

Examination for Utilization of Mobile Big Data for Rural Landscape Evaluation: A Case Study of Terraced Rice Fields

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Summary

The evaluation of the value of rural landscapes, including terraced rice fields (TRFs), has been conducted using various methods. However, one major challenge in this evaluation is accurately identifying the number of visitors to open spaces, such as rural areas. However, in recent years, the use of mobile big data (MBD), which draws on location information from smartphones, has gained attention in the analysis of human mobility patterns.

In this study, we analyzed the trends in visitor numbers and their attributes using MBD, with TRFs as a case study. The results indicated three distinct patterns among the TRFs: (1) sites where the number of visitors did not decline even in May 2020, during the movement restrictions imposed due to the COVID-19 pandemic, (2) sites where the number of visitors decreased during the restriction period but subsequently recovered, and (3) sites where the visitor numbers decreased and did not recover. Furthermore, the findings revealed that the average travel distance of visitors significantly decreased in some TRFs during the pandemic, whereas others showed no notable change.

Although careful interpretation of numerical data derived from MBD is necessary under current conditions, this study demonstrated that such data can be effectively used to conduct detailed analyses of human mobility patterns and visitor attributes in open spaces, such as TRFs. The findings of this study are expected to provide fundamental information for the formulation of policies aimed at conserving rural landscapes.

Keywords: Terraced Rice Fields, Ecosystem Services, Landscapes, Mobile Big Data, KDDI Location Analyzer