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Effects of information provision activities in streets on driving speeds

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Abstract

Traffic accidents in the streets have become a very serious issue in Japan. In order to reduce the traffic accidents in the streets, a proper speed reduction of the vehicle is important. Although there are many approaches to make the vehicles reduce the speed, this study focuses on a user measures to encourage the speed reduction by providing the information. Recent years, there was a traffic calming study in which some people stand the roadside and then remind the drivers to decrease their driving speeds by showing the vehicle's speed. In this study, by referring the existed study, we tried to grasp the measurement issues from the viewpoint of vehicle behavior such as reduction of the speed, evaluation by the drivers and neighborhoods consciousness, and possibility of the supports by the government in this area. Results obtained in this study are as follows. 1) When provided speed information for the over speed limit vehicles, it was found that the speed is reduced markedly near the provision position. 2) Vehicle speed provision activities were accepted favorably to the driver. In addition, the trend was noticeable to the driver who lives in the vicinity of the activities. 3) It was recognized by neighborhoods that vehicle speed provision activities are effective compared to the traffic safety campaign activity as usual. In addition, the tendency was more remarkable in the people who recognized that the vehicle speed in the street was fast. 4) The problems listed by the road administrators for the spread of vehicle speed information provision activities were the relations with other policies, the generalization of the effects, and consideration for the trouble evasion.

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1. Introduction

The 9th Fundamental Traffic Safety Program has been devised in Japan on March 31, 2011, and street measures were newly included as one of three main viewpoints of road safety measures in the program. The reason is that the proportion of traffic fatalities in the streets has been increasing in recent years. In order to reduce the traffic accidents in the streets, a proper speed reduction of the vehicle is important. Although there are many approaches to make the vehicles reduce the speed, this study focuses on a user measures to encourage the speed reduction by providing the information. Recent years, there was a traffic calming study in which some people stand the roadside and then remind the drivers to decrease their driving speeds by showing the vehicle's speed.

In this study, by referring the existed study, we tried to grasp the measurement issues from the viewpoint of vehicle behavior such as reduction of the speed, evaluation by the drivers and neighborhoods consciousness, and possibility of the supports by the government in this area. Specifically, we carried out the Speed Information Provision Activities (SIPA) by the collaboration with neighborhoods for two districts in Toyota-city, Aichi and investigated a vehicle speed change compared with before and after, and the consciousness of drivers who passed through the streets and the neighborhoods for the activities. In addition, we carried out a hearing investigation to ask about political problems of the SIPA for the police and the road manager who will take on an important role in the activities promotion. The paper structure in this study is as follows. Firstly, feature of present study are described comparing with previous studies. Secondly, details of survey methods are explained. Thirdly, results of the surveys are pointed out. Finally, we discuss about the conclusion of this study.

1.1. Feature of present study

Previously, measures prompting the safe driving by providing information to the driver have been attempted in various ways. These can be divided into two depending on the location of the information provided. One is from the roadside with signboards, and the other is from the inside of the vehicle with a vehicle-mounted device. In both viewpoints, there are lots of studies using the ITS technologies recently (e.g. Warner and Åberg (2008), Gehlert et al. (2012), etc.). For instance, Erke et al. (2007) confirmed effects of route guidance Variable Message Signs on speed and route choice on two sites on motorways. As a result, speed measurements of 3342 vehicles showed large speed reductions. Using a driving simulator, Boyle and Mannering (2004) explored the effects of driving behavior with in-vehicle and out-of-vehicle traffic advisory information relating to adverse weather and incident conditions. They found that the advisory information are significant in reducing speeds in the area of adverse conditions, drivers tend to compensate for this speed reduction by increasing speeds downstream when such adverse conditions do not exist. On the other hand, in the practice field, many measures that utilize the human resources of the region have been incorporated. One of them is the traffic safety activities by local residents.

Generally, the traffic safety activities are known to encourage safety driving at the roadside by local residents who hold placards with a slogan. The effect of its activities is discussed in an indicator such as the number of accidents during the period in many cases. However, a causal relationship with the activity is not always clear because the various factors involved in that indicator. We think that there is a problem in Japanese traffic safety activities that have been conducted with no feeling without the clarified concrete effect.

On the other hand, studies that attempt to propose the traffic safety activities that effect has been confirmed by scientific methods have been carried out in recent years. Kojima and Kubota (2008) distributes a brochure at the roadside utilizing the method of mobility management to encourage behavior change to the driver using rat-runs. As a result, decrease in the traffic volumes of the rat-runs has been confirmed. Fuchu et al. (2011) performed activities that encourage the awareness of speeding by presenting the driver's speed using a placard from the roadside. As a result, it was confirmed that continues to decrease the vehicle speed over a period of time, even after the end of activities as well as in practice.

In order to carry out the activities continuously and smoothly, it is important to coordinate participants such as police, road manager and residents. In this study, we are focusing on speed information provision activities in streets proposed by Fuchu et al (2011), but it has the following features. First, detailed effects of the activities that are not clearly shown in the results of Fuchu et al (2011) have been confirmed. Second, the problem of the spread of the activities has been revealed from the viewpoint of drivers, residents, police and road manager.

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