

Study of Quantitative Indicators for Urban Renewal by Utilizing Cultural Policy in Depopulated Areas

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1. Introduction

In recent years, the number of tourists from China and other Asian countries visiting Japan has increased, and many of them often visit depopulated areas. Due to population, there is a decline in the number of cultural and arts-related institutions and businesses; however, because of the Cool Japan policy, the influx of tourists into facilities related to Japanese culture and animation is on the rise. Currently, in Kurume City in Fukuoka Prefecture and Tottori City in Tottori Prefecture, facilities for arts promotion or those related to local animation and cartoons are being constructed aggressively in areas with large garages in order to increase visitors from home and abroad[1,2]. In particular, Kurume City is actively engaged in city revitalization by constructing arts facilities in areas with many garages with appropriate consent and collaboration of local residents[3]. The city is also promoting online content considering the evaluation of Kurume City on Twitter and its association with age groups based on publicly available data. Moreover, in Tottori Prefecture, based on the content of local animation such as Meitantei Konan (Detective Conan) and GeGeGe no Kitarō, the city's appearance is being improved, the Bird Theatre Company (NPO) has been established, and an arts festival is held annually to attract visitors from home and abroad[4].

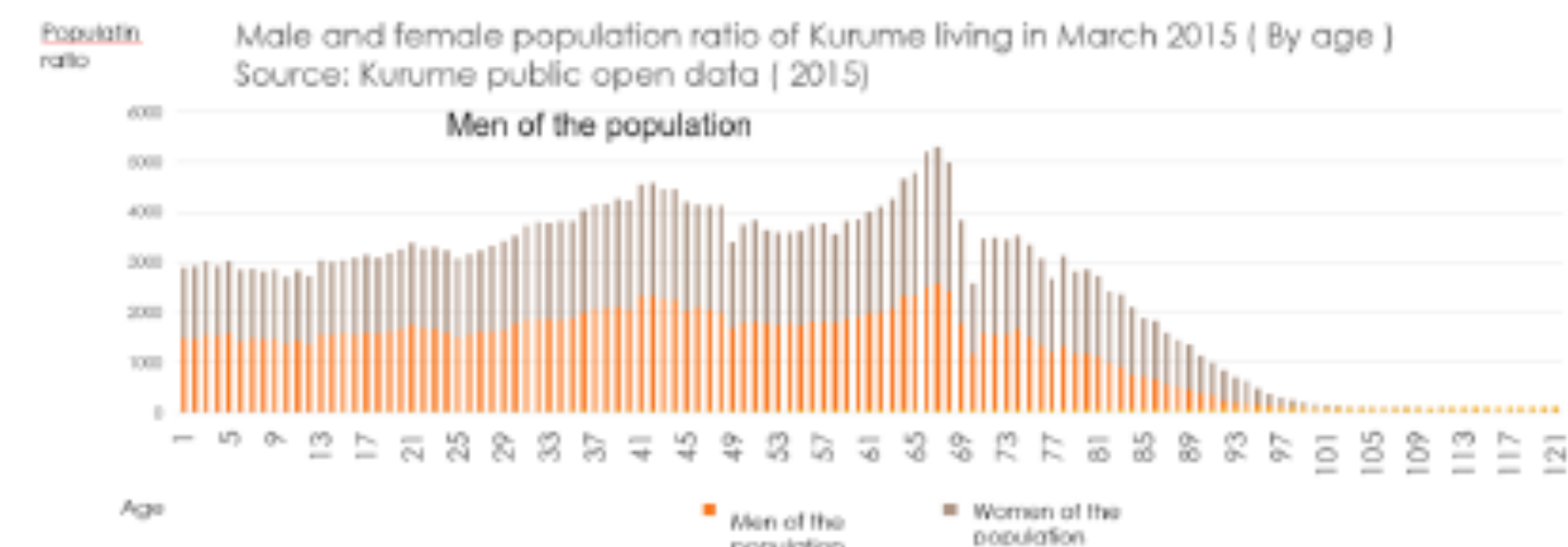


Figure:1 Male and female population ratio of Kurume living in March 2015 (By age) Source: Kurume public open data (2015)

This study aims to quantitatively elucidate the effects of revitalization efforts undertaken in depopulated areas of Japan on other shopping streets in the neighborhood and commerce in and around areas near railway stations. It also aims to elucidate the impact of Japanese culture and content on promising measures to build sustainable future cities through revitalization of old city centers. We performed quantitative analysis using a scaling exponent based on residential map data from 2011 to 2015, Telepoint data on the number of businesses and business categories in each region, the census, and other publicly available data. We focused on the efforts undertaken by Tottori Prefecture to attract visitors (inbound) to depopulated areas through advanced utilization of content and qualitatively and quantitatively analyzed the data on roads in city centers and around railway stations, buildings, shops, and population. Thus, we identified the existing challenges and factors and described the likely urban renewal aimed at the sustainable revitalization of depopulated areas[5].

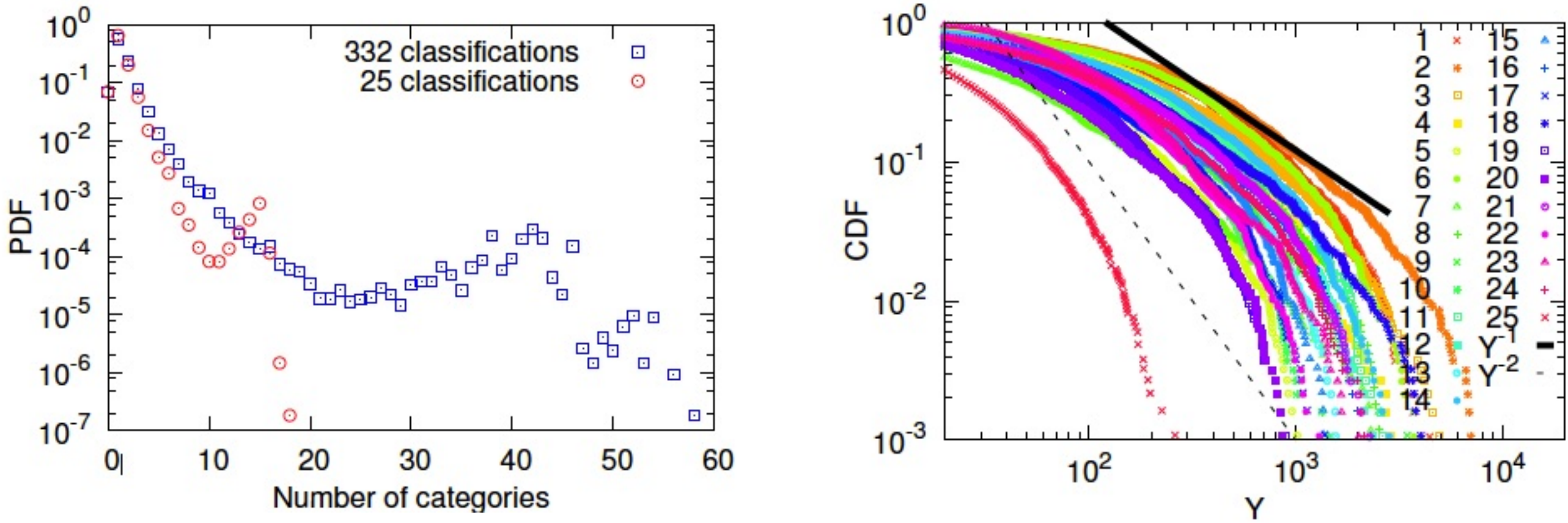
2. Research background

In 2001, the Basic Act for the Promotion of Culture and the Arts was enacted to serve as a bill that covers the entire field of culture and arts. While the fundamental basis of this bill was to promote the autonomous activities of people who engage in art and cultural activities, its objective was to aim for a comprehensive promotion of policies related to art & cultural promotion in order to contribute to the realization of spiritually rich lives of the citizens and a vigorous society. Based on the the Basic Act for the Promotion of Culture and the Arts, the Japanese government formulated the Fundamental Policies on the Promotion of Culture and the Arts (hereafter, “Fundamental Policies”), engaging in the promotion of culture and art based on these fundamental policies with the aim of establishing an artistic and cultural nation. In preparation for such activities described above and the 2020 Tokyo Olympics, a large-scale questionnaire survey activity and mathematical analysis on cultural promotion in the Association of Japanese Theatre Companies and cultural foundations from different regions are being conducted in order to increase the awareness of this matter in rural areas and not just in Tokyo.

During the 2016 financial year, the Association of Japanese Theatre Companies launched the Investigative Research of Social Inclusion Activity in Art Organization within the Agency for Cultural Affairs’ Strategic Art & Cultural Creation Promotion Project. In this initiative, case examples will be studied to examine how theater companies, theaters, and NPOs resolve social issues, with the objective of exploring the impact which social inclusion activities of art organizations have on society and the possibility of enforcing the management foundation of art organizations. I am participating in this initiative. The objective is to clarify the evidence using **SROI (Social Return on Investment- an index that enumerates and measures the outcomes and achievements, used in organization bodies that perform social activities).** In regard to the background described above and the initiatives in sparsely populated areas (which will be viewed to be the current state for the sake of this study), this study will propose population and telepoint data as a method of a mathematical approach. It will also aim to come up with a more effective method.

3. Telepoint data

The accumulation of population and industry has positive feedback effects of improvement of urban development as well as the negative feedback effects of increased crime and land value, as well as increased traffic congestion [6]. This study will examine the growth level of cultural promotion and its transition in Tottori City, a most underpopulated city in Japan in terms of municipality level, and a developed region (i.e., Tokyo), using numerical values by consulting telephone data. For the population data by municipality, the e-Stat by the Statistics Bureau, Ministry of Internal Affairs and Communications (the 2010 population included in *The Realities of Municipalities as Seen by Statistics 2015*) was used for analysis. Analysis was conducted using the phonebook data (nationwide edition) accompanied by industrial information from 13 different time periods: November 2011, June 2012, November 2012, June 2013, August 2013, November 2013, January 2014, May 2014, August 2014, November 2014, February 2015, May 2015, and August 2015. Since phonebook data include geospatial information (i.e., address and industry type) of various stores and facilities (i.e., offices, hospitals, schools, and park), this allows a detailed temporal change of stores and facilities on a national scale. Furthermore, not only is phonebook data updated every 4 months, it allows the observation of information from each store/facility. As such, it ends up being a large geospatial data that is highly accurate in both temporal and spatial manners. In addition, phonebooks include a wide range of businesses from large corporations to individual business owners that do now have a business name . As such, it becomes a data that is vastly comprehensive.



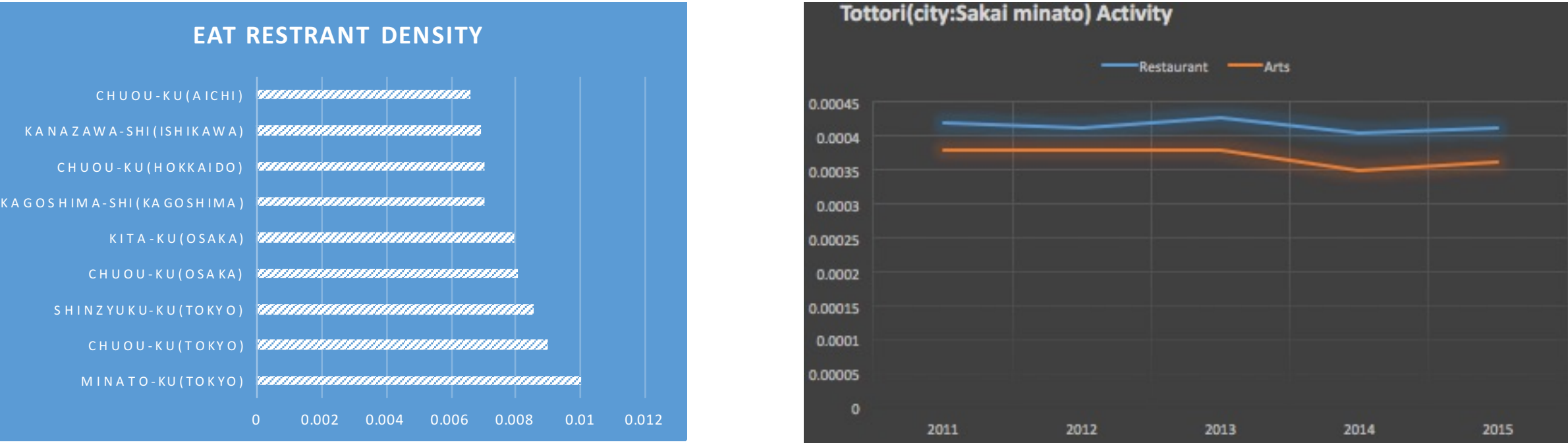
Each store/facility is classified into one of 25 major categories and 332 minor categories, depending on the industry type. Although most stores/facilities belong to a single industry type, a subset of stores/facilities (28% of stores/facilities for the major categories and 37% for the minor categories) belongs to various industries (Figure 2 [8].). The mean number of facilities that belongs to the industry type was 1:36 for the major categories and 1:66 for the minor categories. The spatial distribution of facilities related to medical service is as shown in Figure 2[8], showing a trend in which the number of facilities increases in urban cities with a high population. Each store/facility is categorized into 25 major categories and 332 minor categories depending on the industry type. Although most stores/facilities belong to a single industry type, a subset of stores/facilities (28% of stores/facilities in major categories and 37% in minor categories) belongs to various industries (Figure 2. It is known that in general, urban population follows the power-law distribution (Zipf's law) [8]. The number of stores/facilities also follows a distribution similar to power-law (Figure 2 [8].).

4. Research Focus

Tottori City is a prefectural capital with a population of approximately 200,000, located in the northeastern region of Tottori prefecture. The city population that has continuously increased from the rapid economic growth period onward surpassed 200,000, peaking in 2005. However, according to estimation, this number went on decreasing thereafter, with the number estimated to become approximately 150,000 in 2040, nearly the same level as the population before the rapid economic growth period. Furthermore, the aged population ratio has increased by 14% since 1970, with the acceleration of population ageing predicted to increase. It is predicted that it will further increase by 14% within the next 30 years, by 2040. Despite being the most underpopulated region in Japan, it conducts town renewal projects that incorporate content that is actively picked up in the Cool Japan Project, a Japanese government policy. In particular, Tottori Airport was renamed **Tottori Sand Dunes Conan Airport, taking its name from the Japanese manga series Meitantei Conan (English title: Case Closed).** The City of Sakaiminato located adjacent to Tottori is also the hometown of Shigeru Mizuki, a manga artist. Here is where Shigeru Mizuki Road is located, which has completely become the face of Sakaiminato. **Many manga characters pop up in the city, which in conjunction with the increase in foreign tourists that visit Japan, resulted in the visits of many Chinese tourists, who seek media contents related to the specifically Japanese culture.**

5. Summary

Concerning each store facility in each municipality across Japan, the number of commercial facilities for each period in the 25 major classifications (A-Y) for each municipality and the mean facility number during the data collection period were calculated in accordance with industry type. In order to ascertain the increase rate of commercial facilities and of 25 major categories of facilities related to culture since 2011 onward in Tottori, the number of commercial facilities for each period in the 25 major categories (A-Y) of all municipalities and the mean facility number in which the data collection was conducted were calculated. Furthermore, the overall mean: number of facilities in each municipality was conducted by calculating the overall mean. Restaurant results showed that the mean value was extremely high even in the restaurant business for regions with high population density. (Figure 3)



Therefore, this study examined the mean values related to cultural facilities. What was noteworthy in Tottori was that despite its small population, its mean values appeared slightly higher compared to other industries. By applying this study's method further, we were able to ascertain the regional activities and operation expansion of cultural nation in Japan, as well as the activities of NPO organizations. In the future, we would like to research regional cases that conduct cultural promotion actively even if the population is sparse, as seen in Tottori. **Furthermore, with regions that have a high level of activity, we would like to explore how other industries are impacting on art and cultural activities by using such resources as human activity, mobile phone base stations and GIS data obtained from smartphone applications. Through this process, we would like to examine in detail the kind of trends that can be seen related to the movement of people and cultural promotion for data analysis purposes.**

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