibility map. Stores including super markets, department stores, greengrocers, butchers, fishmongers, and convenience stores. And we calculated the number of food access difficulties using the grid-square statistics of the population censuses of 2005, 2010, and 2015 in Japan.

3. People aged over 75 years Suffer Food Accessibility Problems the Most

In 2015, the number of food access difficulties was about 8,246,000 across Japan, which accounted for almost one-quarter of all people aged over 65 years (Table 1). Among them, an estimated 5,355,000 Japanese over 75 years suffer food accessibility problems, representing 33.2% (almost one-third) of the population over 75 years. Moreover, the ratio of people over 75 years to those over 65 years is 48.2% and the rate of food access difficulties for over 75s is thus 64.9%. Put simply, people aged 75 and over in Japan endure the most food accessibility problems.

Table 1. Trend in Food Access Difficulties

(thousand, %)

	2005		2010		2015 (a)			Over 75 Ratio (b/a)	Increasing Rate (2015/2005)	
		Difficulty Rate		Difficulty Rate		Difficulty Rate	Over the Age 75(b)		Over 65	Over 75
Whole Japan	6,784	26.4	7,327	25.1	8,246	24.6	5,355	64.9	21.6	42.1
Metropolitan Area	2,621	22.5	3,067	22.1	3,776	23.3	2,194	58.1	44.1	68.9
Tokyo area	1,244	20.8	1,548	21.4	1,982	23.2	1,112	56.1	59.3	89.2
Nagoya area	514	24.6	563	23.1	609	21.5	407	66.8	18.5	43.7
Osaka area	862	24.2	956	22.8	1,185	24.4	675	57.0	37.5	57.8
Non-urban Area	4,163	29.7	4,260	27.7	4,470	25.9	3,161	70.7	7.4	28.1
DID	3,282	20.0	3,871	20.0	4,916	21.7	2,924	59.5	49.8	80.7
Non-DID	3,502	37.8	3,456	34.9	3,331	30.8	2,431	73.0	- 4.9	13.1

Source: Policy Research Institute, MAFF

Note 1. We define “food access difficulties” for people aged over 65 years who live 500 meters or more away from stores and who cannot use private cars.

Note 2. We used the grid-square statistics of the 2015 Population Census and 2014 Census of Commerce.

Note 3. Stores include supermarkets, department stores, greengrocers, butchers, fishmongers, and convenience stores.

Note 4. The Tokyo metropolitan area includes Tokyo, Saitama pref., Chiba pref., and Kanagawa pref.

The Nagoya metropolitan area includes Aichi pref., Gifu pref., and Mie pref.

The Osaka metropolitan area includes Osaka, Kyoto, Hyogo pref., and Nara pref.

Note 5. The difficulty rate means the ratio of food access difficulties for those over 65 years.

4. Food Access Difficulties are Increasing Rapidly in Metropolitan Areas

The number of food accessibility problems rose from 6,784,000 in 2005 to 7,327,000 in 2010, and to 8,246,000 in 2015. The average rate of increase between 2005 and 2015 nationally was 21.6%, with notable increases in metropolitan areas such as Tokyo (Figure 1). On the contrary, the ratio of food access difficulties for over 65s decreased slightly, from 26.4% in 2005 to 24.6% in 2015. This is because the total elderly population increased drastically, causing an increase in the number of elderly who can drive a car.

We focus on the increased contribution of food access difficulties by age, which is -1.8% at 65–74 years and 23.4% for over 75s. In any prefecture, over 75s are an increasing factor in food access difficulties; however, the number of those aged 65–74 years has declined in rural areas, whereas it has increased in metropolitan areas. This result shows that food access difficulties have increased significantly for over 75s and in metropolitan areas.

5. Food Accessibility Problems in Non-Metropolitan Areas are decreasing because of Automobile Use

We also focus on the causes of food access difficulties increasing. The greatest driving factor is the aging population in Japan (contribution rate is 23.5%) followed by the decreasing number of stores (13.9%) and automobile use by the elderly (-14.7%). By region, the decreasing store factor shows no regional differences (i.e., the number of stores is decreasing nationwide). On the contrary, the number of the elderly has doubled in metropolitan areas compared with rural areas. The automobile use factor shows large differences between metropolitan and rural areas; for example, it is -7.6% in the Tokyo metropolitan area, where public transportation is convenient, and -17.1% in rural areas, where residents are highly dependent on private cars.

6. Conclusion

From the calculation results and food accessibility map, we found that food access difficulties increased between 2005 and 2015. By contrast, the ratio of food access difficulties relative to those aged over 65 has decreased slightly. Further, the number of food access difficulties has increased in metropolitan areas and decreased in rural areas. Moreover, over 60% of food access difficulties affect those over the age of 75. In this paper, we provided the results of national trends as well as estimated in units of 500 m grid-squares. Such trends in food access difficulties can influence aging-related projects by local governments as well as regional countermeasures. Indeed, it is possible to apply a more detailed verification related to the food environment and health indicators. Using a food accessibility map is thus one of the indicators showing the actual condition of the aging population and may shed light on the possible solution.

Reference:

[1] USDA, Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences, Report to Congress, 2009.

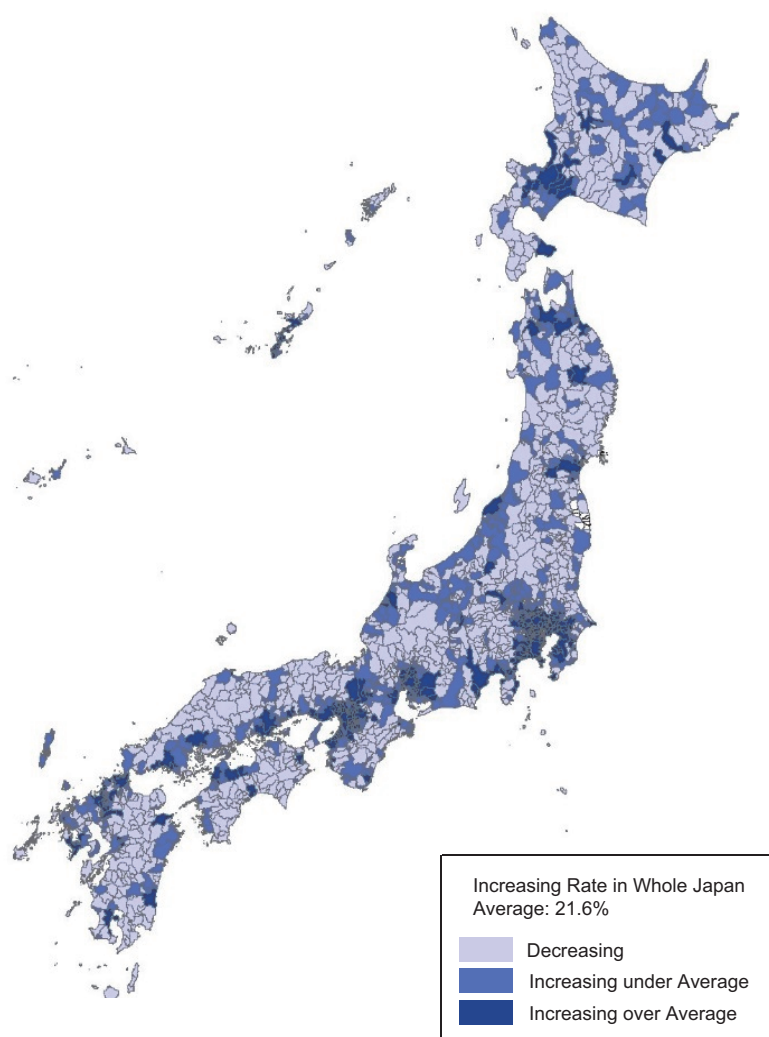


Figure 1. Increasing Rate of Food Access Difficulties by city (2005–2015)

Source: Policy Research Institute, MAFF