

**Plain Language Summary:** In this study, a generalized linear model was used to predict the number of heatstroke emergencies in the near future (2031-2050). The results showed that the rate of increase in the number of heatstroke emergencies from the baseline (1981-2000) to the near future was about 2.6 times (considering climate change and population dynamics). We also examined the extent to which the number of heatstroke emergencies could be reduced by taking into account the acquisition of heat tolerance and changes in lifestyle.

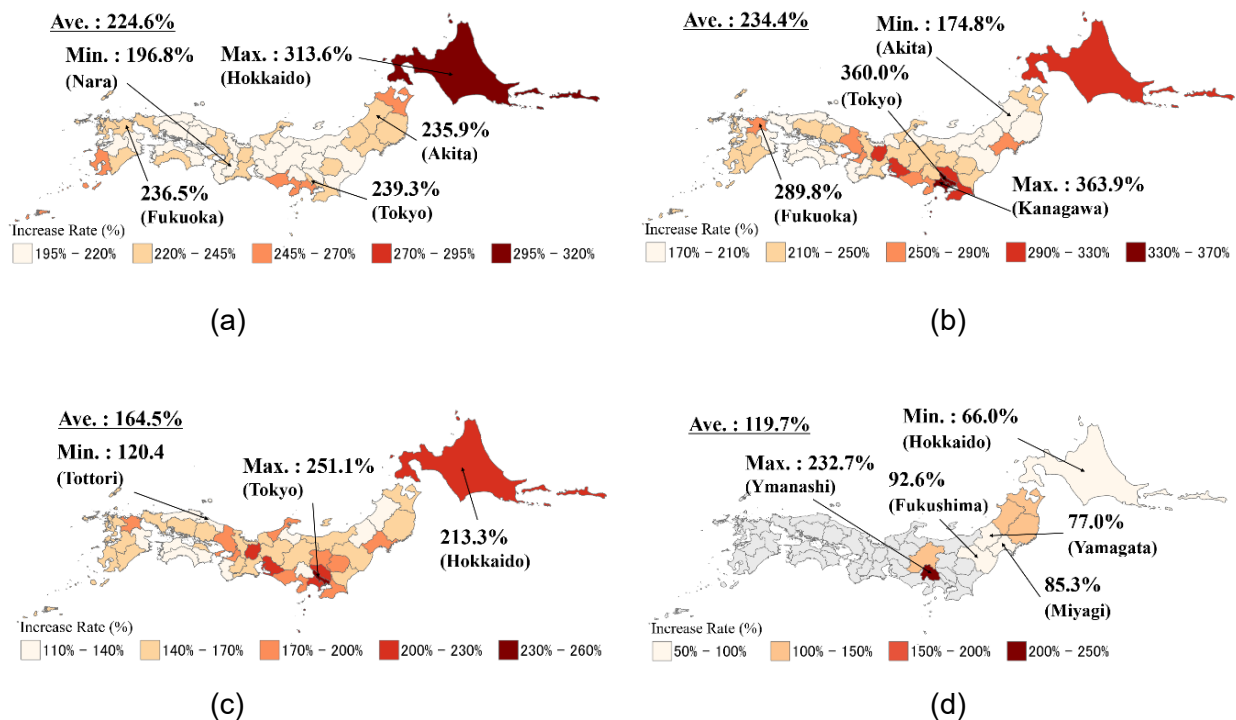


Fig.1 The rate of increase in the patients with heatstroke from baseline period to the near future (RCP8.5 scenario) using daily maximum temperature as the explanatory variable. (a) prediction without population dynamics, (b) prediction with population dynamics, (c) An experiment assuming that people have acquired heat tolerance equivalent to that of late summer since early summer. (d) An experiment that takes into account lifestyle changes, such as the widespread use of air conditioners. The areas shaded by gray color are outside of analysis target.

## Highlight

- In this study, we used a statistical model (GLM) that takes into account heat acclimatization throughout the summer to predict the number of emergency heatstroke near future (2031-2050).
- The risk of heatstroke from the residents' perspective will increase about 2.2 times on average nationwide from the baseline (1981-2000) to near future (2031-2050).
- The risk of heatstroke from the administrative perspective will increase by a factor of 2.3 on average from the baseline to the near future.
- There is much room for risk control in cold regions by promoting the acquisition of heat tolerance and lifestyle changes.