

Evaluation and Validation for Walking Trails in University of Tsukuba

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1. Introduction

Promoting adults' physical activity is a public health priority since evidence has shown that regular physical activity is one of the best way for personal health. A potential method to bring about sustainable increases in adults' physical activity is to create environments that facilitate walking. Walking trails are important parts of walking environment and they can enhance the physical activity level by providing spaces for walking, jogging, hiking and other physical activities. In this context, the evaluation of walking trails is important since it provides information on how to build a walkable neighborhood.

2. Motivation

The purpose of this study is to give evaluation to all walking trails within campus of University of Tsukuba and for validation, to count people flow within different time periods of a day in trails with different evaluations.

3. Study Area

The Campus area of the University of Tsukuba.

4. Methodology

Evaluation: Managed the basic vector data of Tsukuba for scoring all walking trails. Five factors were considered for evaluation: width of a trail, existence of greenness belt, accessibility to potential destinations, surface condition (cleanness and flatness) and aesthetic (adjacent to green space or not). The field work was done to accomplish the data preparation, especially for width of a trail, existence of greenness belt and surface condition. After the preparation for data, overall evaluations to all trails were given. Each factor mentioned above was given scores between 0 and 1 based on the collected data. The total score for each trail ranged between 0 and 5, with 0 represents a trail with low potential for promoting walking and 5 represents a trail with high attraction to people to walk along it.

Validation: This step was done based on the results of the evaluation. Three trails with high, medium and low walking potential were selected as validation sites. The flows of walking people in three time periods (9:00 ~ 10:00, 13:00 ~ 14:00, 17:00 ~ 18:00) in three sites were counted as the validation results.

After finishing the evaluation and the validation the result was compared to check the consistency.

Table 1

Count of walkers in validation sites in 3 time periods

Time	Site A	Site B	Site C
09:00 - 10:00	118	37	0
13:00 - 14:00	317	23	6
17:00 - 18:00	93	24	0

5. Results and Discussion

The result of the evaluation is shown in the figure 1. The trails with red color have the highest potential to attract walkers while the trails with blue color have the lowest attraction for walkers. The trails in the northern area of the campus have relatively low score compared with others due to the low accessibility to facilities as well as the bad condition of the trail surface. The trails cross the central area of the campus have higher score since no vehicles passed through it and due to the fact that it own wider width and better accessibility. Three sites were selected for validation based on their score. Site A locates at the central area of the campus (Fig. 1.) with the highest score (5); Site B is closer to the sports ground (Fig. 1.) and it owns a medium score (2.75); Site C is one trail in the Agriculture and Forestry Research Center Area (Fig. 1.) and it has the lowest value (0). Table 1 shows the results of validation. The results have high consistency with the evaluation results. It proved that the approach used in this study is reasonable for evaluating walking trails in the campus area. As a conclusion, there is a need of more facilities built in the northern part of the campus and more trails are needed in the central area to reduce the pressure from huge flow of people in rush hours.

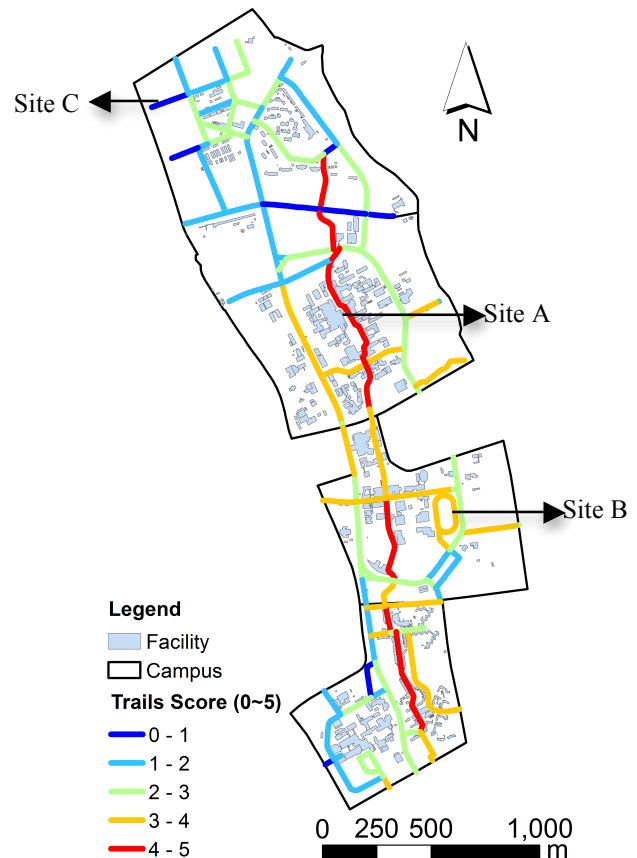


Fig.1. Evaluation of walking trails in University of Tsukuba