NON-HOMOGENEOUS POISSON MODELS TO FORECAST AVIATION SAFETY OCCURRENCES AND THEIR SEVERITY

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ABSTRACT: Aviation is a key transportation sector for global development, and safety is essential for its healthy growth and sustainability. Having good forecasting models for the number of safety occurrences and their severity is paramount to adequately manage risks, maintain the confidence of its users and preserve the status of aviation as a safe mode of transport. This forecasting problem is involved due to the presence of complex effects impacting occurrence rates, uncertainty about the future number of operations, and the lack of a well-established occurrence reporting culture. In this seminar, a general forecasting framework for aviation safety occurrences is presented as part of a methodology for the management of aviation safety risks at national level, with novel models as well as novel combinations of earlier models. The practicality of these models is illustrated by the application to one of the 88 different types of occurrences analyzed.