

Mapping the Gap: Visualizing and Understanding Discrepancies Between Climate Extremes, Environmental Attitudes, and Political Action

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Motivation and Research Question

- Public awareness of climate change has grown around the world – yet climate opinion and action remain highly polarized
- Limited understanding of the detailed spatial patterns and the extent to which geographic variation in climate opinion and behavior is influenced by exposure to climate extremes
- Contribution to a growing, but inconclusive, literature on the link between extreme weather experience and peoples' attitudes and behavior ([1]–[5])

Research Question

- Does regional exposure to climate extremes influence individuals' environmental attitudes and political action?

Hypotheses

- H₁: Regional heat-drought exposure (↑) → Climate change concerns (↑)
- H₂: Regional heat-drought exposure (↑) → Green support/vote (↑)
- H₃: Regional heat-drought exposure (↑) → Fridays for Future protest (↑)



Empirical Design and Data

- Uni-/bivariate analysis on regional level (n = 400 German districts and 4,600 German municipal associations)
- Multivariate analysis on individual level (n = 9,627–21,569 persons in Germany)

Independent Variables

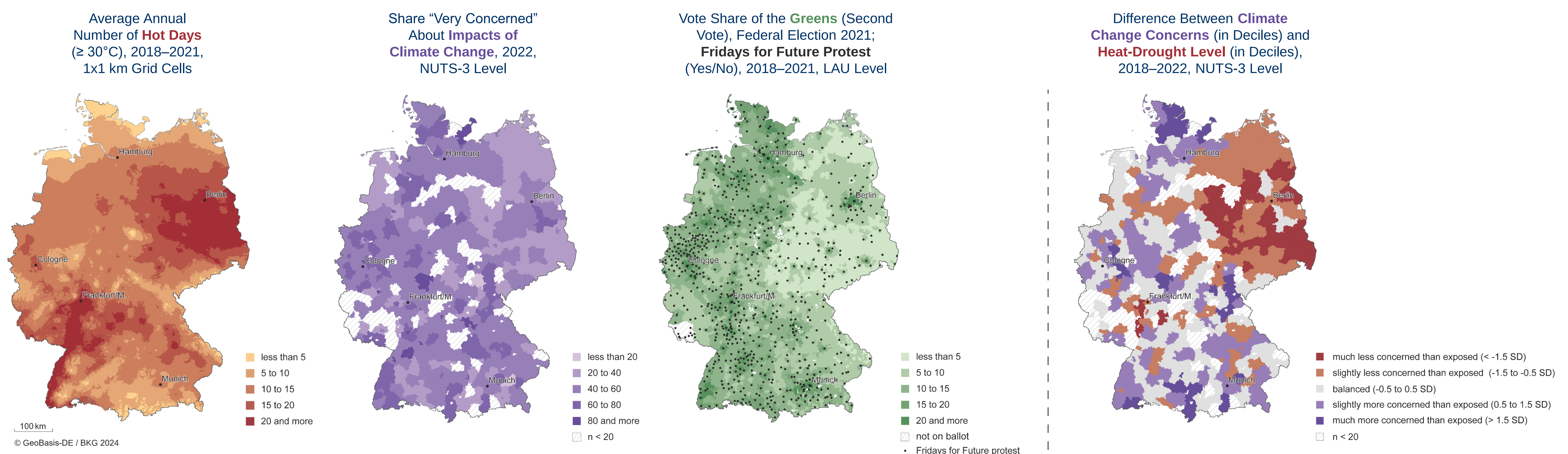
- Regional heat-drought level as a combination of number of hot days and de Martonne dryness, DWD, 2018–2021 (= spatial proximity)
- Heatwave during SOEP interview, DWD, 2022 (= temporal proximity)

Dependent Variables

- Climate change concerns, SOEP, 2022
- Leaning towards the Greens, SOEP, 2022
- Vote share of the Greens, Federal Election, 2021
- Local Fridays for Future protest, Valentim (2023 [6]), 2018–2021

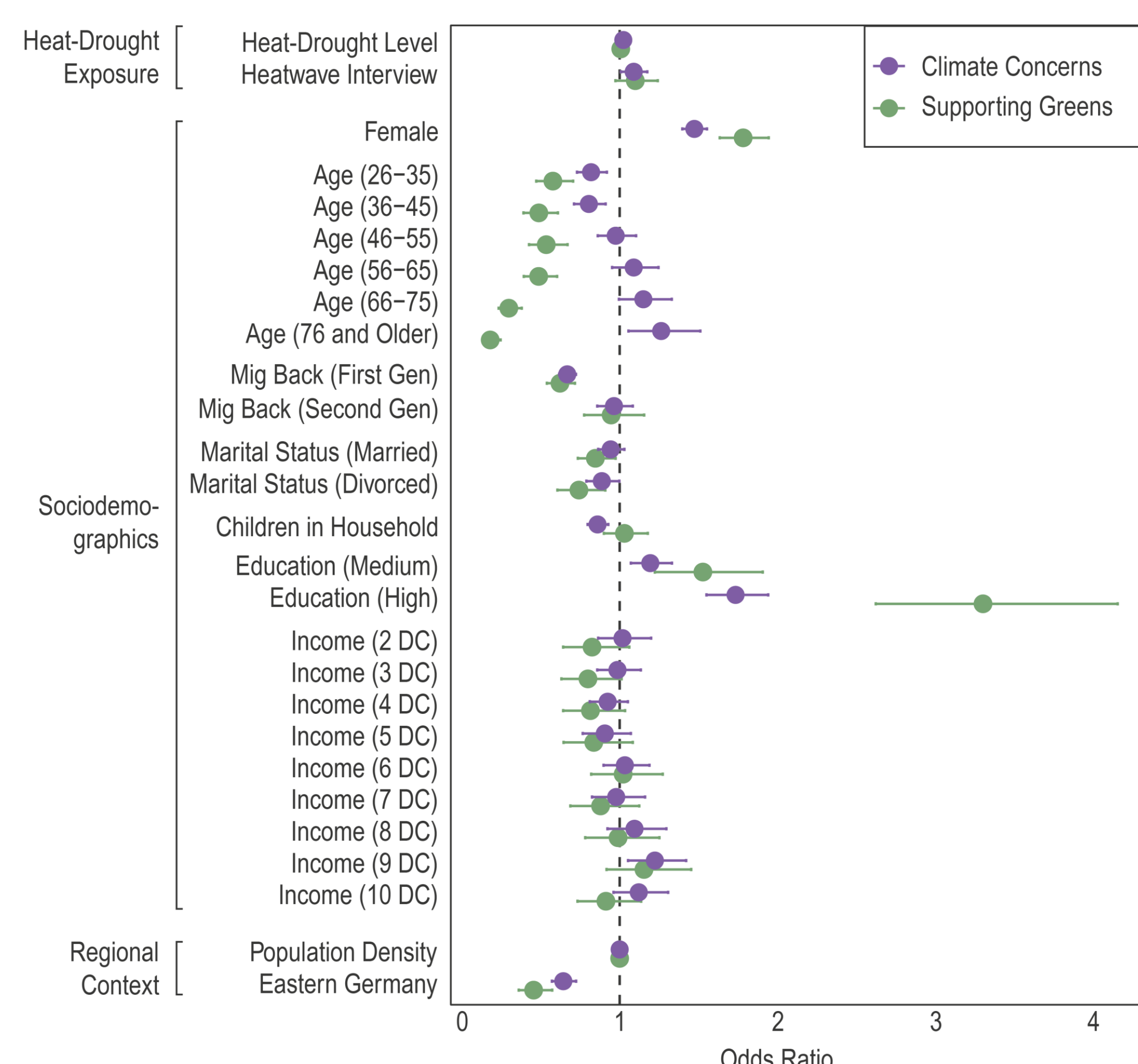


Descriptive Results on Regional Level



Regression Results on Individual Level

Logistic Regressions on **Concerns About Climate Change** (1 = "Very Concerned") and **Leaning Towards the Greens** (1 = "Yes"), 2018–2022, Individual Level, Clustered Standard Errors Adjusted for 400 Districts



Conclusion and Outlook

- Regional-level results:** Correlations between regional heat-drought exposure and dependent variables are highest for Green voting (H₂) and FFF protest (H₃), especially in urban areas and Eastern Germany
- Individual-level results:** Heat-drought level has a weak positive effect on climate change concerns (H₁), but no significant effect on Green party support (H₂)
- Heatwave during SOEP interview shows partial positive significance
- Strongest predictors: Education (+), female (+), Eastern Germany (–), migration background (–), age (–, partially U-shaped)
- Geographically, urban-rural and East-West divides are stronger than climate exposure – but weather effects are still present!

Next Steps

- Adding other climate extremes and weather events (e.g., floods, wildfires)
- Relating weather data to the 1961–1990 baseline period to capture (relative) changes over time across different regional levels
- Linking spatial and survey data at the LAU level
- Improving statistical models (e.g., multilevel models, generalized additive models)



Contact

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References: [1] Howe et al. (2019) doi.org/10.1088/1748-9326/ab466a; [2] Sisco (2021) doi.org/10.1016/j.cosust.2021.09.001; [3] Rüttenauer (2024) doi.org/10.1080/14616696.2023.2277281; [4] Fernando et al. (2025) hdl.handle.net/10419/319526; [5] Quob (2025) doi.org/10.1007/s10584-024-03842-y; [6] Valentim (2023) doi.org/10.31235/osf.io/m6dpg