

ANALYSIS OF TOURIST ACCUMULATION TREND USING PERSON FLOW BIG DATA AND TELEPHONE DIRECTORY —CASE STUDY IN ICHIHARA CITY, CHIBA PREFECTURE—

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1. INTRODUCTION

(1) Background

Tourism is an opportunity to inform the attractiveness of local governments and has become an important element in regional revitalization. As the number of domestic tourists has plateaued and competition among tourist destinations intensifies due to the development of information distribution and sharing environments such as SNS, it has been pointed out that in order to effectively attract tourists, it is necessary to analyze the behavior of visitors and quantitatively understand the actual situation from the perspective of tourists¹⁾. Therefore, it is necessary to prototype tourism policy formulation based on analysis of tourism behavior.

There have been many studies analyzing the behavior of visitors using person flow big data (Sugimoto et al.²⁾ etc.). However, there are few examples of prototyping such as proposals for tourism promotion based on analysis results.

(2) Objective

Therefore, in this study, the objective of this study is to analyze data targeting Ichihara City, Chiba Prefecture with data analysis aimed at effective tourism measures and to propose new tourism policies using data. It is expected to be able to investigate the relationship between facility information and visitor accumulation from a tourist perspective.

In Ichihara City, Takataki Glamping Resort (Takataki GR) opened in 2021, and the number of young people who have rarely visited the city is increasing. Therefore, this study was conducted with advice from Ichihara DMO.

2. DATA

(1) Town Page Database

The Town Page Database (TPDB) is a database of information published in the occupational telephone directories (Town Page) published by NTT East and NTT West. The study used data from the whole of Ichihara City. It contains the location (longitude and latitude) which each office and about 1,900 types of business category (NTT Classification). In this study, we reclassified business category into the "Tourism Classification" in consideration of its relationship to tourism.

(2) Konzatsu-Tokei

Konzatsu-Tokei® data is data processed comprehensively and statistically by NTT DOCOMO from cell phone location information sent by consenting users of NTT DOCOMO applications. The location information is

GPS data (latitude and longitude information) measured every five minutes at a minimum, and does not contain personally identifiable information. The number of people staying for more than 15 minutes per regional mesh (1 km square grid) can be monitored by common attributes. In this study, we will use data obtained by aggregating the number of visitors for each mesh in 2019 and 2021 for the entire Ichihara City by season.

3. ANALYSIS OF VISITOR'S TRENDS

Fig.1 shows the number of visitors by mesh in Ichihara City in 2021. Trends of visitor attributes and behavior in 2019 and 2021 are shown.

(1) Rate of visitors residing outside the Kanto region.

There is no significant change between 2019 and 2021. In the Lake Takataki area, the rate is high in both years. It is also high in coastal areas including industrial areas and places that do not contribute to local tourism, such as Ichihara SA.

(2) Visitor's accumulation on holiday.

Compared to 2019, the rate of weekday visitors increased in the southern part of the city in 2021. This is because the number of visitors decreased. On the other hand, tourism demand is considered to be maintained in Ichihara Zou-no-Kuni and Yoro Valley.

(3) Accommodation rate

It has decreased throughout the city in 2021 compared to 2019.

(4) Age group with the highest percentage of visitors

There is no significant change between 2019 and 2021. Male aged 50-69 in the southern part of the city and 30-49 in other areas account for the population, which is thought to reflect the customer of golf course.

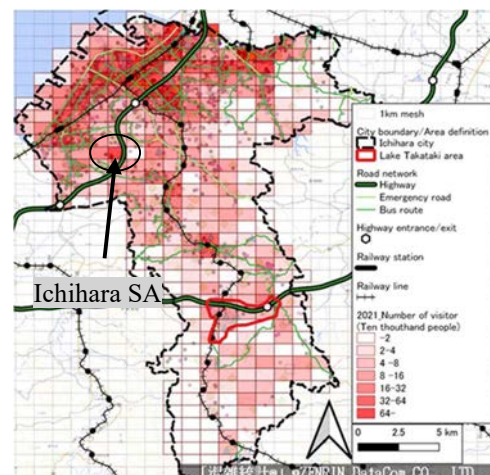


Fig.1 Number of visitors by mesh on Ichihara City in 2021

Keywords: Regional revitalization, Telephone directory, Person flow big data

4. ANALYSIS OF HOLIDAY TRENDS IN THE SOUTHERN PART OF THE CITY

(1) Analysis of population accumulation trends on holidays focusing on business sites and facilities

Fig.2 shows the number of holiday's visitors in the southern part of the city in 2021. There were remarkable population accumulations around Takataki-Tsurumai IC including Ichihara Zou-no-kuni, around Lake Takataki including Takataki Dam and Takataki GR, and the Yoro district including hot spring towns (hereinafter referred to as "major tourist spots"). In addition, I also found that the areas near the mesh where restaurants exist locate along the main road and there are many business establishments there.

(2) Analysis of accumulation trends of specific target

We analyzed trends in age and gender, including family groups, which Ichihara City positions as its main target.

For 29-year-old women, the stay decision was only found in the area containing the major tourist spots and few visits were made outside this area.

For 29-year-old men, accumulations were found in the vicinity of major tourist spots and golf courses. Accumulations were also observed in the mesh with restaurants north of the Takataki-Tsurumai IC.

5. DISCUSSION OF DATA ANALYSIS RESULTS BASED ON FIELD SURVEY

We conducted a field survey on January 8, 2023 between 11:00 and 17:00. The results showed that long railway stops, visits to photo spots by railway fans and extensive tours by touring passengers may have influenced the stay judgment.

6. CONCLUSION

We could extract and organize industries focusing on tourism using the TPDB industry classification. Moreover, we were also able to grasp the population distribution by each mesh using the Konzatsu-Tokei. However, because the Konzatsu-Tokei were based on the mesh aggregation, it was not possible to determine which facilities were clustered and where they were distributed.

In the southern part of the city, Population accumulations were found to be high around major tourist spots and golf courses. It was also found that in meshes without the above facilities and restaurants, no accumulation occurred, even around major roads and railway stations. Restaurants were found to be viable in tourist areas or in meshes with a concentration of business office in the vicinity.

Focusing on age, especially among those under 29 years old, pinpoint visits to only major tourist spots were conspicuous. In addition, the study also revealed the existence of a specific group of visitors for specific purposes.

7. STUDY OF TOURISM POLICIES USING THE RESULTS OF THE ANALYSIS

Based on the results of the above analysis, proposals are made for measures that will lead to the promotion of

tourism using the results of the analysis. The proposals in this paper are classified into three levels, focusing on the degree of difficulty of implementation.

(1) Short-term plans

Possible measures include tourism PR, installation of simple installations (manholes et al.), events aimed at promoting tours around the city, and the sale of free tickets for railways, etc.

(2) Medium-term plans

Possible measures include turning facilities located in areas with low accumulation into tourist spots, operating tour buses and re-examining current bus routes.

(3) Long-term plan

Possible measures such as the opening of facilities (roadside stations et al.) that can promote the attractiveness of the local.

8. FUTURE WORKS

In the future, the content of proposed measures based on the analysis method and analysis results will be brushed up through further discussions with Ichihara City and the Ichihara DMO, with a view to formulating feasible measures. In addition, as an analysis from a different perspective to this article, we would like to use person flow data that can track the movement history of visitors in chronological order, analysis the tour routes and consider proposing measures that make use of the results.

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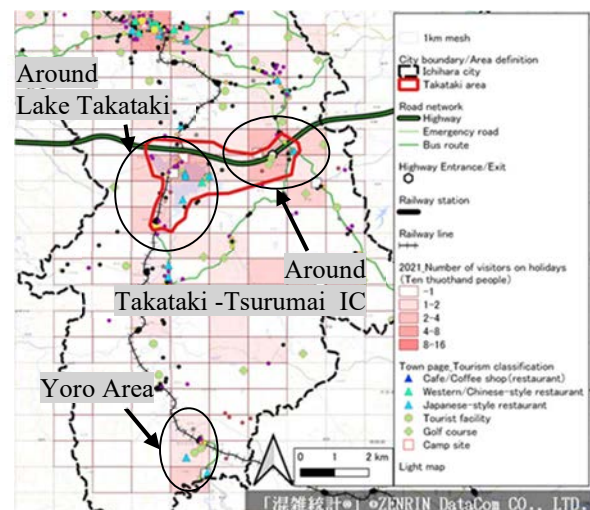


Fig.2 Number of visitors in the south of the city on holiday 2021