

Spatial Distribution and Impact Analysis of Restrictive Posts in the University of Tsukuba

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1.Motivation

One of the most considerable traffic signs in the university of Tsukuba is the restrictive posts established in the university premises. These have been established to control the speed and to warn about danger ahead. The total student population of the university is 16,000. Out of this, about 80 per cent of the university students have registered their bicycles according to the university student plaza data and about 2,600 students live in student dormitories. These dormitories are in the peripherals of the university. Therefore, student mobility is occurred almost all the time in a day. The objective of this study is to assess the influences of the restrictive posts to the student cyclists in the university. The assessment of this study will assist for decision making process of the university administration to manage the student mobility and to mitigate the impacts of the restrictive posts for the students.

2.Introduction

Locating road signs and signals inside the university is important to control traffic condition in the university. Indeed, Proper allocation of restrictive posts especially, near junctions are essential, because the bicycle is the prime medium of transportation inside the university of Tsukuba, the probability of happening road accidents are in high due to huge student population and abandonment of vehicles. However, restrictive posts established to control traffic itself causes for accidents in the university, sometimes.

3.Study Area

The study area for this study is the university premises, including central area. Especially, Ichinoya dormitory area, Hirasuna dormitory area, and Oikoshi dormitory area. Kasuga dormitory area was not selected because in this area, there are no restrictive posts identified. As well as to use student population in each area to suit to objective of this study.

4.Methodology Primary data were collected in this study. Place identification was done using Survey 123 software. Building map of the Campus GIS has been used as the base map. Criteria defined were color of the post, shape of the post, number of posts in one place, they are damaged or not, and the level of the damage, availability of light reflective strips in the post, and appearance in the night. Evaluation will be done according to the Survey 123 data with field experience. Students information were collected from the university records. Arc GIS software is used to analyze data and conducted clustering analysis.

5.Results and Discussion

Total number of restrictive posts considered in this study is 138. According to the results 47% are yellow color posts while 40% of other colors and 13% are white color respectively. 46% of total posts are rectangular in shape. Straight and curve posts are almost same in percentage about 26%. About 54% of posts are 1 to 2 posts in one place and above 6 is about 2%. Its maximum number of posts are 12 in number in one place. The place is located near the university grounds. 87% percent of total posts are with low in damage (Fig.2), however, 3.31% of severe damages were recognized. This cluster was identified in Ichinoya area. Also, 91% do not locate in dark (Fig. 3) while nighttime. Figure 1 shows different types of restrictive posts.

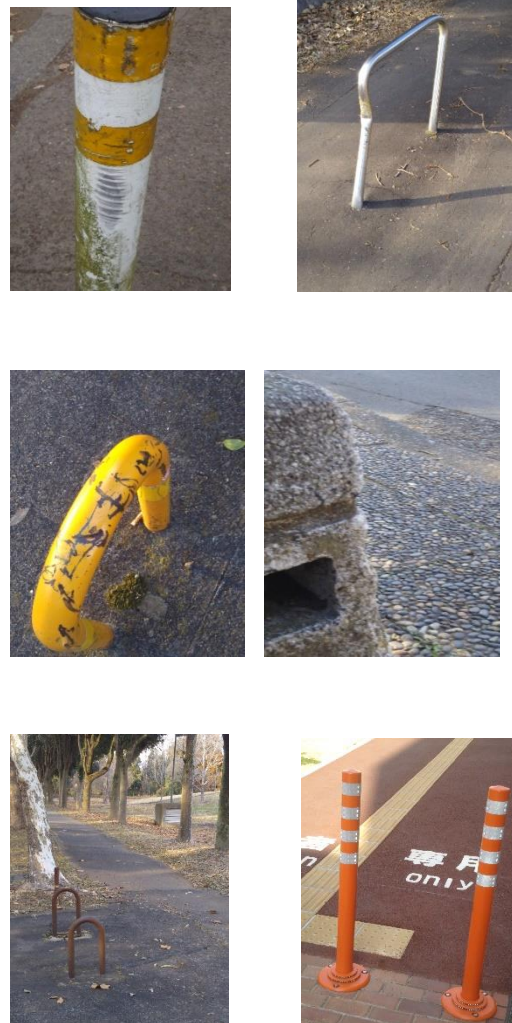


Figure1-Different types of restrictive posts

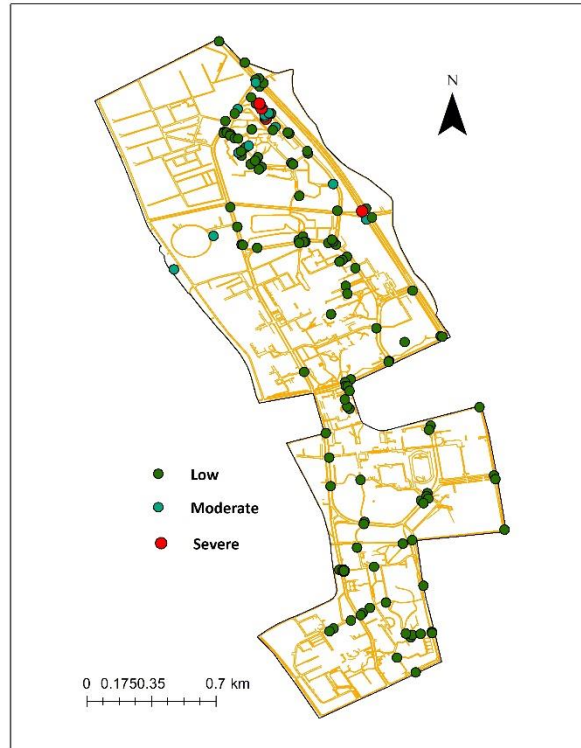


Figure 2- Map showing level of damage of the posts

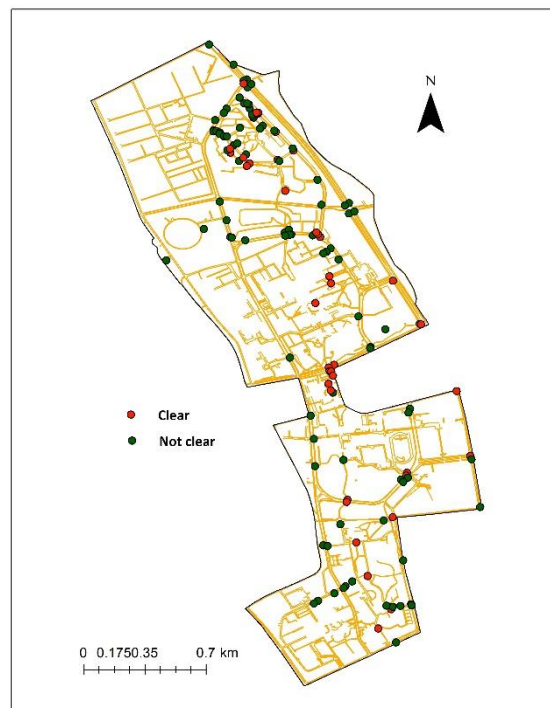


Figure 3- Map showing appearance in night

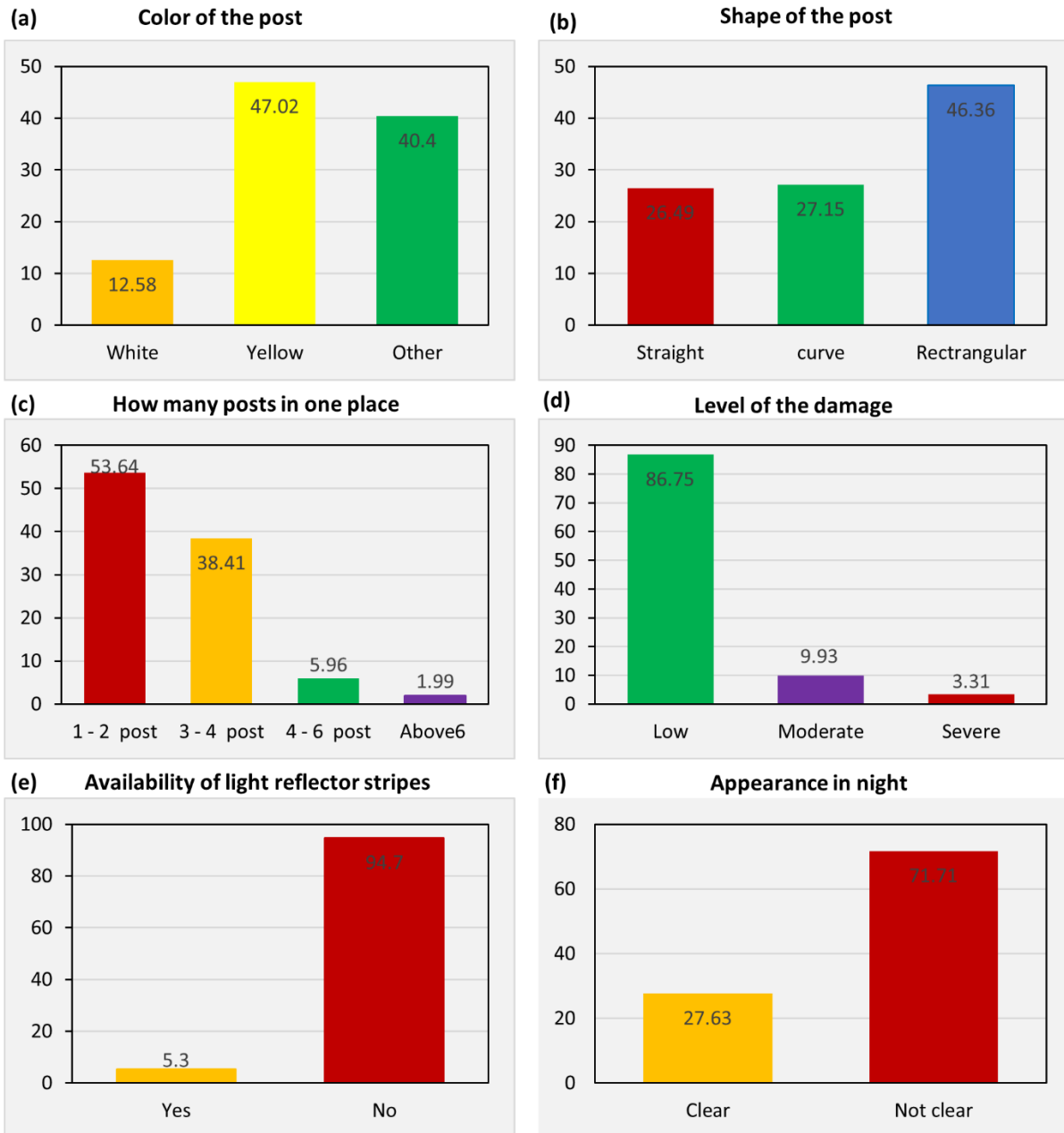


Figure 4 -Graphs showing criteria results generated from the study (in percentage)

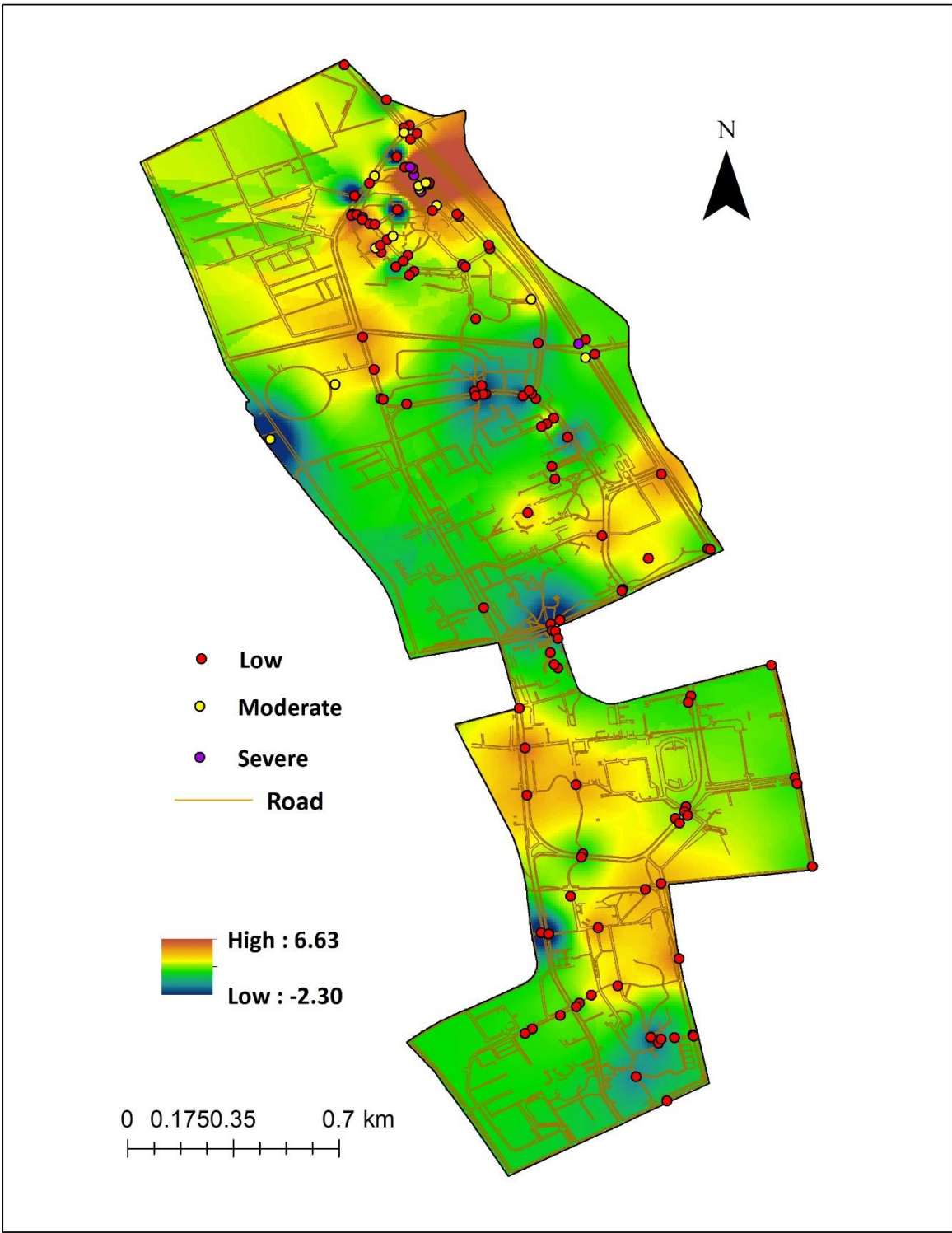


Figure 5- Cluster Map