

■ 博士學位論文紹介 ■

논문 제목 : 도로의 안전성투자 평가기법에 관한 연구
 (A Study on the Methods of Road Investment Evaluation for the Safety)
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This study aims at considering the changes of its safety when a new highway is constructed. The measures of effectiveness and techniques for evaluating safety of the highway have been developed here. In order to estimate the reduction benefit of traffic accidents by the construction of a new highway, a stated preference analysis has been introduced. Benefits from new highway construction include congestion reduction by traffic accidents.

Regardless of the importance of traffic safety on the highways, traffic safety has not been greatly treated in evaluating the effectiveness on the construction of new highways. It is due to lack of social concerns in comparison with concerns on the economical factors. Recently, the interest in traffic safety tends to increase because of high traffic accidents rates, serious consideration for human-being values, and rapid ascending individual incomes. Also, the fact that criteria of road design are closely related with construction costs provide the higher interest in traffic safety factor on the evaluation for highway construction. Therefore, it is a timely study to include the benefits from reduction of traffic accidents according to new highway construction.

A new approach has been suggested to define the size of the reduction of traffic accidents. The

methodology devised in this research has been examined by comparing with the previous methodology for the Yongdong highway between Shingal and Wonjoo.

As a result of the comparisons, the methodology used in this study shows superior performance in estimating traffic accident benefits. It is judged that the methodology and unit price of traffic accident costs used in this study represents the opinion of drivers on the highways better than the previous ones.

The followings are specific results from the study.

- 1) Benefit of traffic accident reduction takes up 7.7% out of total benefits. The financial benefit amount estimates about six times to the whole construction costs.
- 2) It is shown that the methodology suggested in this research to estimate benefits seems efficient compared to previous methodologies.
- 3) Benefit of reduction by traffic congestion estimates 59.13 billion won, taking up 15.3% out of total construction costs. It means that the benefit from traffic accidents reduction should be included in evaluating the necessity of highway investments
- 4) This study provides a scheme to differentiate accident costs from the real social loss by

applying the traffic safety costs index(utilizing CVM techniques) for the estimation of benefits for highway investments.

- 5) Also, a scheme has been suggested for considering the application of unit price for estimation of traffic safety indices.

As a result of analyzing the safety degree on the study highway, the safety facilities on the highway and the geometry structure of those links have an serious impact on inducing the traffic accidents. It is necessary to reflect these factors on planning and designing the highways. Even though constructing a highway has an impact on reducing

traffic accidents, the analysis including traffic safety factors on the other previous factors could help improve the performance of feasibility study. In case that highway construction has a low feasibility level due to the light traffic volume estimated, reducing traffic accidents rises up the feasibility level in evaluating a highway.

The following research on the relationship between geometry structure of highway and traffic accidents must be conducted to find out the proper size of the traffic accident benefit in highway construction. This study contributes to evaluate efficiently the highway investments, it is expected to reduce traffic accidents by improving the highway environment.