

Who is more vulnerable among the most vulnerable?

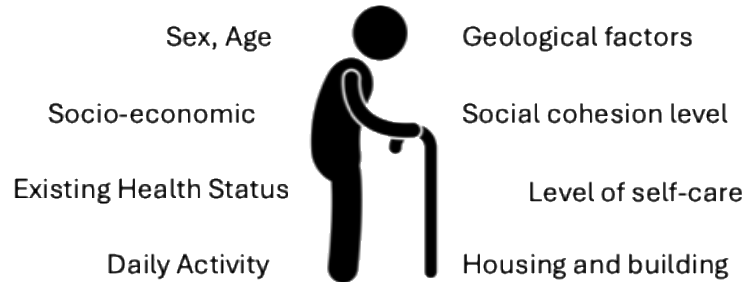
Assessing vulnerability profiles to heat in older adults in Switzerland

Sujung Lee

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Gaps in Current Research

Who is more vulnerable?

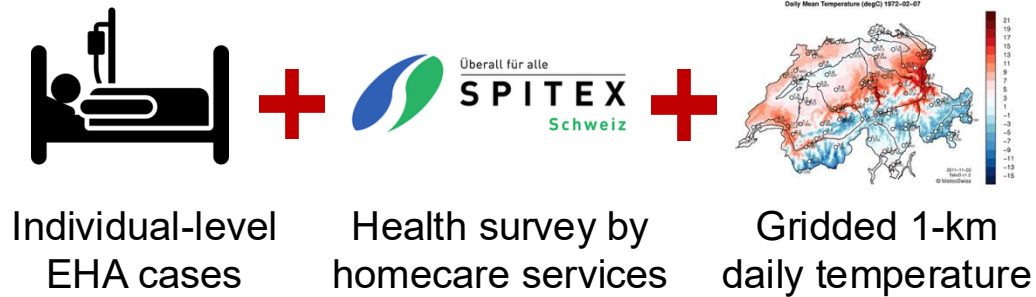


- How **older individual characteristics modulate its effects** remains unclear
- There is **limited availability of detailed health information**

Aim of the study

Examine how individual characteristics of older adults modulate their vulnerability to heat in terms of emergency hospital admissions (EHA)

Data & Methods



Case time series design
quasi-Poisson regression
with **DLNM**

Results

Sex-specific differences



- Living with a partner
- History of **cancer, fractures, COPD**
- Primary diagnosis: **endocrine, respiratory** disease



- Living with others (e.g., caregivers)
- History of **anxiety, Dementia/Alzheimer's, urinary tract infections**
- Primary diagnosis: **skin, infectious, genitourinary** diseases

Daily tasks & Social interaction



Without assistance



Higher social interaction



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Assessing vulnerability profiles to heat in older adults in Switzerland

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EGU25 - Vienna, April 2025



Who is more vulnerable?





Aims of the study



Lynchpics / Alamy Stock Photo

Evaluation of heat-related health risks using emergency hospital admissions (EHA) in Switzerland

- 1) Quantify the risk of EHA among older adults (aged ≥ 65 years) associated with heat episodes
- 2) Identify clinical profiles of old individuals with a higher risk of EHA during heat episodes (e.g., pre-existing health conditions, capacity of daily activities, social interaction level).

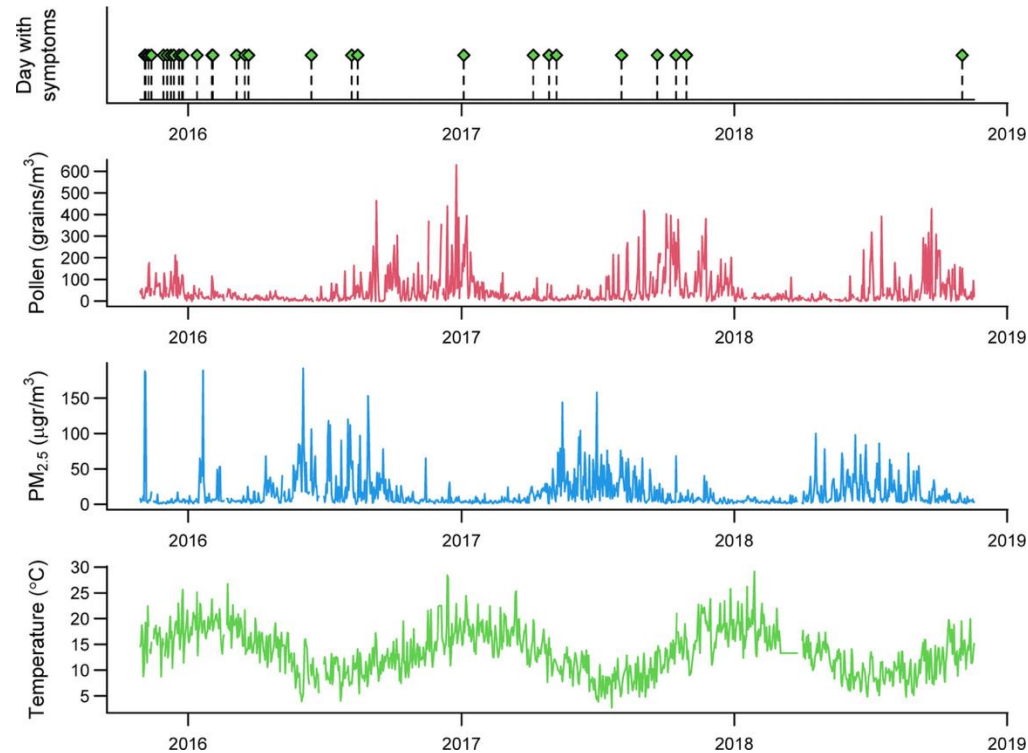


Data





Study Design



Gasparrini 2021

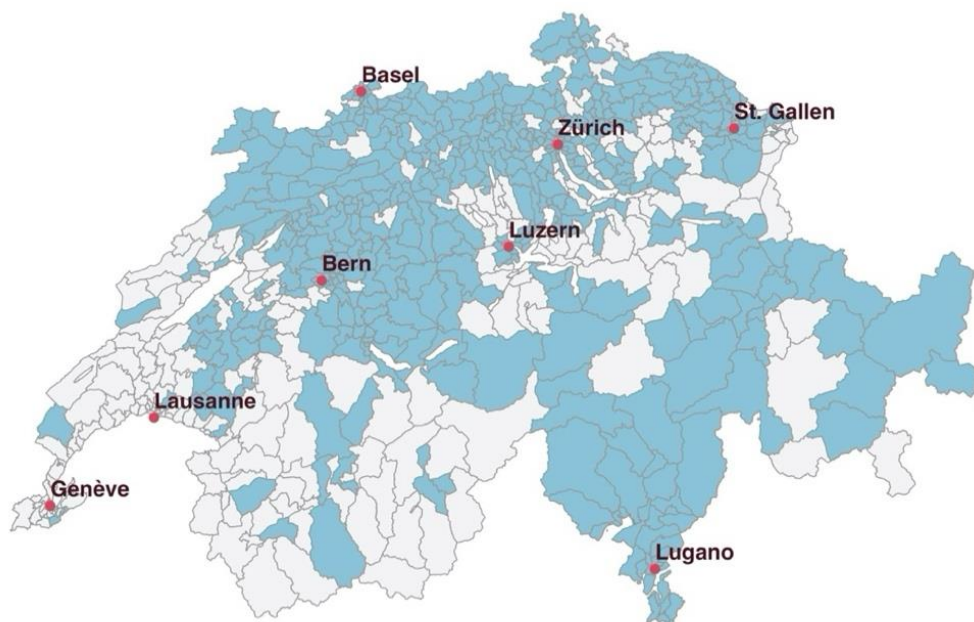
The Case Time Series Design

- Individual level setting + temporal structure:
Reconstruction of **longitudinal profiles** of health outcomes
and time-varying predictors in **subject-specific series**

quasi-Poisson regression analysis with DLNM



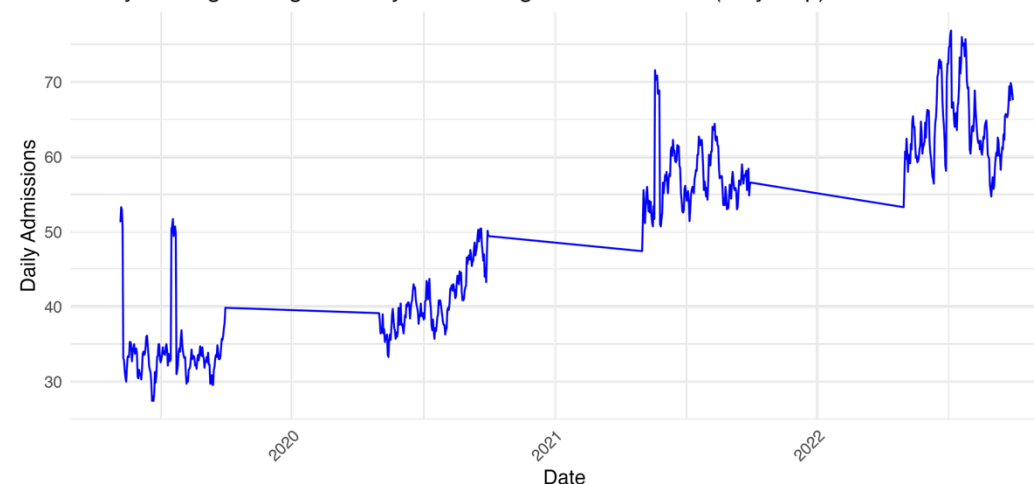
Descriptive statistics



**Spatial Coverage of EHA during warmer months
(May - September) between 2019-2022**

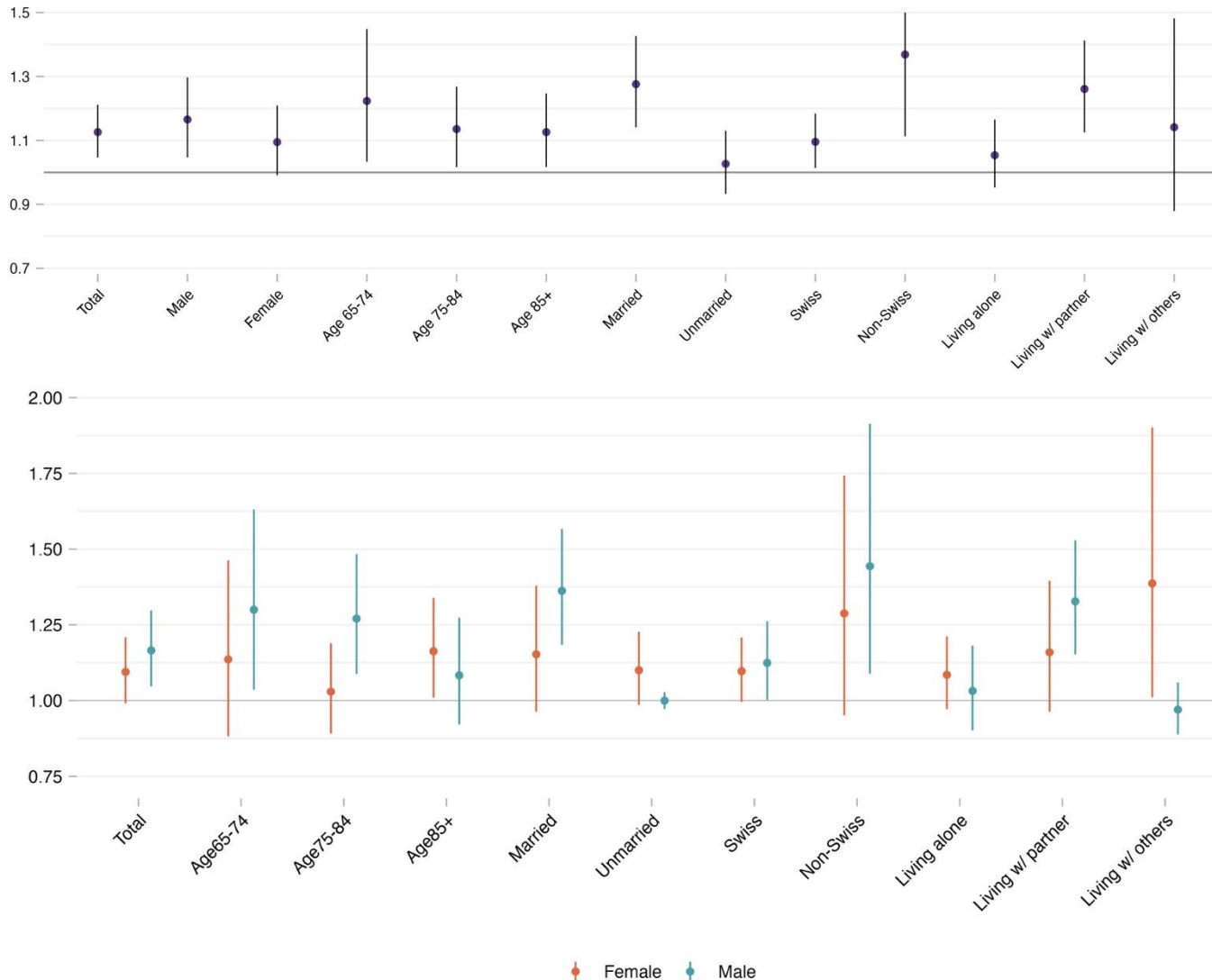
Age	Number of EHA			Number of patients		
	Male	Female	Total	Males	Female	Total
Total	13,954	16,313	30,267	8,427	10,583	19,010
65-74	3,170	2,653	5,823	1,817	1,630	3,447
75-84	6,081	6,680	12,761	3,707	4,327	8,034
85+	4,703	6,980	11,683	2,903	4,626	7,529

7-Day Moving Average of Daily EHA during warmer months (May-Sep)





Overall & sex-specific differences in heat-EHA risks



Overall, **13%** higher heat-EHA risks

Higher risk in **younger age** groups (65-74)

Subgroups with higher heat-EHA risks:



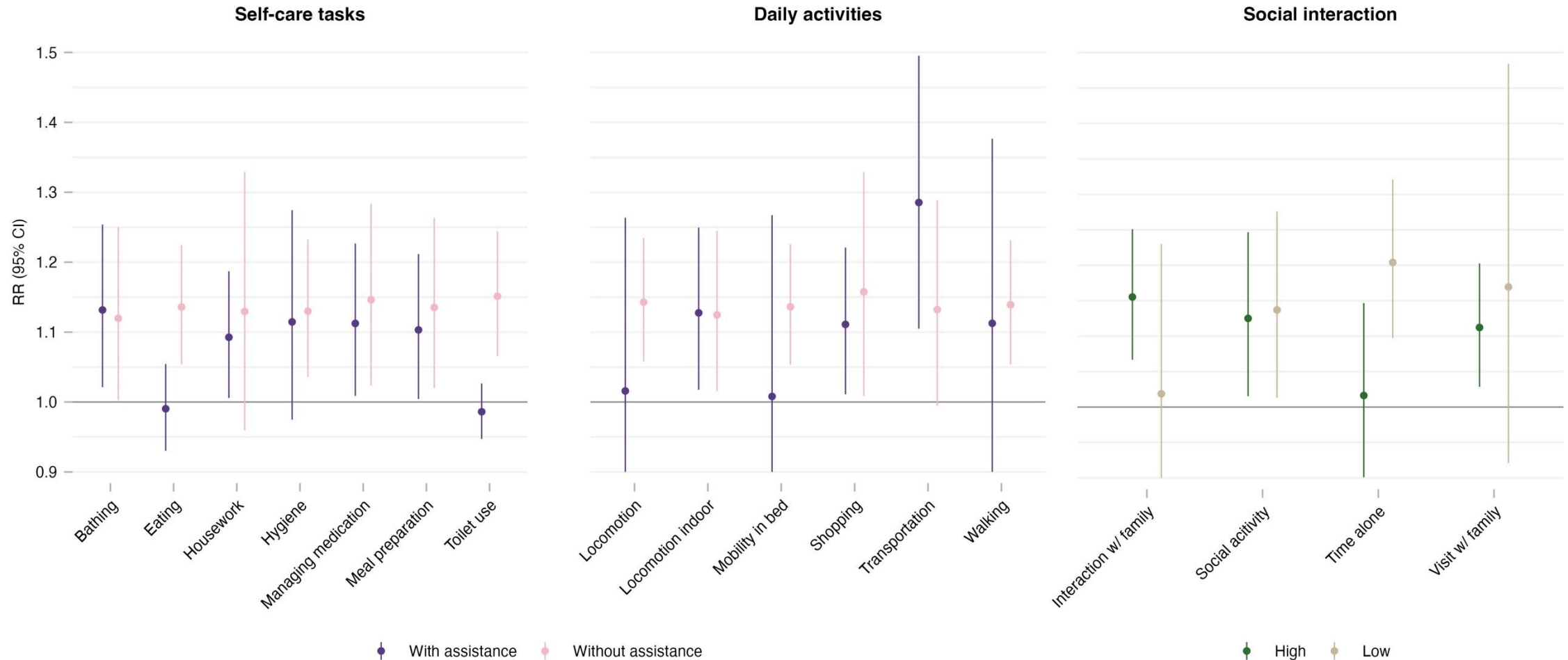
- **Younger** age group (age 65-84)
- Living with a **partner**



- **Older** age group (age 85+)
- Living with **others** (e.g., caregiver)

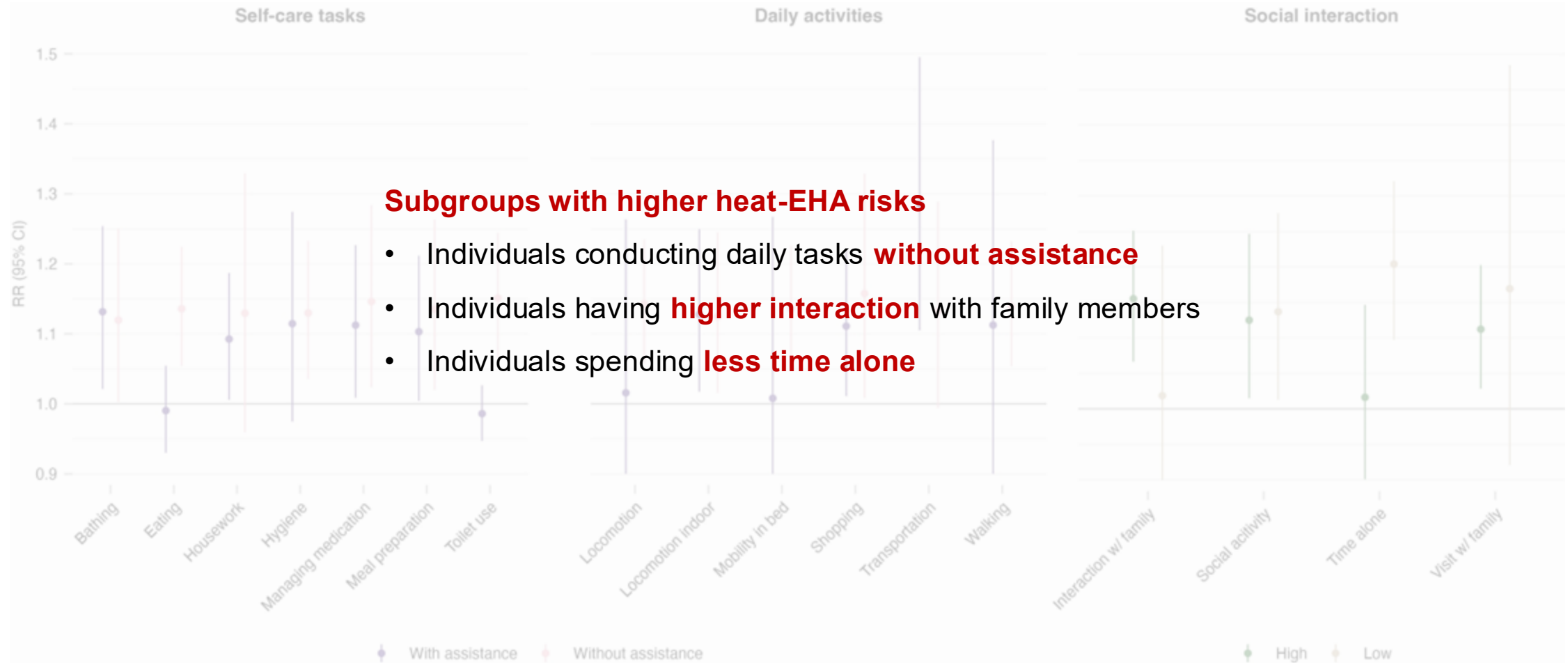


Impact of daily task capacity and social interaction





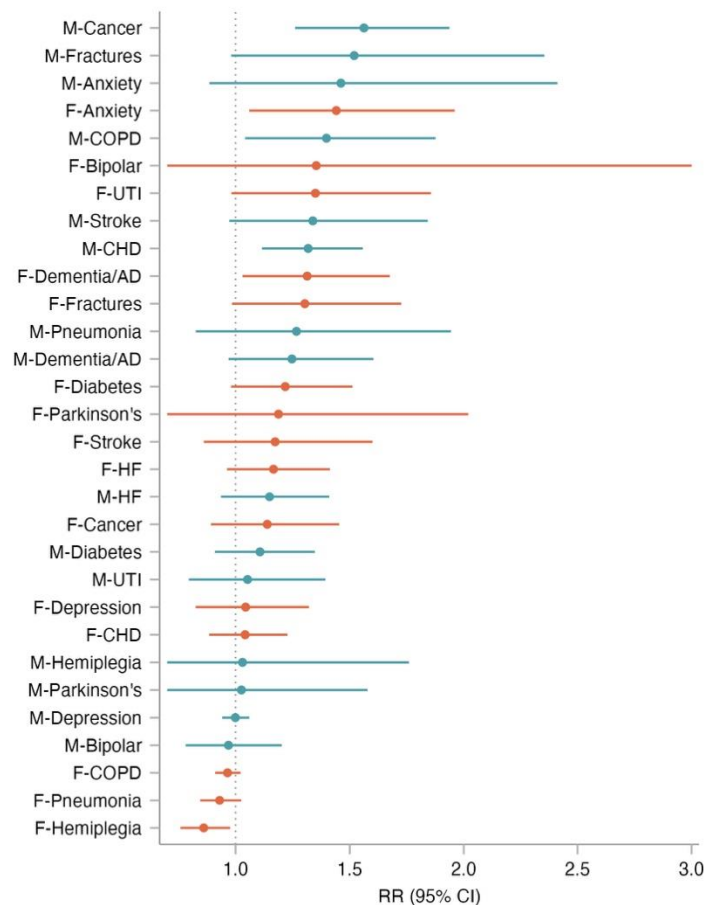
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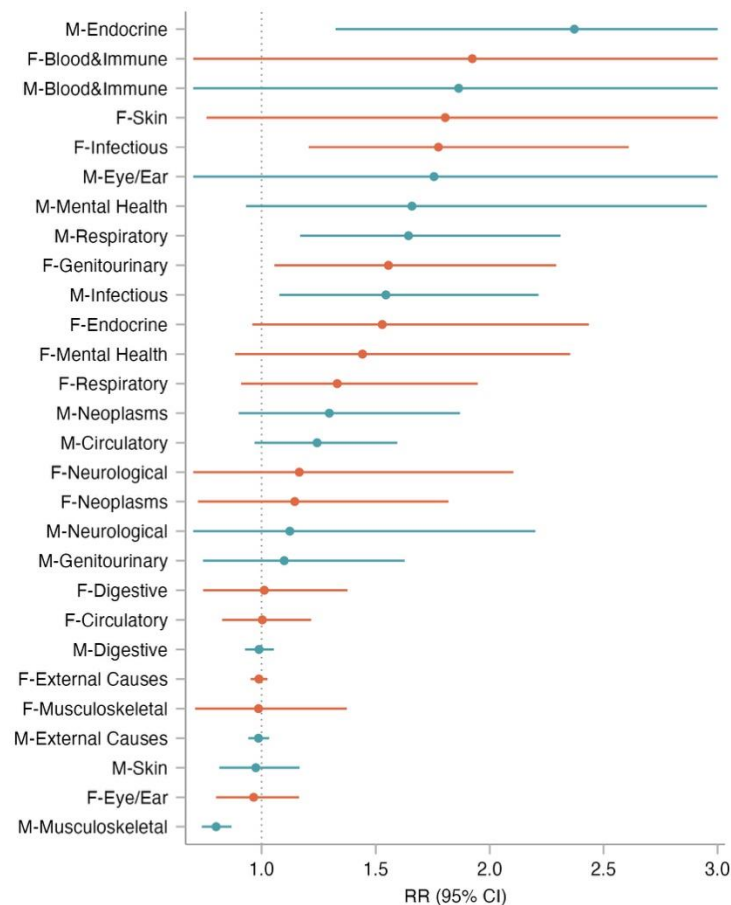


Pre-existing health conditions and main diagnosis

a Pre-existing health conditions



b Primary diagnosis of the admission



Sex ● Female ● Male

Subgroups with higher heat-EHA risks



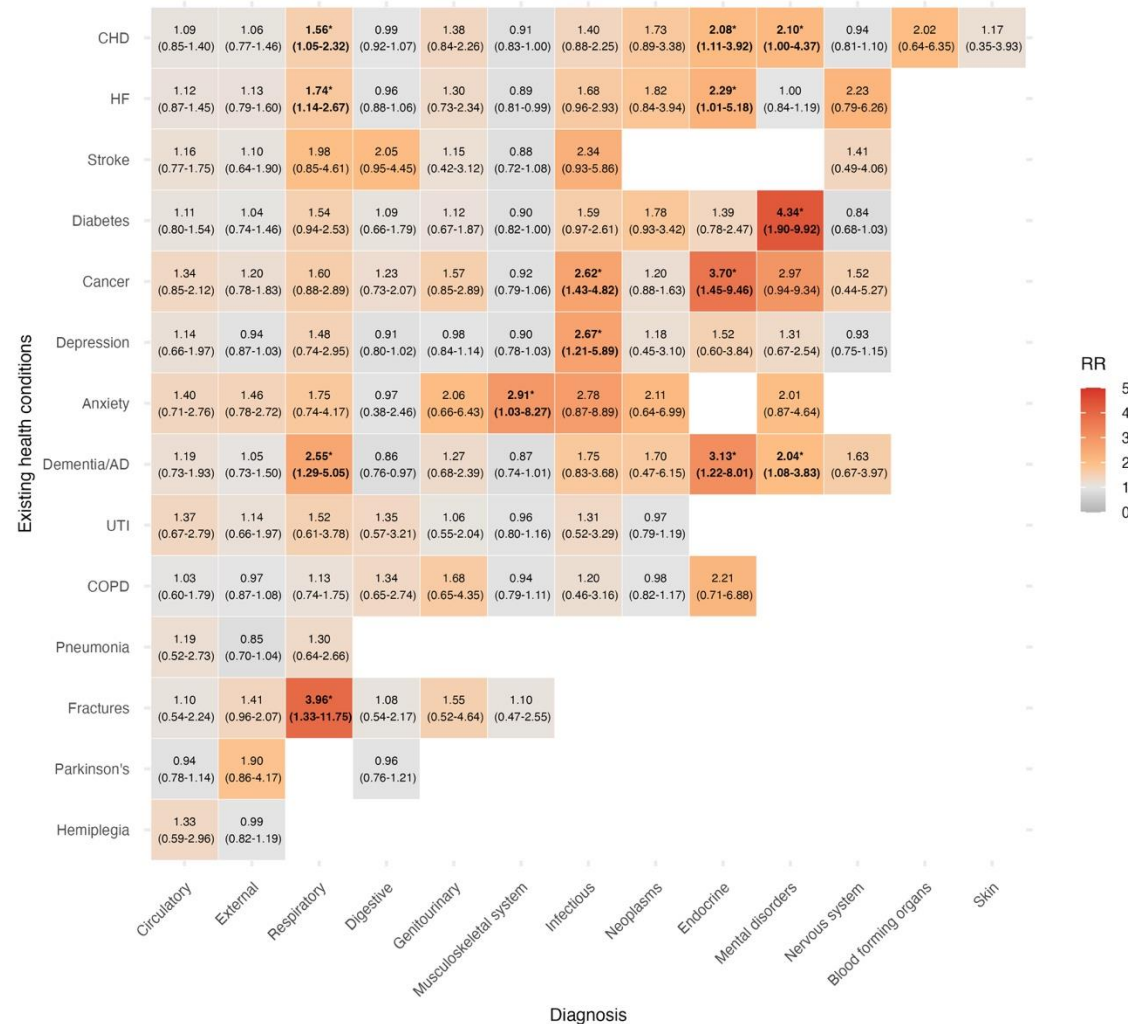
- History of **cancer**, **fractures**, **COPD**
- Primary diagnosis: **endocrine**, **respiratory** disease



- History of **anxiety**, **UTI**, **Dementia/Alzheimer's**
- Primary diagnosis: **skin**, **infectious**, **genitourinary** diseases



Pre-existing health conditions and main diagnosis



Existing CHD or dementia/Alzheimer's disease

- Respiratory diseases
- Endocrine and metabolic disorders
- Mental disorders

Existing cancer

- Infectious diseases
- Endocrine and metabolic disorders

Existing diabetes

- Mental disorders



Take-home message

Sex-specific differences

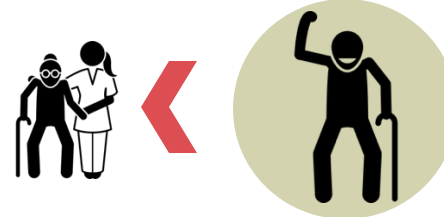


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Daily tasks & Social interaction

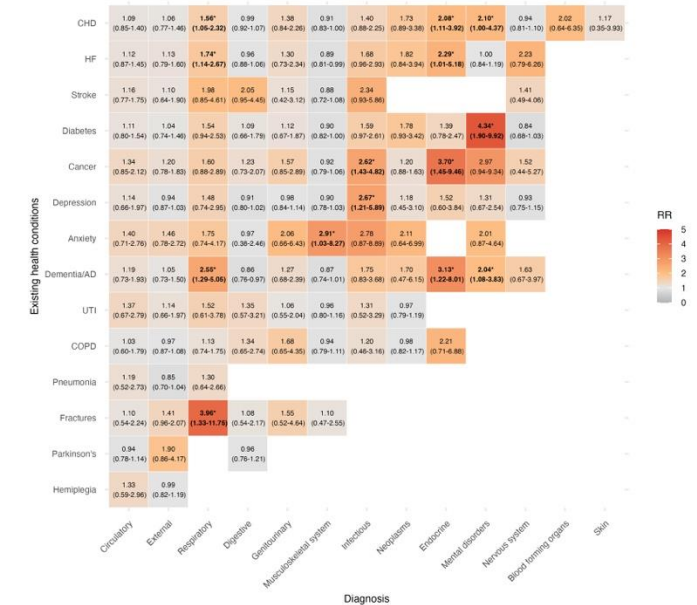


Without assistance



Higher social interaction

Existing health condition & main diagnosis





Thank you!

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