

# Total annual visitor monitoring: A meta-analysis

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Aim of this work is to map recreational use of non-urban ecosystems spatially explicit EU-wide. Therefore, we develop a meta-analytic visitor arrival function by regression analysis. The model allows for predictions of annual visitors per hectare.

Primary data on the dependent variable were collected from visitor monitoring studies across the entire EU, mainly from northern Europe. In total, we analysed more than 51 studies, with over 200 samples. Explanatory variables of the model can be divided into (1) site characteristics, (2) context characteristics and (3) study characteristics. Site characteristics describe the site itself, such as land-cover and naturalness; context characteristics describe the spatial context of the site, such as the availability of substitutes and accessibility. They were derived from multiple biophysical and socioeconomic GIS-data, which were taken from existing data-sets or produced by processing these datasets. Study characteristics describe the methodology of primary data collection and may thereby account for impacts of different visitor counting methods on the visitor monitoring study result.

Preliminary regression results show more than 60% of explained variance, thus proving the possibility of mapping recreational use across different European countries based on primary data from multiple sources. Predominant explanatory variable is accessibility, describing how easy a site can be accessed by how many people. However, also site and other context characteristics play a considerable role for predicting visitors. Methodological variables do not correlate with final visitor estimates at a statistically significant level, but some study quality indicators do so with the residuals of the studies.

The work may contribute to identify best-practice methods for visitor monitoring. Furthermore, it allows for the identification of areas with high recreational importance and gives insights into the main drivers of recreational use. Thereby, it may give guidance for land-use and site management policies.