National Institutes of Health

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Navigating Data Linkages in Environmental Health Research with CHORDS: Connecting Health Outcomes Research and Data Systems

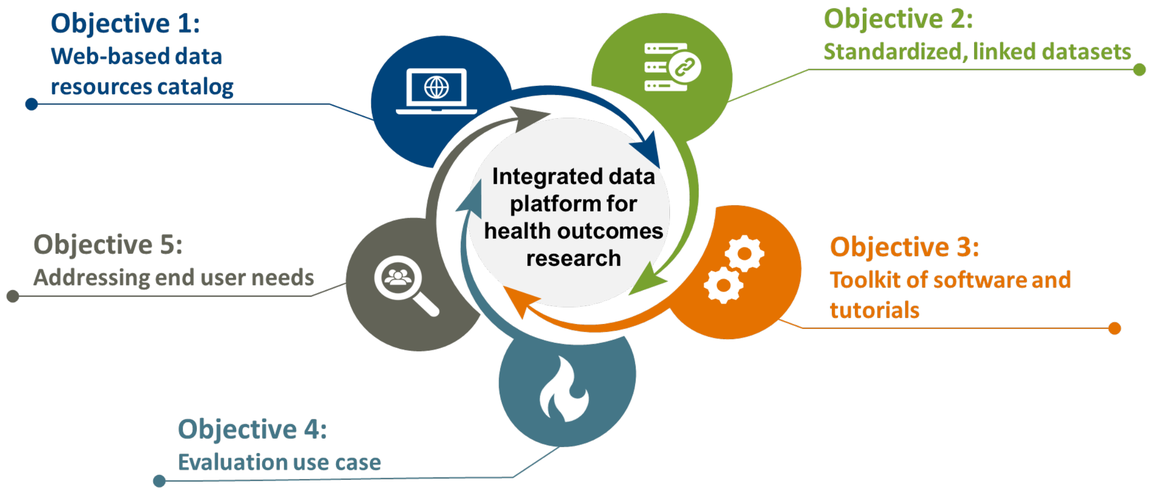
Aubrey K. Miller[1], Darius Bost[1,3], Adam Burkholder[1], Trisha Castranio[1], David Fargo[1], Ann Y. Liu[1,2], Kyle Messier[1], Alison Motsinger-Reif[1], David Reif[1], Charles Schmitt[1]

[1]National Institute of Environmental Health Sciences, Research Triangle Park, NC;
[2]Kelly Government Solutions, Rockville; MD [3]GAP Solutions, Durham, NC

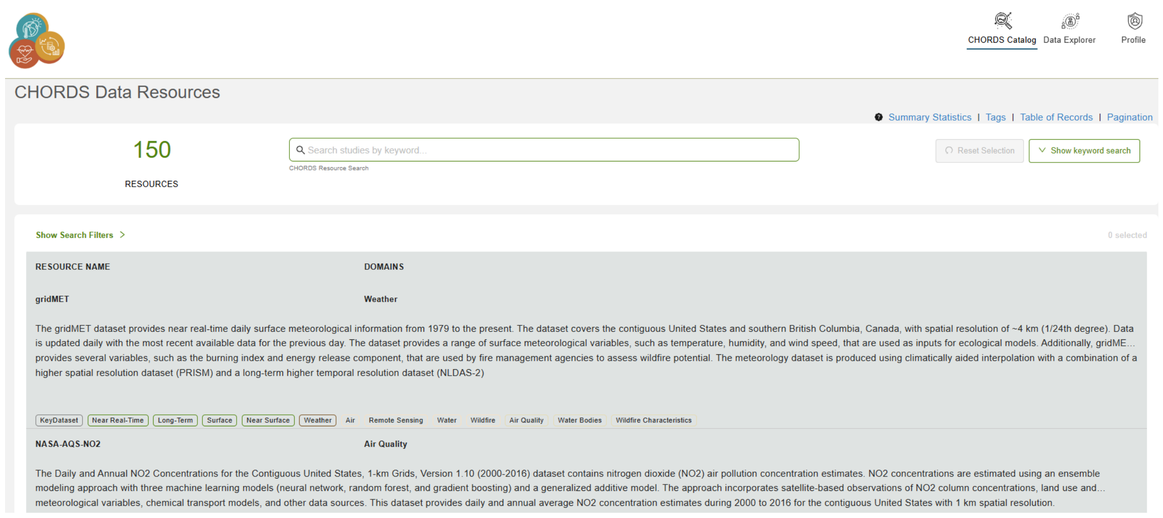
Background

The CHORDS project **strengthens data infrastructure to facilitate research connections** between environmental exposures and health outcomes. Exposures such as poor air and water quality, extreme temperatures, and natural disasters can cause both short-term health effects, like asthma attacks and heat stroke, and long-term conditions such as heart disease and cancer. By **providing accessible, interoperable data and analytical resources**, CHORDS supports researchers, health practitioners, and public officials in assessing environmental health risks, developing evidence-based interventions, and anticipating future health challenges to better protect communities.

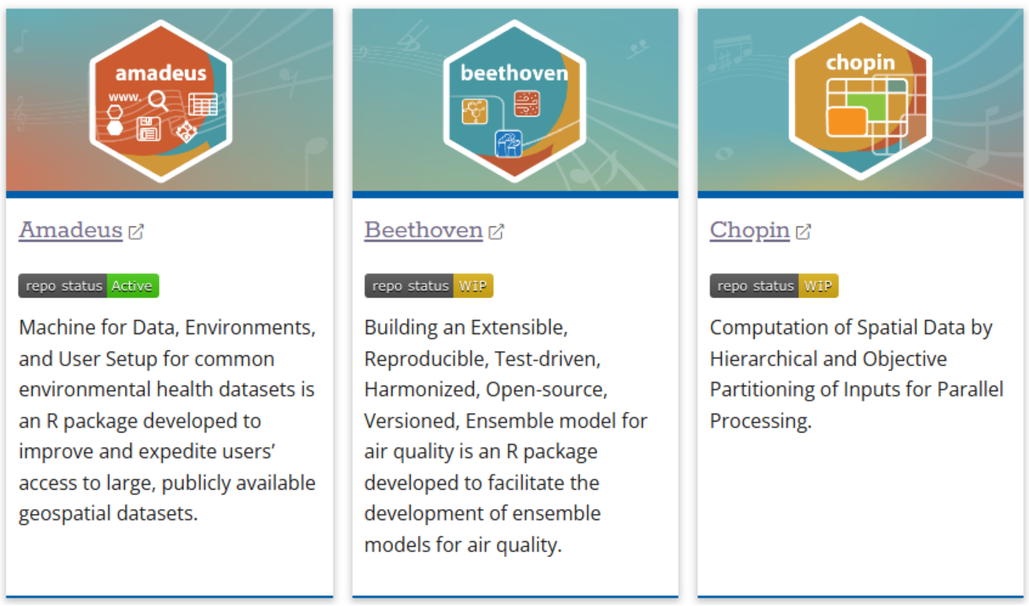
CHORDS Objectives and Deliverables



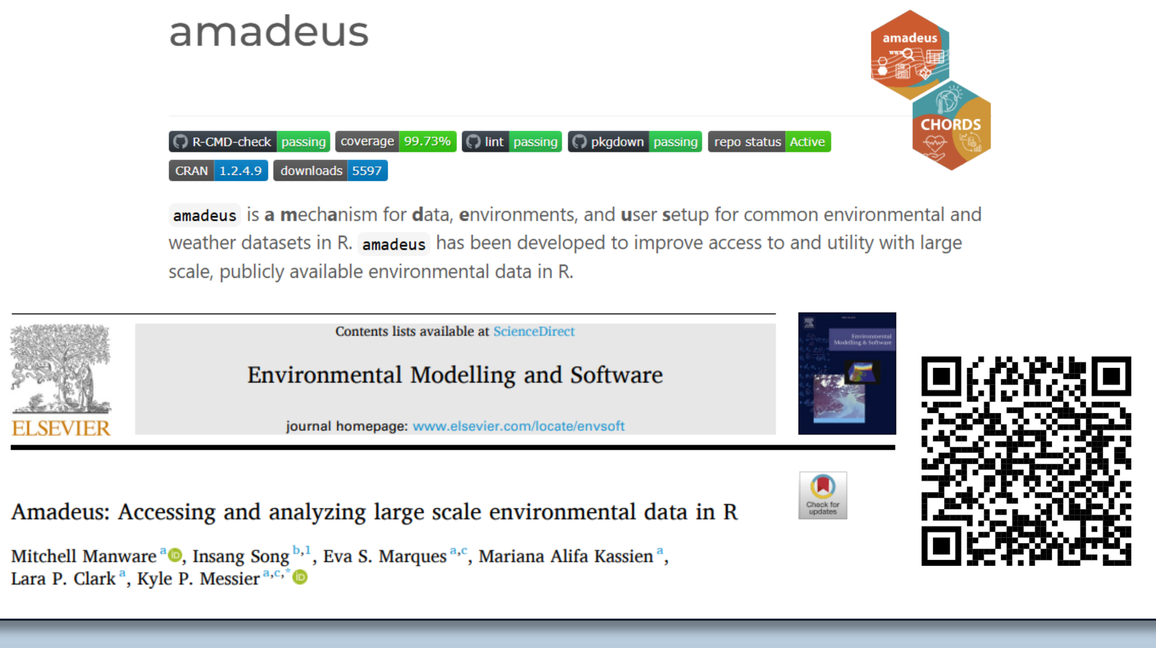
Data Resources Catalog



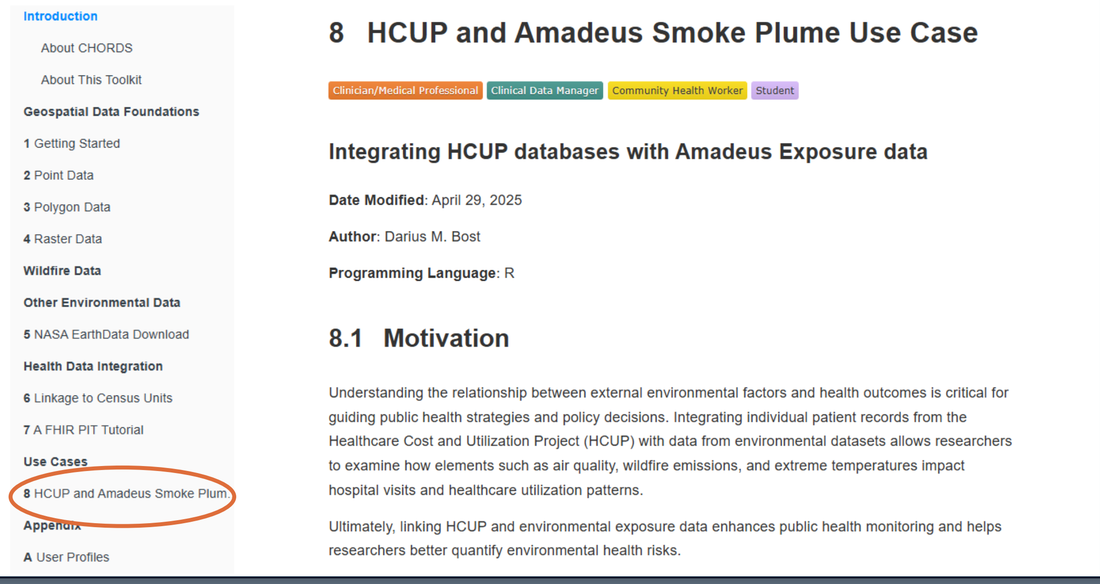
Open-source Software Tools



Adameus Software



Training and Tutorials



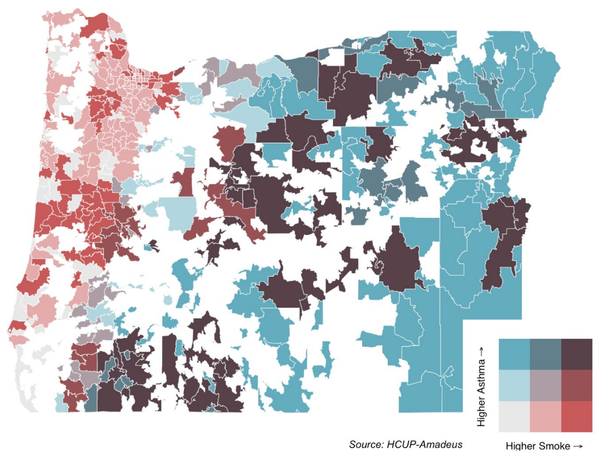
Wildfire Use Case with HCUP Data (Oregon, 2021)

- Logistic regression model: exposure to medium and heavy smoke significantly increases the odds of asthma diagnosis
- Demonstrates utility of amadeus software in processing NOAA HMS wildfire smoke data
- Combining environmental and clinical data can support targeted public health interventions

Legend:
X-axis (**red**): higher smoke exposure
Y-axis (**blue**): higher asthma

Color interpretations:
- **Dark red**: high smoke, low asthma
- **Dark blue**: high asthma, low smoke
- **Dark purple**: high smoke, high asthma
- **Light gray**: low smoke, low asthma

Asthma Prevalence vs Heavy Smoke Exposure by ZIP Code
Bivariate map showing intersection of health and environmental burden



Source: HCUP-Amadeus

Conclusion

By building a data ecosystem of evolving publicly available resources, CHORDS aims to empower a diverse group of end users – including researchers, health care providers, policy and decisionmakers, and community groups – seeking to examine and mitigate the adverse health consequences of wildfires and other environmental health disasters and emergencies.

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