Provision of Web-Based Childcare Support Maps by Local Governments in Japan

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Abstract. The aim of this study is to analyse the present conditions and problems with web-based childcare support maps provided by local governments, with particular attention to their content and representation. We sampled web-based childcare support maps of the Tokyo Metropolitan Area and classified them into three levels in terms of interactivity and user's participation in data collection. The results revealed that more than half of the online childcare maps are interactively displayed; however, there are few participatory maps. Comparison between the maps provided by the local government and those of the voluntary sector clarified that the latter compensated for the limitation of the former by providing information about for-profit facilities or comments on the map.

Keywords: Online maps, Web cartography, Volunteered geographic information, Collaborative mapping, Childcare support

1. Introduction

The adoption of the Internet as a means of map distribution has fundamentally changed the way spatial information has been presented since the mid-1990s (Peterson, 2005; 2008). With the spread of the Internet and the digitalisation of maps, not only private companies but also local governments have been providing online maps containing useful information for residents' daily lives, especially in Japan. Based on data concerning online maps provided by local governments in Japan, which was collected by the Centre for Spatial Information Science (CSIS) at the University of Tokyo, Sekimoto et al. (2011) reported that as many as 8,535 maps displayed on websites were provided by Japanese local governments in 2009.

In particular, online maps for childcare support have shown a rapid increase in recent years. As a result, the ratio of this kind of map accounts for approximately 10% of the entire range of online maps made available by local governments. This is because it has become more important for national and local governments to improve their childcare policies, as Japan faces increased childcare needs caused by an increase in the number of working mothers and the necessity of implementing countermeasures to offset the declining birth rate. The objective of this study is to analyse the present conditions and problems with web-based childcare support maps provided by local governments, with particular attention to their content and representation.

2. Methodology and Data

We sampled web-based childcare support maps in the Tokyo Metropolitan Area (Tokyo, Kanagawa, Saitama, and Chiba Prefectures) from the database by Sekimoto et al. (2011) to analyse style, content, representation, and the map creation process. We classified the maps into three levels.

- Level 1 refers to the map provided as a static image of a PDF or image file based on analogue maps, for which users cannot choose the information or change its representation.
- Level 2 is the interactive map that uses WebGIS, for which users can choose the information and its representation.
- Level 3 signifies the participatory map, for which users can add or share information.

We counterchecked the database made by Sekimoto et al. (2011) as of 2009, focusing on the childcare support maps concerning preschool education, childcare services, and playgrounds for children in 2012. The maps obtained were classified into the three levels mentioned above, and their contents were analysed. In addition, we interviewed the staff of a local government and staff at a voluntary group involved in making the childcare support maps to compare the process of creating the maps and the related products between the public and private sectors.

3. Classification of Childcare Support Maps

The 172 municipalities in the Tokyo Metropolitan Area provided Web-based childcare support maps in 2012. We conducted a content analysis of 360 maps obtained from these websites.

An analysis of these maps revealed that level 1 comprised 44.4% of the total childcare maps; level 2, 55.0%; and level 3, 0.6%. This indicates that more than half of the online childcare maps are interactively displayed; however, there are few participatory maps. In addition, 1.4% of the maps included in Sekimoto et al.'s (2011) list were either not found or were inactive in 2012, and 16.1% of the maps had different URLs after 2009. Hence, it can be said that the online map is changeable and unstable.

Most level 1 maps are uploaded print maps converted into PDF or image files and contain a variety of representations, including an illustrated map (Figure 1). Their contents consist of information on childcare facilities (e.g. day-care centres) in each municipality. Some of these maps have characteristics similar to participatory maps, as not only public actors but also private actors, such as mothering groups, participate in the mapmaking process.

Figure 1. Example of a level 1 map (http://www.city.edogawa.tokyo.jp/kurashi/kosodate/kosodatemap/files/12kosodatemap01.pdf).

Level 2 maps can be divided into two types in terms of the style in which they are provided. One type (level 2a) is an interactive map on which users can see all childcare facilities within the municipality at a glance (Figure 2). The other type (level 2b) shows the location of each facility individually on the map (Figure 3). Therefore, the former type can be more readily used to search the facilities from a wider area within the municipality, while the latter type can be used as a navigational tool. In both types, existing Web maps, such as Google Maps, are used as a background image. As a result, the style and operability of the maps are sufficiently standardised for easy use, although their representation tends to be uniform. Furthermore, some local governments maintain a website for mobile phones because it is common, especially among Japanese women, to access the Internet on their mobile phones.

Level 3 maps include a function to collect information from users. For example, the map shown in Figure 4 is attached to a frame in which users make relevant comments or provide information. Although this kind of function is a distinctive feature of the Web-based map, few examples were found in the Tokyo Metropolitan Area.

Figure 2. Example of a level 2a map

(http://mappage.jp/S/S01.php?X=2.4398292429785&Y=0.622418051882&L=11&MAP_x=28&MAP_y=189).

Figure 3. Example of a level 2b map (http://www.city.bunkyo.lg.jp/gmap/detail.php?id=1787).

Figure 4. Example of a level 3 map (http://katsushika-kosodatemap.net/1174).

4. The Actual Condition of Making Childcare Support Maps: The Case of Meguro Ward, Tokyo

4.1. The maps provided by the local government

Meguro Ward, located in the vicinity of central Tokyo, was selected as the study area. The local government of Meguro Ward published an online childcare support map using Google Maps as the base map. Users can freely change map scale and map frame, but cannot select map elements, therefore this is classified as a level 1 map. Distinctive colours and sights are allocated to each type of childcare support facility, this being overlaid on the base map (Figure 5). As production and maintenance of the map is outsourced to a professional corporation, the map design is sophisticated and its usability is similar to that of Google Maps. However, information on the map is limited to the facilities authorised by the local government, excluding private shops and for-profit facilities, as well as evaluation or comments on them. Therefore, these maps cannot necessarily satisfy the information demand of parents raising young children.

Figure 5. Childcare support map made by a local government: example of Meguro Ward (http://megurokodomo.net/map/).

4.2. The maps made by a voluntary group

In 2009, a group of mothers in the Meguro Ward, who had completed a training course on making childcare support maps, started making their own maps. This training course was set up by the government, but planning for the project was left to the members. The five main members, including four mothers with small children and one male, decided on the detailed plans. One of the main members had previous experience in making this type of map, having being involved in another municipality in a non-profit organisation. Consequently, the group in Meguro used the know-how. The group has been subsidised by the local government and other foundations for the costs related to making childcare maps.

Seven to ten volunteers, including the main members, participate in the map-making process. To make the map, the group of mothers collected informal information on facilities, playgrounds, and shops for children from their acquaintances. If there were areas where no members or acquaintances lived, they visited it on foot to get information for the map. They use Google documents and a Yahoo! mailing list to communicate with each other, and use SNS (Facebook) for announcements relating to the map or events. However, they do not want to upload the childcare support map onto the internet, because they value the role of the paper maps as a 'trigger' for face-to face communication among isolated mothers.

The maps are printed on B4 (257 mm × 364 mm) sized paper which is folded into a 92 mm by 128 mm format for portability (Figure 6). Concerning representation, the basic elements of the map are simplified or partially omitted, and instead, some illustrations drawn by an amateur painter have been added. A notable feature of the childcare support maps of this group is that they contain various types of information, including private facilities and shops as well as comments on these, unlike those of the public sector. Hence, the maps are more useful for mothers raising young children in comparison to those produced by the public sector.

Figure 6. Appearance of the childcare support maps made by a mothers' group in Meguro Ward.

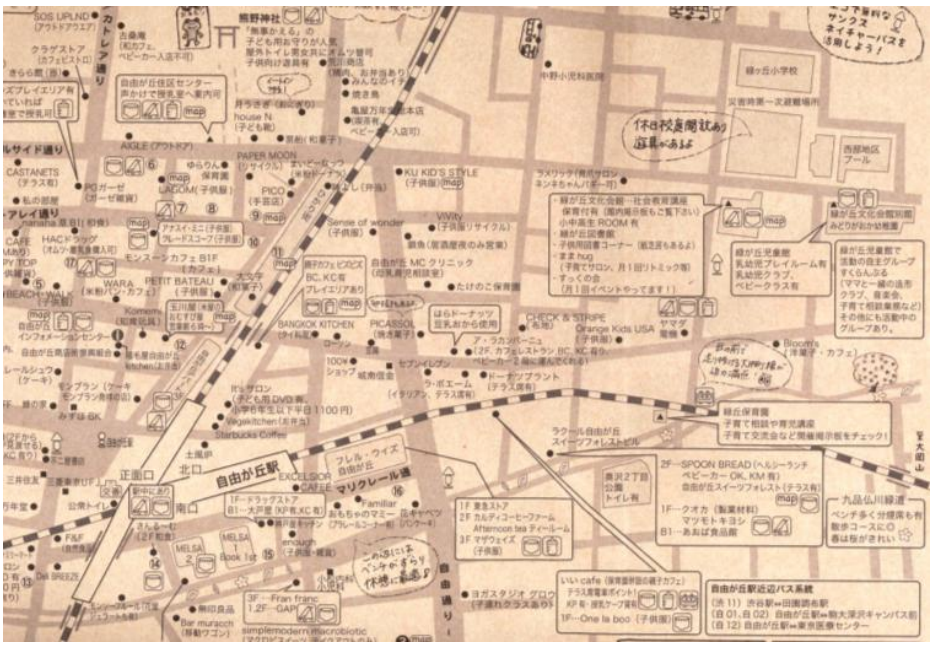

Figure 7. A part of the childcare support map made by a mothers' group in Meguro Ward.

5. Conclusion

The results revealed that interactivity or user participation, which are the major advantages of using the online digital map, were not necessarily realised in Web-based childcare maps in Japan, in spite of the increased number of online maps. This suggests that digital maps are not being utilised, even with a high Internet penetration rate of 79.1% in Japan, because most providers do not fully understand the advantages or characteristics of digital maps, and users still rely on analogue or printed maps.

With regard to the content of the map, since childcare support maps provided by the local government are usually made as a part of the disclosure of administrative information, they exclude information about for-profit companies or shops. In addition, few maps permit users to participate in the process of information collection or map-making. With regard to representation, there are a variety of maps, ranging from static maps with illustrations to interactive Web-based maps. With the increase of maps using Google Maps as a base map, not only content but also representation has become standardised.

The limitations of the childcare support maps provided by the local government are studied by those of the voluntary sector. Some groups of mothers raising children have attempted to make the childcare support maps themselves as a means of information sharing. Though these maps have a wide variety of content and representation, they commonly contain useful information for map users. This kind of grass-root activity is also regarded as an example of the activities for volunteered geographic information (VGI) (Goodchild, 2007). Since the information provided by the local government is limited, the role of the voluntary sector will become important in providing information closely related to daily life, namely, childcare support, on maps.

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(* in Japanese with English abstract)