Analysis and Evaluation of Human Lifestyle Pattern Using Mobile phone GPS in Japan

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ABSTRACT: In recent years, needs of Japan customers for retail shop are getting diversified. Therefore, Japanese society is shifting to “little production and little consumption” society and many customers use online shopping e.g. Amazon, Rakuten etc. Large ratail shop considering customer’s taste and lifestyle has advantage for other stores. As a result, manufactures which respond to topical needs are increasing. In addition, Japanese customers are reducing shopping opportunities in real retail shops because of rise of online shopping. They cause to close or decline retail stores in existing commercial area. Therefore, it is important to monitor actual state of commercial areas in borad area. Some previous studies have attempted to understand them by questionnaire surveies and data of point of sale system(POS system). However, it is difficult to understand them in broad area by these methods. Questionnaire survey and research on POS system are not enough to get precise outcome for wide area.

On the other hand, person flow can be monitored using Grobal Positioning System(GPS) log data by mobile phones. We can monitor locations of mobile phone’s users regularly in borad area using GPS log data by mobile phones. Therefore, it is increasing use for research on person flow.

Infomation of each people’s stay-point is important to classify lifestyle. Stay-points is the spot which people doesn’t move or point is contiguous to another because poshitioning information has little error.

In this study, we focus on railroad lines of Tokyu Railway Corporation. We extract person who live wayside of their’s railway based on stay-points. In addition we aggregate stay-points into 250m square grid. and estimate grid’s feature based on Cameo Code which is user segmentation of resident’s tendency by the ZIP code from valious census made by Nikkei research Corporation. Persons are classified into some groups according to patterns of their flow in view of lifestyles using mobile phone’s GPS log data. As a result, we attempt to discover new knowledges which is estimation of customer’s taste based on person flow data using various spatial data. A dataset arranging in this study and to use commercial statistics can apply to estimation of purchasing action and place. As a result We can analyze visiters of retail store regardless of scale of store.

KEYWORDS: GPS log data, clustering, person flow, process, evaluation