

## **Generalized additive models for assessing the impact of weather on hospital admissions**

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The influence of weather on human health has been studied especially from the last decades (Vasconcelos et al., 2013). These studies aim to relate potential risk factors, e.g. thermal comfort index and air pollutants, with outcomes such as mortality, morbidity, and hospitalization. This relationship between outcomes and risk factors can be explored through generalized linear models (GLMs) or generalized additive models (GAMs), according to the assumption of linearity for describing the risk factor effects (covariates) is realistic or not, respectively. GAMs are particularly useful when there are time-dependent covariates in study. The aim of this talk is to assess the impact of several risk factors on hospital admissions for different types of diseases. Namely, the influence of a human-biometeorological index (physiological equivalent temperature - PET) on daily hospitalizations for myocardial infarction in Portugal. In these scenarios, the outcomes are usually counts and the risk factors vary over time or space. The corresponding data analyses based on GAMs can reveal non-linear influence of the weather patterns, which can be useful to improve the existing regional contingency plans.

### ***Reference***

Vasconcelos, J., Freire, E., Almendra, R., Silva, G.L. and Santana, P. (2013). The impact of winter cold weather on acute myocardial infarctions in Portugal. *Environmental Pollution*, **183**, 14-18.

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