

# Increasing climate change changes household medical expenditures

Zhu, Dianyue; Liu, Miaomiao; Li, Ruoqi; Shan, Yuli; Zhang, Haofan; Bi, Jun; Hubacek, Klaus

DOI:

[10.5194/egusphere-egu24-16105](https://doi.org/10.5194/egusphere-egu24-16105)

License:

Creative Commons: Attribution (CC BY)

*Document Version*

Publisher's PDF, also known as Version of record

*Citation for published version (Harvard):*

Zhu, D, Liu, M, Li, R, Shan, Y, Zhang, H, Bi, J & Hubacek, K 2024, Increasing climate change changes household medical expenditures. in *EGU General Assembly 2024.*, EGU24-16105, EGU General Assembly 2024, Vienna, Austria, 14/04/24. <https://doi.org/10.5194/egusphere-egu24-16105>

[Link to publication on Research at Birmingham portal](#)

## General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

## Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact [UBIRA@lists.bham.ac.uk](mailto:UBIRA@lists.bham.ac.uk) providing details and we will remove access to the work immediately and investigate.

EGU24-16105, updated on 14 Mar 2024

<https://doi.org/10.5194/egusphere-egu24-16105>

EGU General Assembly 2024

© Author(s) 2024. This work is distributed under the Creative Commons Attribution 4.0 License.



## Increasing climate change changes household medical expenditures

Dianyu Zhu<sup>1</sup>, Miaomiao Liu<sup>1</sup>, Ruoqi Li<sup>1,2</sup>, Yuli Shan<sup>2</sup>, Haofan Zhang<sup>1</sup>, Jun Bi<sup>1</sup>, and Klaus Hubacek<sup>3</sup>

<sup>1</sup>State Key Laboratory of Pollution Control and Resource Reuse, School of the Environment, Nanjing University, People's Republic of China

<sup>2</sup>School of Geography, Earth and Environmental Sciences, University of Birmingham, U.K.

<sup>3</sup>Integrated Research on Energy, Environment and Society (IREES), Energy and Sustainability Research Institute Groningen (ESRIG), University of Groningen, The Netherlands

Climate change is exacerbating global disease risks, which will change household medical expenditures. Employing machine learning techniques and fine-scale bank transaction data, this study explores the changing household medical expenditures in 290 Chinese cities under four SSP scenarios (SSP1-2.6–SSP2-4.5–SSP3-7.0–SSP5-8.5) and further evaluates the adaptive impacts from socio-economic and physiological adaptations. The results show that the increasing temperature is projected to decrease future medical expenses in China by 5.24% (SSP1-2.6) to 5.60% (SSP5-8.5) in 2060. Cities exhibit differentiated sensitivity to increasing temperatures. Richer cities have enhanced resilience to high temperatures, and cold regions demonstrate less vulnerability to extreme cold weather. Physiological adaptation to climate change can significantly reduce medical expenditures by 27.6% by 2060. Meanwhile, socio-economic adaptation is expected to amplify national total medical expenses by 22.5% in 2060 under the SSP5-8.5 scenario. Our study incorporates adaptation into the prediction of future medical expenditures in China, aiming to assist cities in devising tailored climate adaptation strategies to alleviate the household economic strain induced by climate change.