

1. Motivation

Roughly 80% of the students at the University of Tsukuba use bicycles. Most of the students use them as a means of transportation, both on and off campus for commuting to classes, going shopping and other purposes. Consequently, bicycle accidents often occur.

2. Introduction

The bicycle is the most favorite medium of transport among students in the University of Tsukuba. But bicycle accidents become an issue for the university administration. Figure 1 shows the number of accidents and means of transport of the University of Tsukuba for the period of 2010–2014. Therefore, it is very important to identify the geospatial factors associated with bicycle accidents using existing bicycle accidents map of the university, map new hot spots based on the identified factors and rank the hot spots according to the level of risk. The result will help the university administration to look for possible solutions to reduce the number of bicycle accidents in the university.

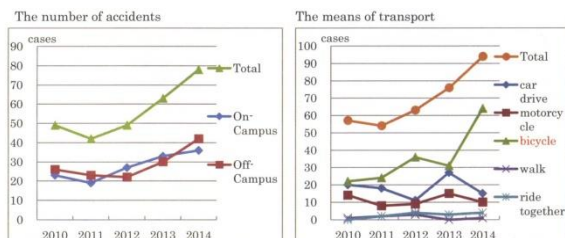


Figure 1: Number of Accidents and Means of Transport

Therefore, objectives of this study are to identify the geospatial factors associated with bicycle accidents, to map new hot spots based on the factors identified and to rank the hot spots according to the level of risk.

3. Study Area

The study covered North, Middle, South, West and Kasuga areas of the University of Tsukuba to identify possible locations for bicycle accidents.

4. Methodology

Both secondary and primary data collected for the study.

Secondary data: Existing bicycle accident map and data from Division of Student Welfare, University of Tsukuba. CampusGIS digital data from Division of Spatial Information Science, University of Tsukuba.

Primary data: Get locations of hot spots of bicycle accidents through a field survey.

Survey123 for ArcGIS used to prepare and conduct the field survey and downloaded shapefile after completing the survey for analysis.

The flow diagram of the methodology is given in エラ一! 参照示が見つかりません.

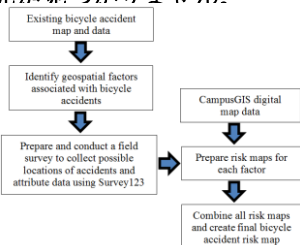


Figure 2: Methodology of the study

5. Results and Discussion

Slope, sidewalks, road condition, parking, visibility, time and number of cross roads were identified as the geospatial affect for bicycle accidents based on the existing accident map and data. Survey123 was useful to gather filed data quickly. Figure 3 shows the risk maps prepared for each factor and final risk map of bicycle accidents. The risk categorized as low, medium and high.

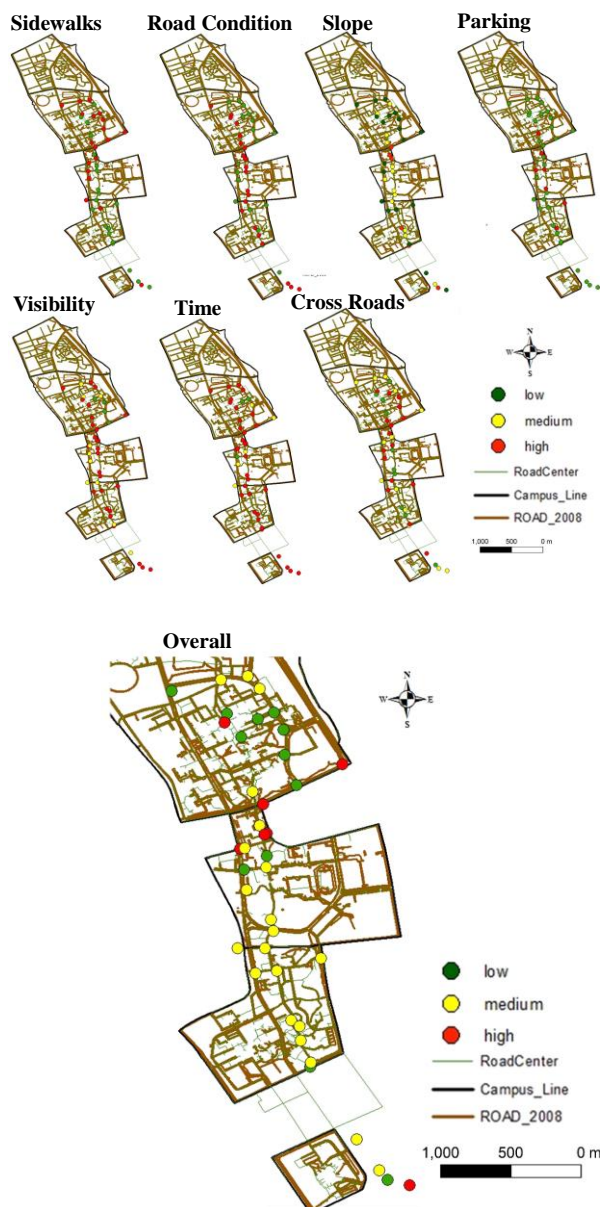


Figure 3: Factor and overall bicycle accidents risk maps

6. Conclusion

Slope, sidewalks, road condition, parking, visibility, time and number of cross roads were identified as the geospatial factors affect for bicycle accidents of the University of Tsukuba. Up-to-date bicycle accident risk map prepared as the final output of the study.