



**HAL**  
open science

# Assessing Vulnerability to Health Impacts of Climate Change in French Municipalities

Hiago Pereira Barbosa, Anne Roué Le Gall, Marie-Florence Thomas

► **To cite this version:**

Hiago Pereira Barbosa, Anne Roué Le Gall, Marie-Florence Thomas. Assessing Vulnerability to Health Impacts of Climate Change in French Municipalities. *European Journal of Public Health*, 2023, 33 (Supplement\_2), 10.1093/eurpub/ckad160.229 . hal-04285572

**HAL Id: hal-04285572**

**<https://hal.science/hal-04285572>**

Submitted on 14 Nov 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

based tools for local decision-makers are needed. This study aims to present the development and application of a multicriteria decision analysis (MCDA) model to assess vulnerability to the health impacts of climate change in French municipalities.

**Methods:**

We selected 59 municipalities to develop and apply the model. The development of the MCDA model involved a literature review on climate change and health, as well as active participation from an interdisciplinary committee composed of members from academic, associative, and professional sectors. This led to identifying 38 indicators to characterize vulnerability based on three components: climatic exposure, environmental and socioeconomic sensitivity, and adaptive capacity. These indicators were used as input to the MCDA model, which applied an outranking method to rank municipalities from most to least vulnerable.

**Results:**

The MCDA model generated partial rankings by the components of vulnerability, as well as a complete ranking that integrated the three components. The results revealed the main indicators that explained the rankings and allowed for a typology of municipalities. The results helped prioritize interventions by identifying the indicators that have the greatest impact on the vulnerability of each municipality studied.

**Conclusions:**

This study highlights the importance of considering multiple criteria and their interdependencies when assessing vulnerability. The results of the MCDA model provide an evidence-based tool to support decision-making processes at the local level. The MCDA model is a valuable tool for identifying and prioritizing effective interventions to reduce vulnerability in the studied municipalities.

**Key messages:**

- The developed MCDA model is a valuable tool for local decision-makers to prioritize interventions and reduce vulnerability.
- The developed MCDA model provides a robust evidence-based tool to support decision-making processes.

**Abstract citation ID: ckad160.229**  
**Assessing Vulnerability to Health Impacts of Climate Change in French Municipalities**

Hiago Pereira Barbosa

*H Pereira Barbosa<sup>1</sup>, A Roué-Le Gall<sup>2</sup>, M-F Thomas<sup>1</sup>*

<sup>1</sup>University Rennes, EHESP, Inserm, Irset -Umr\_s 1085, Rennes, France

<sup>2</sup>University Rennes, EHESP, Cnrs, Arenes – Umr 6051, Rennes, France

Contact: hiago.pereirabarbosa@ehesp.fr

**Background:**

Climate change significantly threatens human health, particularly in vulnerable municipalities. Multiple climatic, environmental, and socioeconomic factors influence municipal vulnerability. To effectively reduce this vulnerability, evidence-