

Prevention of slipping accidents of pedestrians – informing the pedestrians about adverse road conditions

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Finnish people walk about one fourth of their daily trips, approximately one kilometre each day. Against all expectations, the most active month for walking trips is March, when the weather and road conditions are more likely to be adverse. Therefore it is not surprising that slipping accidents are the most general accidents in pedestrian wintertime traffic accidents – it has been estimated that over 50 000 Finnish pedestrians slip each winter while walking outside so seriously that they need to seek for medical care for their injuries.

Prevention of slipping accidents is therefore justified not only for economic, but also for human reasons - slipping accidents are especially serious for elderly people, who quite often do not have any other choices for moving around and to whom the consequences for slipping are more serious. In addition to maintenance manoeuvres, the information about means of slipping accident prevention, but also about real-time road conditions is important. In earlier studies it has been noticed that in most of the slipping accidents, the pedestrian has not noticed that the road conditions have been adverse. Therefore an experiment of service where information about adverse road conditions was especially given for pedestrians was started by Finnish Meteorological Institute, Ministry of Social Affairs and Health and Finnish Road Administration.

The experiment where information about adverse road conditions at pedestrian and bicycle ways was distributed in local radio station was started at the Helsinki area in the beginning of winterseason 1998–1999. The experiment was successful and had great acceptance in Helsinki area and therefore the service was expanded in Tampere region in the beginning of winterseason 1999–2000, in Lahti region in the beginning of winterseason 2000–2001 and in Jyväskylä region in the beginning of winterseasons 2001–2002. The free-form information is given to the pedestrian after the regular weather forecast only on days, that the pedestrian and bicycle ways are extremely slippery.

Like in all traffic information services, the evaluation of the service is one of the most important steps while improving the service itself and the information accuracy given by the service. In this paper some evaluation results and improvement actions of the pedestrian adverse road conditions information service are presented. More detailed, the accuracy of the given information was studied. In addition, the hazardous weather conditions implicating the possibility of slippery pedestrian and bicycle ways were described by defining some weather parameters indicating the slippery conditions. Also user-opinions about the necessity and advantages of the service and the possible differences between adverse road conditions for vehicles and for pedestrian were investigated.

The results from national phone interview suggested that although only one-fifth of the interviewed people had heard the information, they indicated that the separate service for pedestrians was useful and was clear benefit compared to regular forecast. It was indicated that this kind of information would have the greatest effects to the pre-trip behaviour, such as selection of footwear and the time reserved to the trip.

In the study the accumulation days of slipping accidents in Helsinki area were investigated from the medical and insurance statistics available during the winter season 1999–2000. Those days were compared to days when the pedestrians were warned about extremely slippery conditions. Overall, the results suggested that the accuracy of the information service was rather good – two of the six accumulation days of slipping accidents were forecasted and warned accurately in the morning. In addition, three of the accumulation days of slipping accidents were forecasted and warned one day too early – in other words the warning should probably have been given the following morning as well. In the other hand, on two days when the warning given, no signs of slippery conditions were seen on slipping accident statistics. This might be due the fact that the slipperiness has been regional and only in few pedestrian and bicycle ways. As a summary, the hazardous weather conditions implicating the possibility of slippery pedestrian and bicycle ways are as follows; rain, sleet or snow, the temperature changing between plus and minus degrees during the day, fast clearing of the weather (clouds) and raining or snowing on top of wet or icy ground.

In addition, the possible congruence between the road condition information to pedestrians or to drivers or the possible congruence between accumulation days of slipping or traffic accidents were studied. The results suggest that the accumulation days for accidents were different for pedestrians and for vehicles. Therefore also the warning information about adverse road conditions for pedestrians and for drivers were given on different days. Also these results suggested the overall conclusion, that separate road conditions information for pedestrian is justified.