

Research Trends and Results

Analyze the Effects of a Road Opening Using ETC2.0 Probe Data

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1. Introduction

The Ministry of Land, Infrastructure, Transport and Tourism has developed a system that collects the longitude and latitude, time, acceleration, etc. of cars from ETC2.0 onboard units through roadside devices, and since April 2011, has been collecting data about users (ETC2.0 probe information) who have agreed to the collection of these data. This report introduces the result of analysis using ETC2.0 probe information of change of selected routes (Fig. 1) between the Tomei Expressway and Kanetsu Expressways caused by the opening of the Sagami-hara-Aikawa IC to Takaosan IC (14.8km) section of the Metropolitan Inter-city Expressway (below, “Kenodo”) from that was opened for use on June 28, 2014.

2. Analysis results

Based on the ETC2.0 probe data, the analysis confirmed changes in the selected route after opening of the Kenodo by vehicles that passed through the Kanetsu Expressway Tsurugashima JTC within 6 hours after passing through the Tomei Expressway Ebina Junction and vehicles traveling in the opposite direction. Similar route selection trends were revealed in both directions between the Tomei Expressway - Kanetsu Expressway, showing that the opening of the Kenodo increased traffic using the Kenodo about 20%. The ETC2.0 probe data confirmed that the opening of the ring road transformed route selections by through traffic that did not begin traveling in the center of Tokyo.

3. In Conclusion

In the future, we will endeavor to realize a world in which roads are used "intelligently" by appropriately evaluating the reliability of roads on which ETC2.0 probe information is used "intelligently and by taking appropriate measures.

[Sources]

1) Y. Tanaka, H. Kanoshima, H. Saji, H. Makino: Analysis of effects of opening of the Metropolitan Inter-city Expressway (Kenodo) by road probe data, 12th ITS Symposium 2014, 1-2A-05, Dec. 2014.

2) Ministry of Land, Infrastructure, Transport and Tourism, Road Bureau: From ETC to ETC2.0, <http://www.mlit.go.jp/road/TTS/j-html/etc2/index.html>

Figure 1. Selected Routes between the Tomei Expressway and Kanetsu Expressway

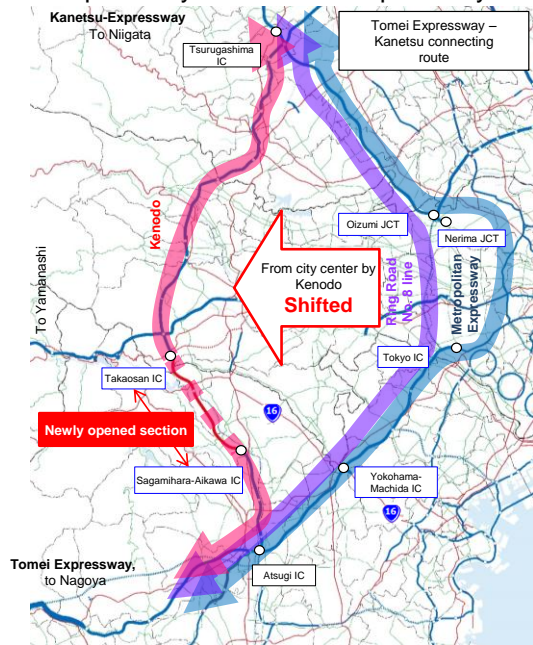
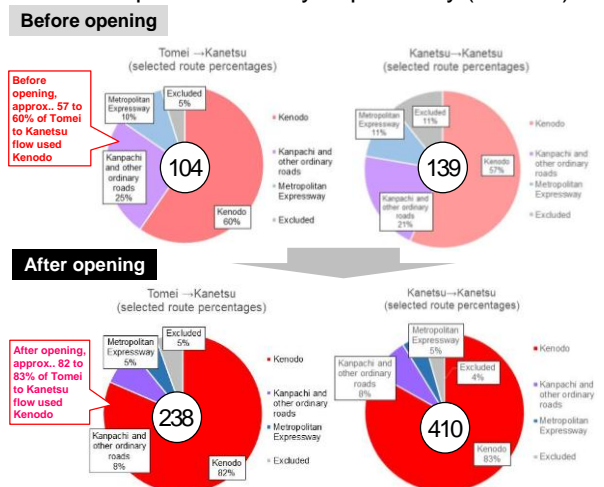


Figure 2. Change of selected route after opening of the Metropolitan Inter-city Expressway (Kenodo)



Data period: Before opening April 1 to June 27, 2014 (approx. 3 months each) After opening July 1 to Sept. 30, 2014

Object extracted and analyzed: The study confirmed the routes traveled by vehicles that entered the Tomei Expressway Ebina JCT within 6 hours after passing through the Kanetsu Expressway Tsurugashima JTC (and in the opposite direction) (Kenodo/Kanpachi or other ordinary road/Metropolitan Expressway). Excluding vehicles that stopped midway