

Development of the Method to Grasp Traffic Conditions of Roads in Residential Areas Using ETC 2.0 Probe Data

OZAKI Yuta, Researcher
KAWASE Haruka, Researcher
SETOSHITA Shinsuke, Head
Road Division, Road Traffic Department

Keywords: ETC. 2.0, measures for traffic safety, road in residential areas

1. Introduction

In order to take precautions for traffic safety on roads in residential areas, it is important to grasp the overall traffic conditions in the first place, including the occurrence of accidents, through traffic, and driving speed, and then examine the measures to limit through traffic or reduce driving speed.

The NILIM is conducting research to develop a method to grasp the overall traffic conditions in residential areas, including through traffic and driving speed, by utilizing ECT 2.0 probe data that can collect the data of movement of a number of cars in a wide area.

2. Grasping Traffic Conditions on Roads in Residential Areas

ETC. 2.0 probe data consist of driving history data, where the location and speed data of a car that has a dedicated ETC in-vehicle unit are recorded, and behavior history data, where the degree and location are recorded when longitudinal or latitudinal acceleration exceeded predetermined thresholds.

In Figure 1, typical routes of through traffic in the residential area (encircled by a gray dotted line) of a region are clearly indicated, and the traffic volume is expressed by the thickness of the line based on ETC 2.0 probe data. Driving history data recorded per car were connected to create a route, and the one that has the origin and destination outside the area was extracted. The chart was created by totaling the number of cars on each route. From this chart, we can identify the through routes with heavy traffic, crossings of such routes, and other dangerous routes and places. After examining the actual places, we can extract the sectors or places that need countermeasures.

Figure 2 indicates both the 85th percentile value of driving speed at each crossing and between crossings and the locations where accidents and abrupt slowdown occurred. The driving speed is obtained from the driving history data and abrupt slowdown from behavior history data. From this chart, we can identify the locations where dangerous behavior, such as accidents and abrupt slowdowns, often occurs and the sector where the driving speed is high in order to grasp the interrelation. This helps us extract the locations and sectors that need to improve and examine the countermeasures to take.

Thus, the use of ETC. 2.0 probe data enables us to grasp the overall traffic conditions on roads in residential areas.

3. Future Plans

Grasping the overall traffic conditions using ETC. 2.0 probe data as above helps us discuss how we could implement effective measures. From now on, we are going to discuss a method to extract areas that need countermeasures from a wider region using ETC. 2.0 probe data in order to promote efficient measures for the safety of roads in residential areas. In addition, we will also discuss a method to use the data on longitudinal and latitudinal acceleration more effectively

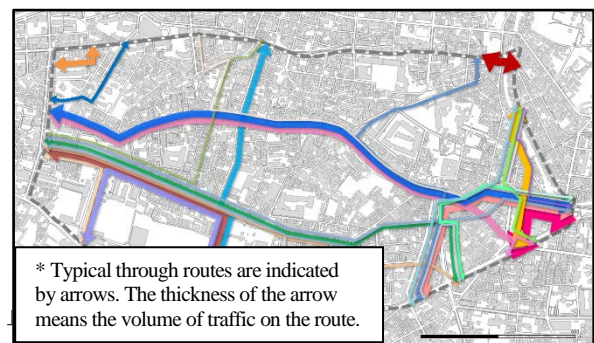


Figure 1: Result of Analysis of Through Routes

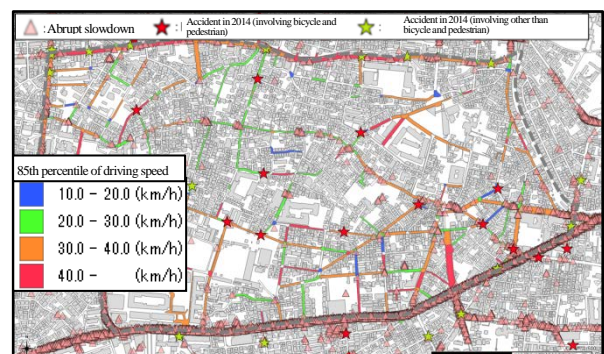


Figure 2: 85th Percentile Speed