"Average Annual Maintenance Expenditure (AAMEX) Modeling for Indiana Highway Assets: A Statistical and Econometric Analysis of the Effect of an Asset's Age on Expected Maintenance Costs"

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Abstract

Routine maintenance expenditures make up a significant fraction of the overall life cycle costs incurred by highway agencies and thus constitute a key input in life-cycle cost evaluation. Most life cycle cost analyses have proceeded only with very rough approximations of average annual maintenance costs due to difficulty in acquiring data on routine maintenance costs. This difficulty, in turn has been due to inconsistency in pavement section reference points and in reporting periods used in routine maintenance activities (often carried out in-house on force account) and other databases. In addressing this issue, this paper uses data meticulously collected and collated from in-house maintenance records and other data sources to develop a cohesive and comprehensive data set which includes over 6,000 miles of pavement sections in the state of Indiana, a mid-western state located in the wet-freeze climatic zone of the strategic highway research program. Applying an array of statistical and econometric techniques to develop the annual average maintenance expenditure models (AAMEX), the paper identifies a number of explanatory variables that significantly influence AAMEX and examines the sensitivity of the response to each of these variables.

Key Words: average annual maintenance expenditure (AAMEX) models, in-house maintenance, routine maintenance, statistical and econometric modeling

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