

# Effect of Street Lighting for prevention of crime and fear of crime – A case study in *Ichinoya* and *Hirasuna* dormitory area.

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## 1. Motivation

Both crime and fear of crime have been increased surrounding the University in past years. Some violence and robbery were reported in the night time in some area where located along the footpath and minor road. Division of student welfare was advised to the student who walks along at night surrounding the university area.

## 2. Introduction

Street lighting is an important attribute in modern life, and it is a one of security factor for crime prevention, for orientation and obstacle avoidance at night, and for providing a general sense of safety to road users. As such, it supports night-time leisure activities and is essential for the freedom to go out at night. The cloistered isolated area is most liable for the violence and robbery in the night time. Improved visibility, will increase the possibilities for identification of crimes. Hence, powerful good function street light system is required for the prevention of crime event and enhancing the security of the passenger. Keeping in view of the above aspects, the primary objective of this study is to study crime vulnerable and fear to crime area where located along the Ichinoya and Hirasuna dormitory route.

## 3. Study area

The bicycle routes from university premises both Ichinoya and Hirasuna dormitory area were selected as study area. Hirasuna bicycle route from (36° 6'23.92"N, 140° 6'8.31"E) to (36° 5'55.66"N, 140° 6'10.58"E) across the building and some isolated area and length is 1.4km. Ichinoya bicycle route distributes from (36° 6'39.53"N, 140° 6'3.25"E) to (36° 7'4.62"N, 140° 5'56.47"E) and length is 0.96km

## 4. Methodology

Both primary and secondary data collection methods were employed to collect the (i) Building information, (ii) Bicycle routes, (iii) Street light and (iv) Previous crime information. Both day and night time data were collected. Location of the street light (as point data) have been collected using GPS and malfunction street light and dark area where not cover with current street light information was collected in nighttime field survey. Data were analyzed at two stages. (i) Proximity analysis was employed to identify a dark area of the routes and (ii) malfunctioning street light information will be facilitated to identify the vulnerable area for the crime. Finally, results were cross check with the past incidents which was reported in last year.

## 5. Results and Discussion

The density of the building was calculated and the area where less building density is isolated and the possibility to crime and fear to crime because of less lighting and less accumulated population. 72 street light points were collected (44 for Hirasuna route and 28 for Ichinoya route) According to the ground survey and GIS analysis radius of the street light is approximately 14.3 m based on this information proximity analysis has been done to identify (i) Dark area of the routes and (ii) overlapping street light. One dark area has been identified in Hirasuna routes where located in the one of bend There is one of dark area on Ichinoya route cause of malfunction street light as in Figure 1.

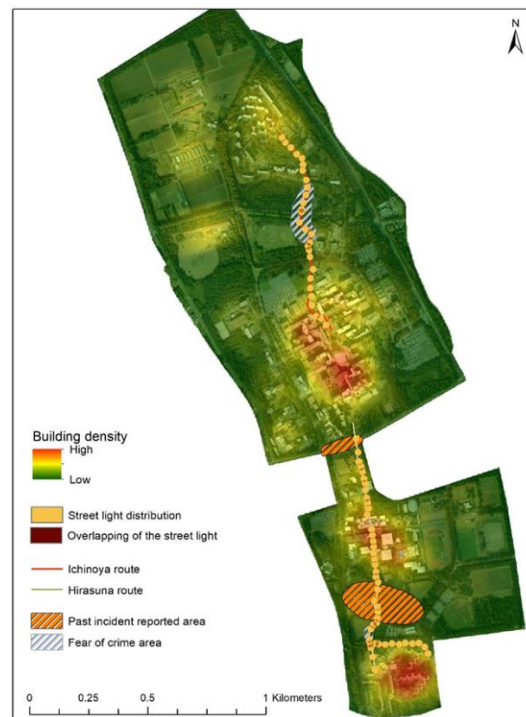


Figure 1 – Distribution of the street light and crime possible area

Result of the current study is correlated with past incident which has published by the official web site of the university of Tsukuba from August 2016 to July 2017. It is proposed to repair the malfunctioning street light and replacing new street light for dark area. It is needed to establish motion detection light system in the isolated area where past incidents reported. Displacing warning message of the unserved area will be more advantage for the student especially for the new comers.