Evaluating Cultural Services in National Parks: Application of Machine Learning Methods on Social Media Data

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[Abstract]

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   To investigate the interactive effects of natural and social factors on recreational services, we conducted a study using georeferenced social media posts on the national parks in Japan. By analyzing Twitter posts, we estimated the spatial distributions of frequency of use, user impressions, economic values and investigated factors affecting them. We also analyzed the effects of demographic biases brought by social media data on the indicators noted above.

   The results showed that the number of posts for each national park correlated well with the existing usage statistics, indicating number of posts can be used as an indicator of usage frequency. On the other hand, the age structure of Twitter users was skewed toward younger generations, indicating results obtained in this study tended to reflect activity of younger generations.

   We found that use of the national parks brought positive emotions on the park users. Also, we found that by using nature images attached to Twitter posts, we can estimate activities done by the users. Moreover, we found that pictures taken in the areas with highest protection level were indirectly used more frequently compared to the pictures taken in other areas or other kind of parks. Finally, we found that frequency of use and economic values were higher in areas with higher accessibility and higher number of tourist destinations whereas they were also higher in more natural locations. These results indicate importance of balancing use and conservation of natural areas to keep values of the national parks.

[References]