Drive Recorders
Towards their Application to Safety Measures for Community Roads

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1. Background of the research

Traffic accident fatalities in Japan have tended to decrease in recent years, and fell below 5,000 in 2009 for the first time in 57 years. However, on community roads, the state of traffic safety improvement is still severe compared to that on arterial roads, because hazardous spots are scattered over the extremely high total length of these roads . It is impossible to clarify causes of accidents for each location by analyzing accident data as it is on arterial roads.

Recently, the use of drive recorders has spread rapidly, mainly in taxies, delivery trucks etc.   These devices record images of the road ahead, position, speed, acceleration, application of brakes and so on, of motor vehicles in operation. The use of drive recorders enables us to efficiently collect large quantities of accident or near-miss data on community roads.

The NILIM is conducting research on methods of using scientific data collected by drive recorders to plan and implement safety measures on community roads.
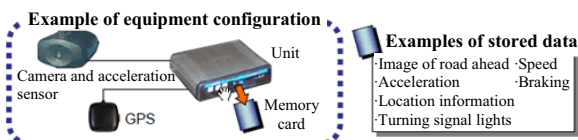

Figure Example of Drive Recorder Configuration

2. Research on use of scientific data

The NILIM is conducting research focused on the following two areas in order to apply drive recorder's data to safety measures on community roads.

1) Extracting Method of near-misses data

Drive recorder's data contain useless data for road safety measures such as data on level differences, as data recorded according to changes in acceleration. In order to apply drive recorder's data for road safety measures, it must be possible to efficiently extract near-misses data. The NILIM is researching methods of efficiently extracting near-misses data focusing on the properties of speed and acceleration wave forms etc.

2) Methods of sharing and accumulating data

In order to apply drive recorder data to road safety measures, road administrators must obtain the cooperation of the taxi and delivery companies who possess such data. The NILIM is researching data sharing and accumulation methods taking advantage of Corporate Social Responsibility (CSR), restoring analysis results, etc., to build cooperative relationships which can gain the benefits of public – private sector interactions.

3. Future research directions

Simple extraction algorithms proposed by the NILIM increased the percentage of near-miss data to more than 80%. The result of research revealed that drive recorder's data improves the selection of hazardous spots and evaluation of safety measures by road administrators without the complex task of image confirmation etc.

The NILIM will provide technical notes on drive recorder data collection and use to regional road administrators who can get an adequate quantity of data from corporations with taxi or delivery companies, citizens, local governments, police, etc. As it is difficult to promptly obtain sufficient data on community roads throughout the nation, we wish to classify patterns of near-misses and safety measures on community roads based on existing data.

The Road Transport Bureau and the Road Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, the National Police Agency, and various other organizations are showing growing concern with the application of drive recorders to traffic safety. The NILIM will deepen its links and cooperative relationships with concerned organizations, in order to make further use of scientific data in the traffic safety field.