Railway Accidents: Using the Global Railway Accident Database and Evaluation for Risk Analysis

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Abstract : The risk of train accidents is an ongoing concern for railway organizations, governments, insurance companies and other depended sectors. Safety technologies are installed to reduce and to prevent potential damages of train accidents. Since the budgetary for the safety of railway organizations is limited, it is necessary not only to achieve a high availability and high safety standard but also to be cost effective. Therefore, an economic assessment of safety technologies is fundamental to create an accurate risk analysis. In order to conduct an economical assessment of a railway safety technology and a quantification of the costs of the accident causes, the Global Railway Accident Database & Evaluation (GRADE) has been developed. The aim of this paper is to describe the structure of this accident database and to show how it can be used for risk analyses. A number of risk analysis methods, such as the probabilistic safety assessment method (PSA), was used to demonstrate this accident database's different possibilities of risk analysis. In conclusion, it can be noted that these analyses would not be as accurate without GRADE. The information gathered in the accident database was not available in this way before. Our findings are relevant for railway operators, safety technology suppliers, assurances, governments and other concerned railway organizations.

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