

Unequal Accessibility of Nurseries for Sick Children in Over- and Under-Populated Areas of Japan.

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Background and Aims

According to the 2015 Yearly Average Results of the Labour Force Survey, 90.0% of men and 72.1% of women aged 25–34 years were permanently or temporarily employed in Japan. A total of 62.4% of babies in Japan were born to women in this age group.

Children in Japan aged 0-4 years visit medical facilities with complaints of disease or injury about 24 times a year. However, most nursery schools in Japan refuse to accept children even with mild illnesses. To avoid taking time off work, parents may ask relatives and friends to provide day care when their children are sick. However, because relatives and friends may not always be available, professional provision of temporary day-care services for sick children is also essential.

To support families with children, the Japanese government has since 1994 subsidized management of nurseries for sick children. As the subsidies are national, children and caregivers throughout Japan should be equally able to access the services that result. However, the difference of accessibility of such nurseries in over- and under-populated areas has not been known.

In this study, I calculated the distance between 787 nurseries for sick children and 211,012 “blocks,” which in Japan are small residential areas sized a median of 0.18 km². The calculation could then be used to clarify access to the nearest day-care provider.

Method

Reference was made to the Ministry of Health, Labour and Welfare’s list of subsidized day-care providers for sick children in Japan as of March 31, 2016.

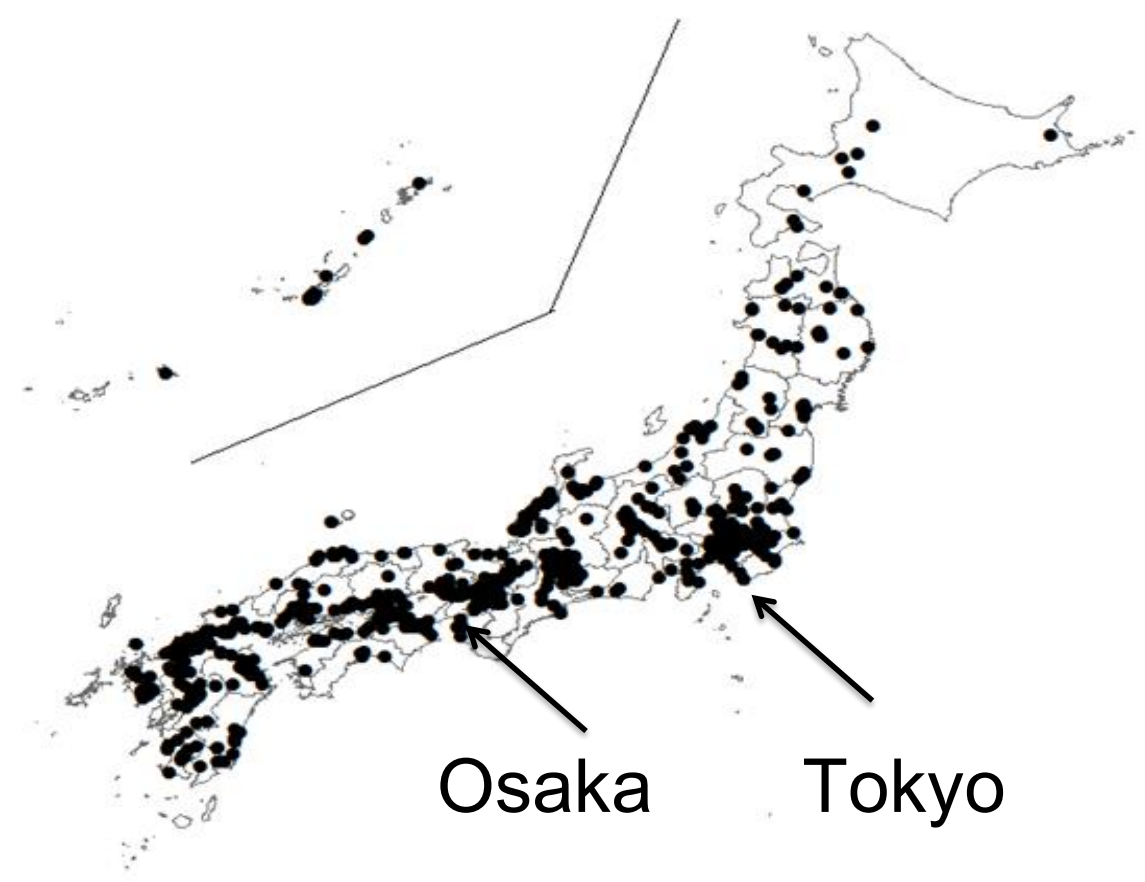
Japan is divided into 211,012 blocks. The respective mean and median areas for these blocks were 1.72 and 0.18 km² as of 2010. Details of the child population in each block were available in the 2010 Population Census, and split into three groups by age: 0–4, 5–9 and 10–14 years.

The straight-line distance to all nurseries for sick children from the geographic center of each block was calculated by spherical trigonometry using:

Distance = Radius of the Earth (6,378.14 km) × cos⁻¹ [sin (Latitude of Block) × sin (Latitude of Nursery) + cos (Latitude of Block) × cos (Latitude of Nursery) × cos (Difference of Longitude between Block and Nursery)].

Results

Nurseries for sick children were mal-distributed in Japan as follows; (Figure)



Overall, 90 percentile of the distance from children’s residence to the nearest nurseries special for sick children was 16.2 km. However, it was extremely longer in the in small towns and villages with 10,000 or fewer residents (Table).

Table. The distance from children's residence to the nearest nurseries for sick children grouped by population size of of their home area (km)

Population of city, town and village (x 1000, whole age)	Percentile			
	25	50	75	90
≤10	9.9	21.3	40.2	93.2
11–30	5.0	9.9	19.6	36.6
31–50	3.3	7.9	15.7	27.3
51–100	2.2	4.6	11.0	21.0
101–200	2.0	4.0	8.4	22.5
201–300	1.8	3.3	6.2	10.6
301–734	1.7	2.9	4.9	7.2
Tokyo metropolitan wards & 19 major cities	1.2	2.0	3.3	5.9
Total	1.7	3.2	7.1	16.2

Conclusion

Nurseries special for sick children were not evenly distributed in Japan, and children and their caregivers in under-populated areas had to travel further to access.