

FOEHN WINDS AND HEAT

The risk of hospitalization associated with foehn winds and heat in the mountainous region of Switzerland

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Motivation & Methods

Foehn winds are intense warm mountainous winds that intensify with climate change and affect rural, older, more heat-vulnerable populations. Their health impact and interaction with heat remain poorly understood.

Do foehn winds increase the risk of hospitalization and is this association independent from temperature? Do foehn winds increase the risk of hospitalization associated with heat? Are certain subpopulations more vulnerable to both effects than others?

We used daily cause-specific hospitalizations per Medstat-region aggregated to foehn wind observing meteorological stations combined with daily foehn wind intensity and daily mean temperature (1998-2019). We applied a case-time series analysis with DLNMs.

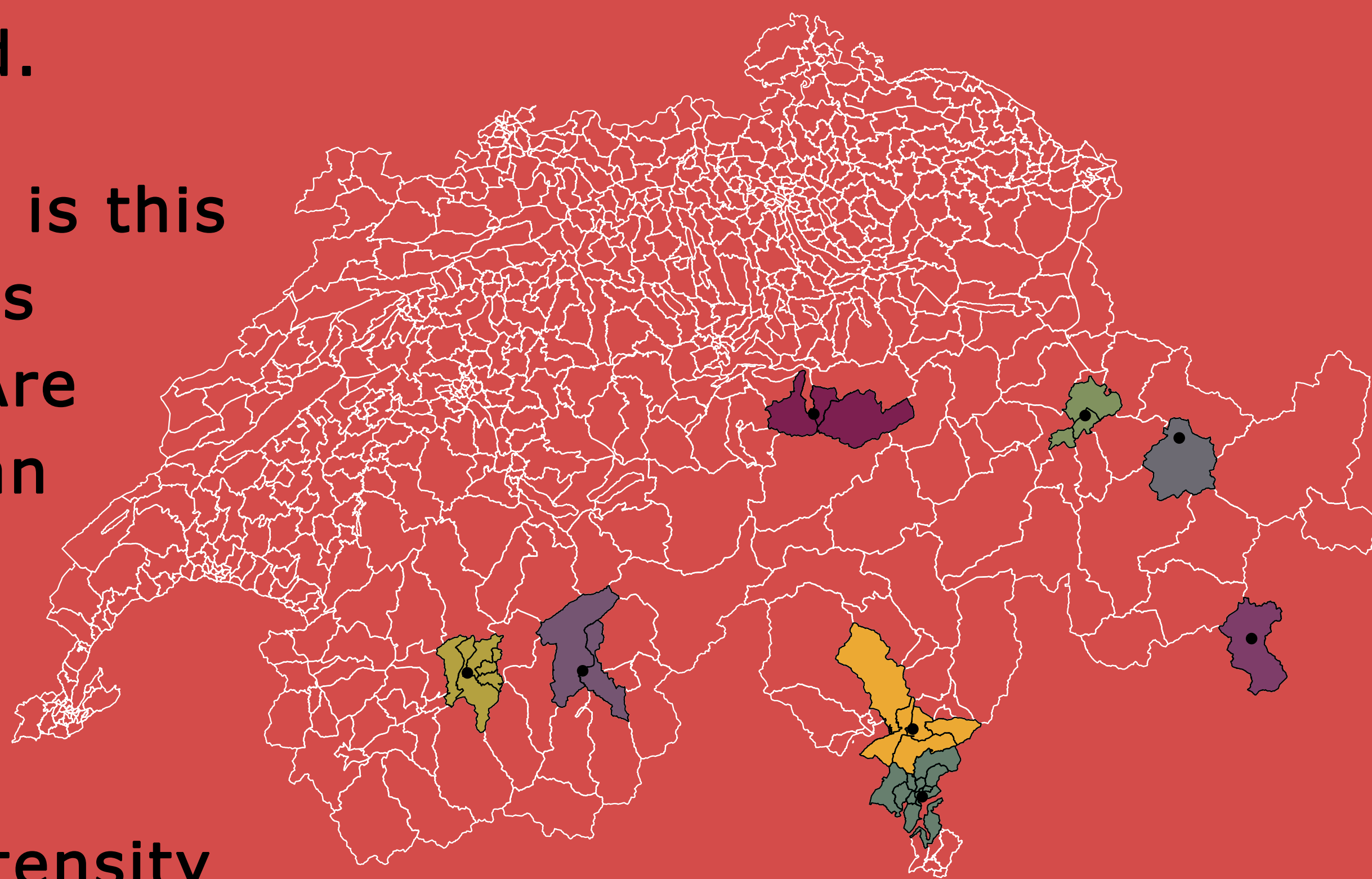


Fig 1: Map of Switzerland with selected meteorological stations indicated by black dots and corresponding Medstat regions in color around them.

Results

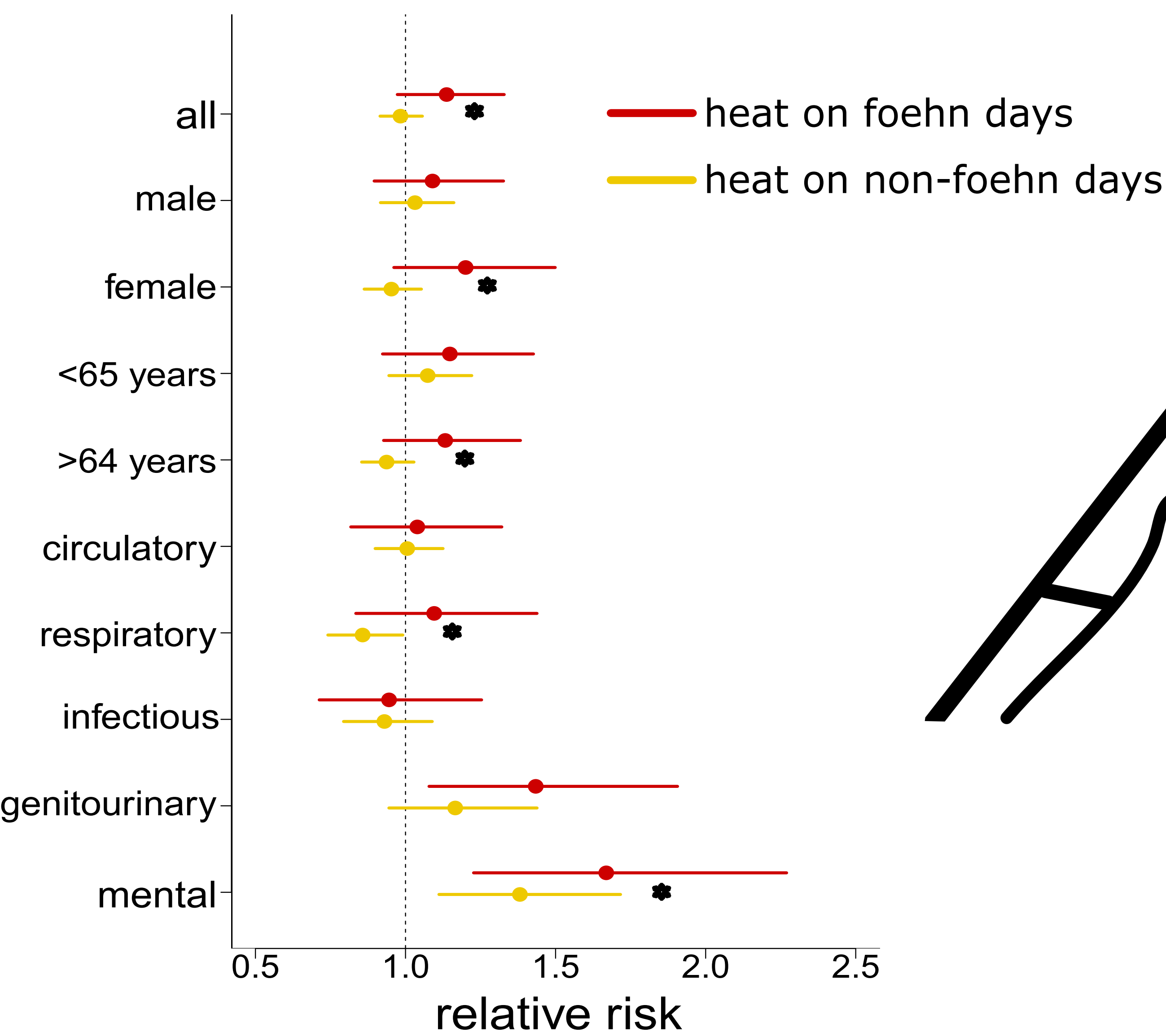


Fig 2: Cumulative relative risk for exposure of 24.7°C (99th percentile) divided by foehn wind presence (threshold daily foehn wind intensity 72). Significant interaction are indicated by *.

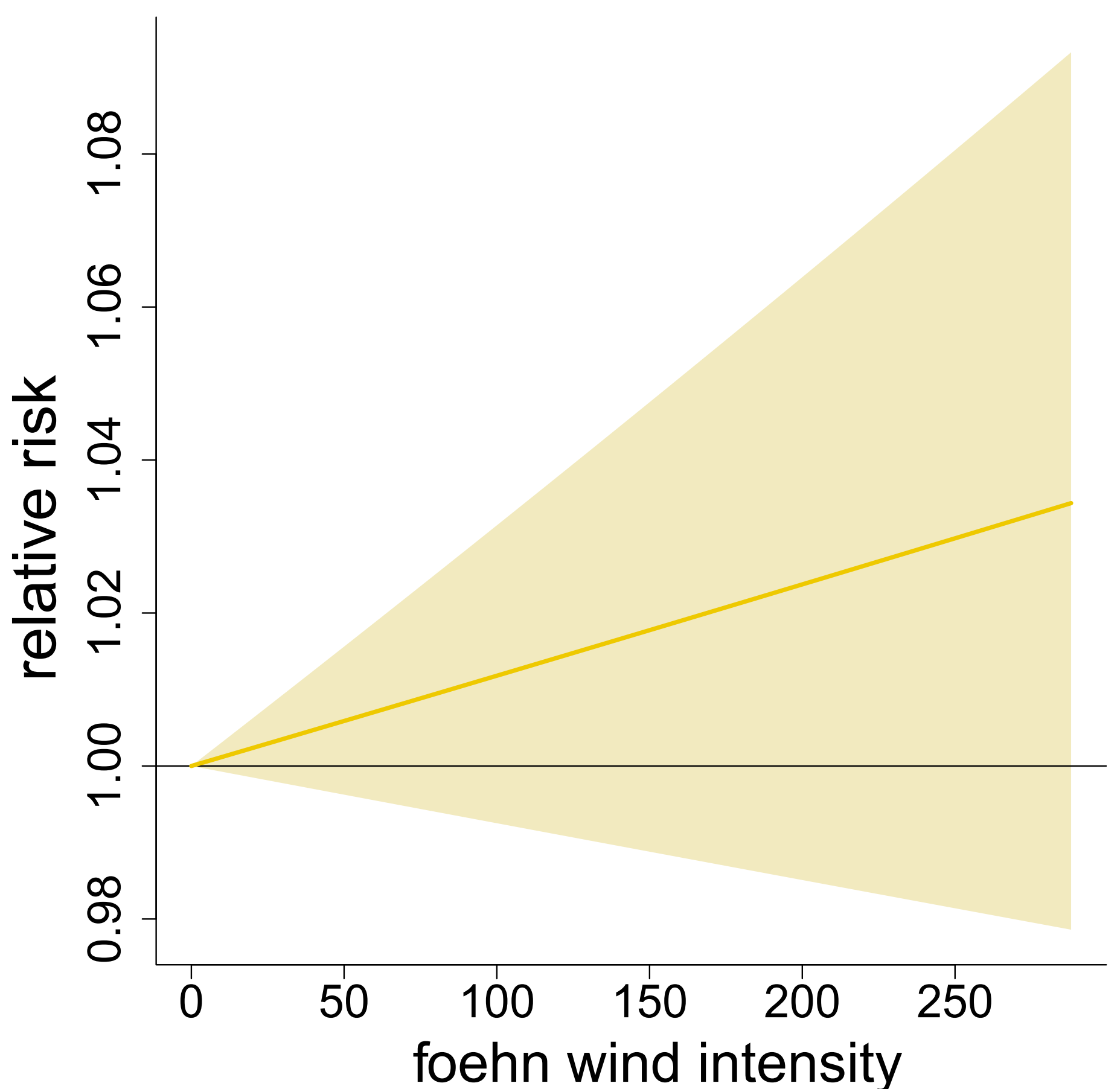
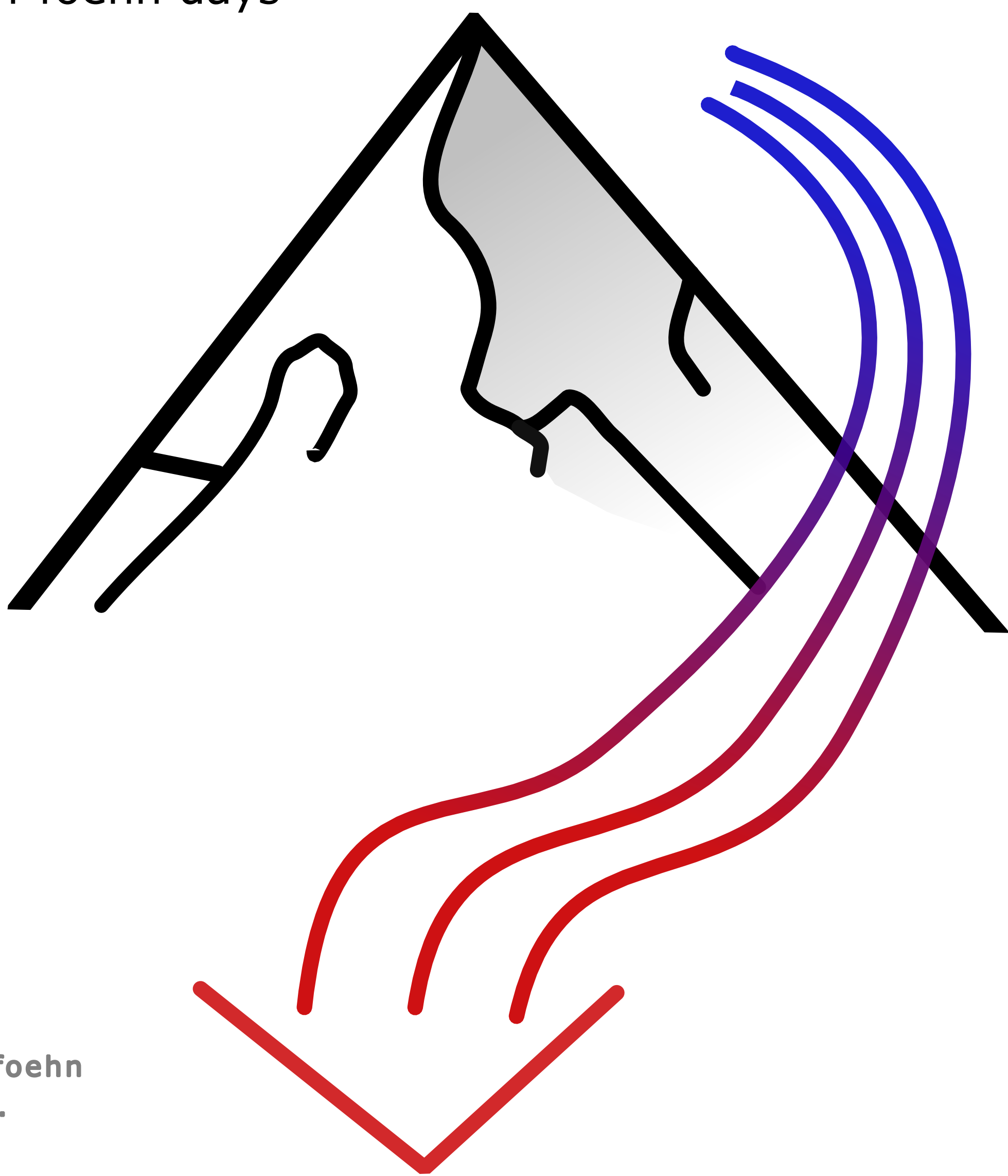


Fig 3: Cumulative relative risk for foehn wind intensity exposure for all-cause hospitalizations.

There is no direct association between foehn winds and hospitalizations, even when adjusted for daily mean temperature and across all subgroups. However, foehn wind presence increases the risk of heat-related all-cause hospitalization. During heat, foehn winds disproportionally affect females, older individuals, respiratory and mental hospitalizations.

Foehn winds increase the risk of hospitalization during heat, especially for females, older individuals, respiratory and mental hospitalizations.