Exploring the potential of AI to enable data-driven impact in local communities

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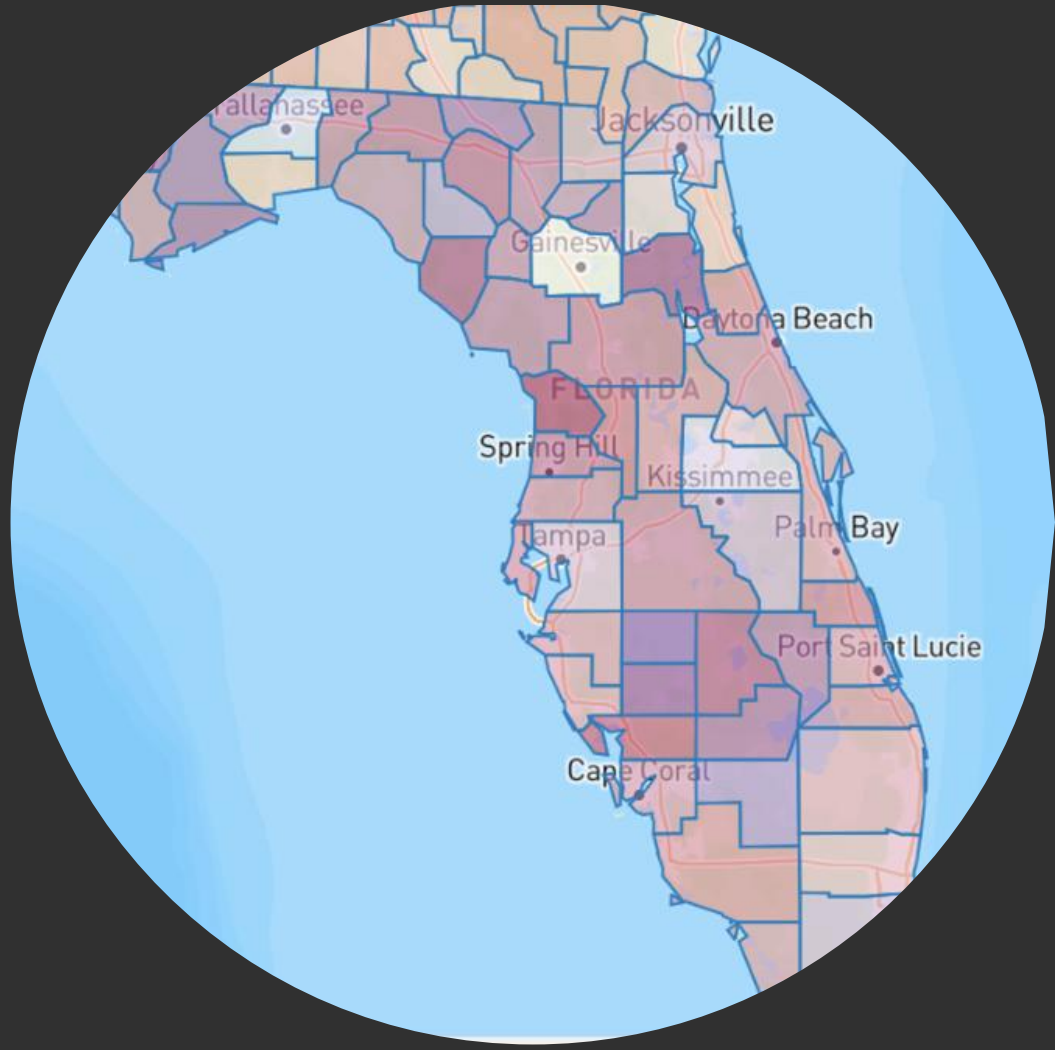

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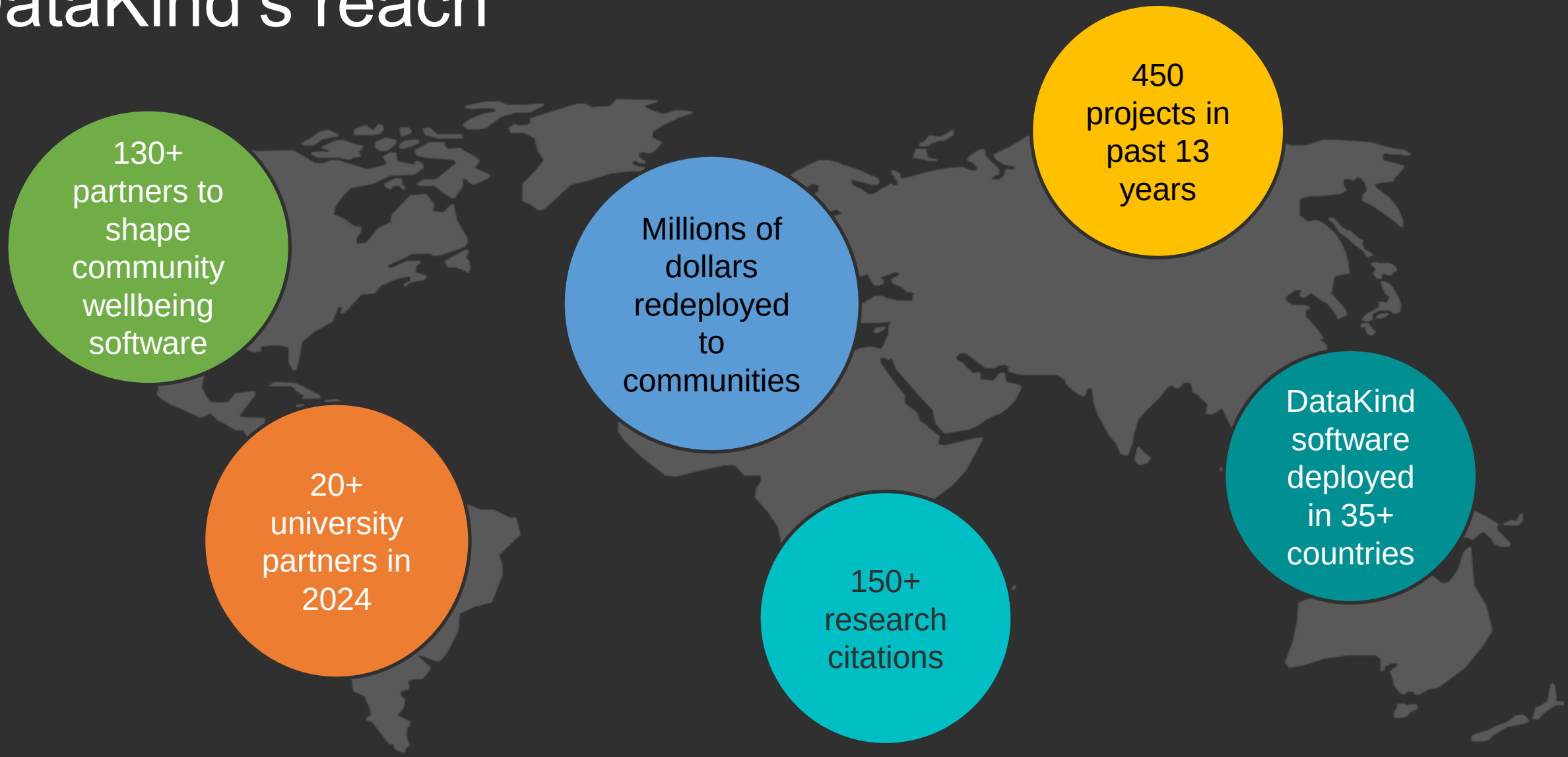
DataKind builds scalable solutions to advance social good.

DataKind's reach



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1. Solve the right problem
2. Plan for solution sustainability from the start
3. Meet your users where they are
4. Realize AI can take many shapes, and it is just one tool in our collective toolbox

Image source: Heather Burns, via Patrick Meier

1

Solve the right problem

The need for humanitarian aid is enormous, urgent, and increasing.

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Access to timely, reliable data can help.

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The Humanitarian Data Exchange

OCHA

Find, share and use humanitarian data all in one place

	A	B	C	D	E	F	G	H
1	Country	Country Pcode	STATE NAMES	State Pcode	LGA NAMES	TOTAL INNEED	# OF IDPs GIRLS	# OF IDPs BOYS
2	Nigeria	NGA	Adamawa	NG002	Demsa	22026	5,045	4,494
3	Nigeria	NGA	Adamawa	NG002	Fufore	6021	1,745	1,773
4	Nigeria	NGA	Adamawa	NG002	Ganye	892	256	258
5	Nigeria	NGA	Adamawa	NG002	Girei	16077	4,152	4,213
6	Nigeria	NGA	Adamawa	NG002	Gombi	206997	763	625
7	Nigeria	NGA	Adamawa	NG002	Guyuk	6402	2,065	1,153
8	Nigeria	NGA	Adamawa	NG002	Hong	272088	1,277	1,066
9	Nigeria	NGA	Adamawa	NG002	Jada	466	161	131
10	Nigeria	NGA	Adamawa	NG002	Lamurde	20545	1,072	775
11	Nigeria	NGA	Adamawa	NG002	Madagali	166712	6,674	4,872
12	Nigeria	NGA	Adamawa	NG002	Maiha	110154	4,895	4,745
13	Nigeria	NGA	Adamawa	NG002	Mayo-Belwa	1826	468	327
14	Nigeria	NGA	Adamawa	NG002	Michika	229885	6,605	5,143
15	Nigeria	NGA	Adamawa	NG002	Mubi North	195347	2,761	2,764
16	Nigeria	NGA	Adamawa	NG002	Mubi South	202314	1,742	1,521
17	Nigeria	NGA	Adamawa	NG002	Numan	144946	2,483	1,998
18	Nigeria	NGA	Adamawa	NG002	Shelleng	2160	634	598
19	Nigeria	NGA	Adamawa	NG002	Song	36116	1,043	823
20	Nigeria	NGA	Adamawa	NG002	Teungo	421	116	101
21	Nigeria	NGA	Adamawa	NG002	Yola North	9672	3,437	2,355
22	Nigeria	NGA	Adamawa	NG002	Yola South	24074	6,830	6,393
23	Nigeria	NGA	Borno	NG008	Abadam	34967	0	0
24	Nigeria	NGA	Borno	NG008	Askira/Uba	279366	4,145	3,850
25	Nigeria	NGA	Borno	NG008	Bama	150050	19,605	18,016
26	Nigeria	NGA	Borno	NG008	Bayo	3506	232	209
27	Nigeria	NGA	Borno	NG008	Biu	103505	12,958	11,039
28	Nigeria	NGA	Borno	NG008	Chibok	124741	4,294	4,177
29	Nigeria	NGA	Borno	NG008	Damboa	134923	27,235	22,099
30	Nigeria	NGA	Borno	NG008	Dikwa	122545	23,157	18,895
31	Nigeria	NGA	Borno	NG008	Gubio	168539	1,671	1,250
32	Nigeria	NGA	Borno	NG008	Guzamala	96043	523	503
33	Nigeria	NGA	Borno	NG008	Gwoza	241954	38,675	31,628
34	Nigeria	NGA	Borno	NG008	Hawul	226644	6,100	5,449
35	Nigeria	NGA	Borno	NG008	Jere	808654	74,808	60,998
36	Nigeria	NGA	Borno	NG008	Kaga	123660	6,275	5,308

#HXL

a simple standard for messy data

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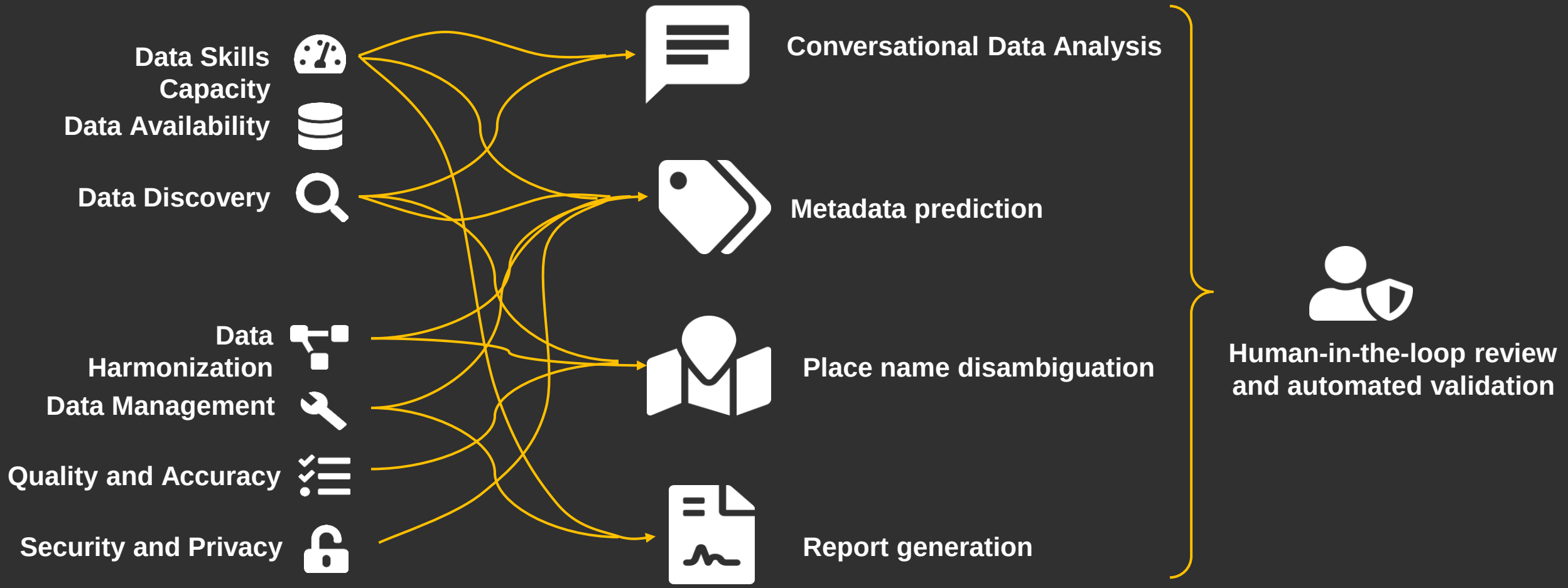
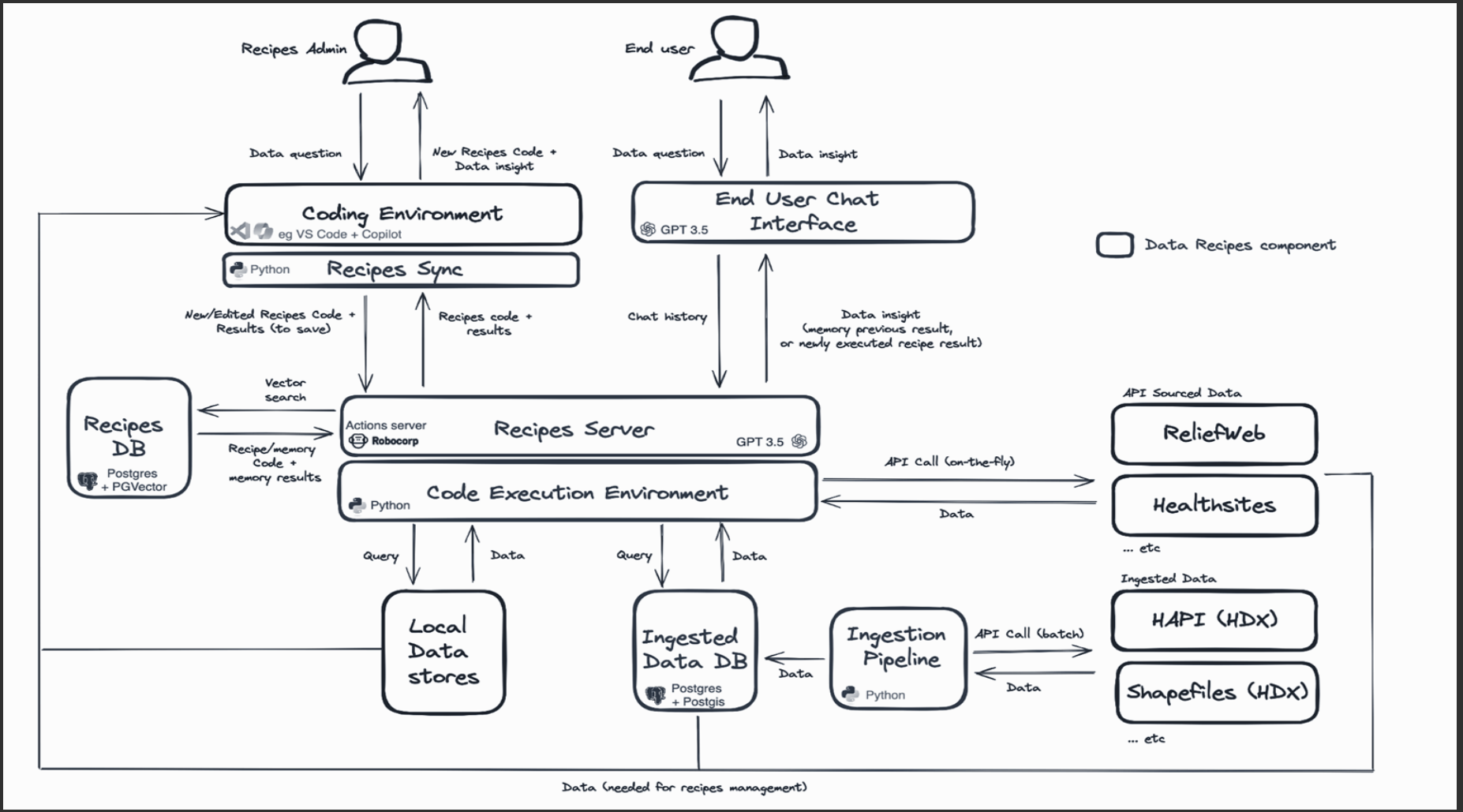
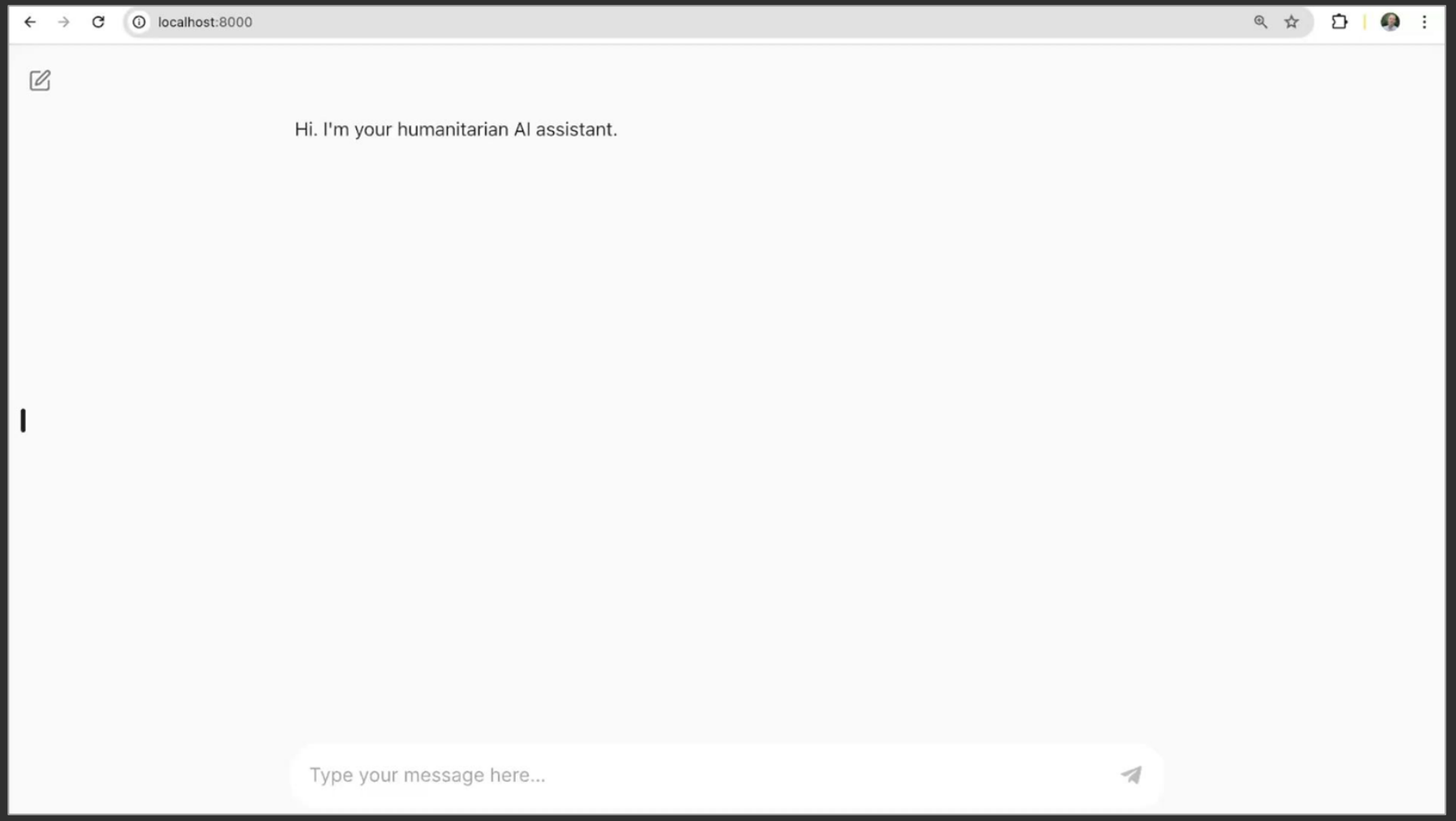

Data Skills Capacity
Data Availability
Data Discovery
Data Harmonization
Data Management
Quality and Accuracy
Security and Privacy
Conversational Data Analysis
Metadata prediction
Place name disambiguation
Report generation
Human-in-the-loop review and automated validation


Recipes Admin
End user
Data question
New Recipes Code + Data insight
Data question
Data insight
Coding Environment
eg VS Code + Copilot
End User Chat Interface
GPT 3.5
Data Recipes component
Python
Recipes Sync
New/Edited Recipes Code + Results (to save)
Recipes code + results
Chat history
Data insight (memory previous result, or newly executed recipe result)
Vector search
Recipes DB
Postgres + PGVector
Recipe/memory Code + memory results
Actions server
Robocorp
Recipes Server
GPT 3.5
API Sourced Data
ReliefWeb
API Call (on-the-fly)
Data
Healthsites
Python
Code Execution Environment
... etc
Query
Data
Query
Data
Ingested Data
HAPI (HDX)
Local Data stores
Ingested Data DB
Postgres + Postgis
Data
Ingestion Pipeline
Python
API Call (batch)
Data
Shapefiles (HDX)
... etc
Data (needed for recipes management)



The Humanitarian AI Assistant was created with seven humanitarian organizations, representing 80% of humanitarian response globally. HDIP simplifies decision-making by simplifying access to thousands complex datasets.

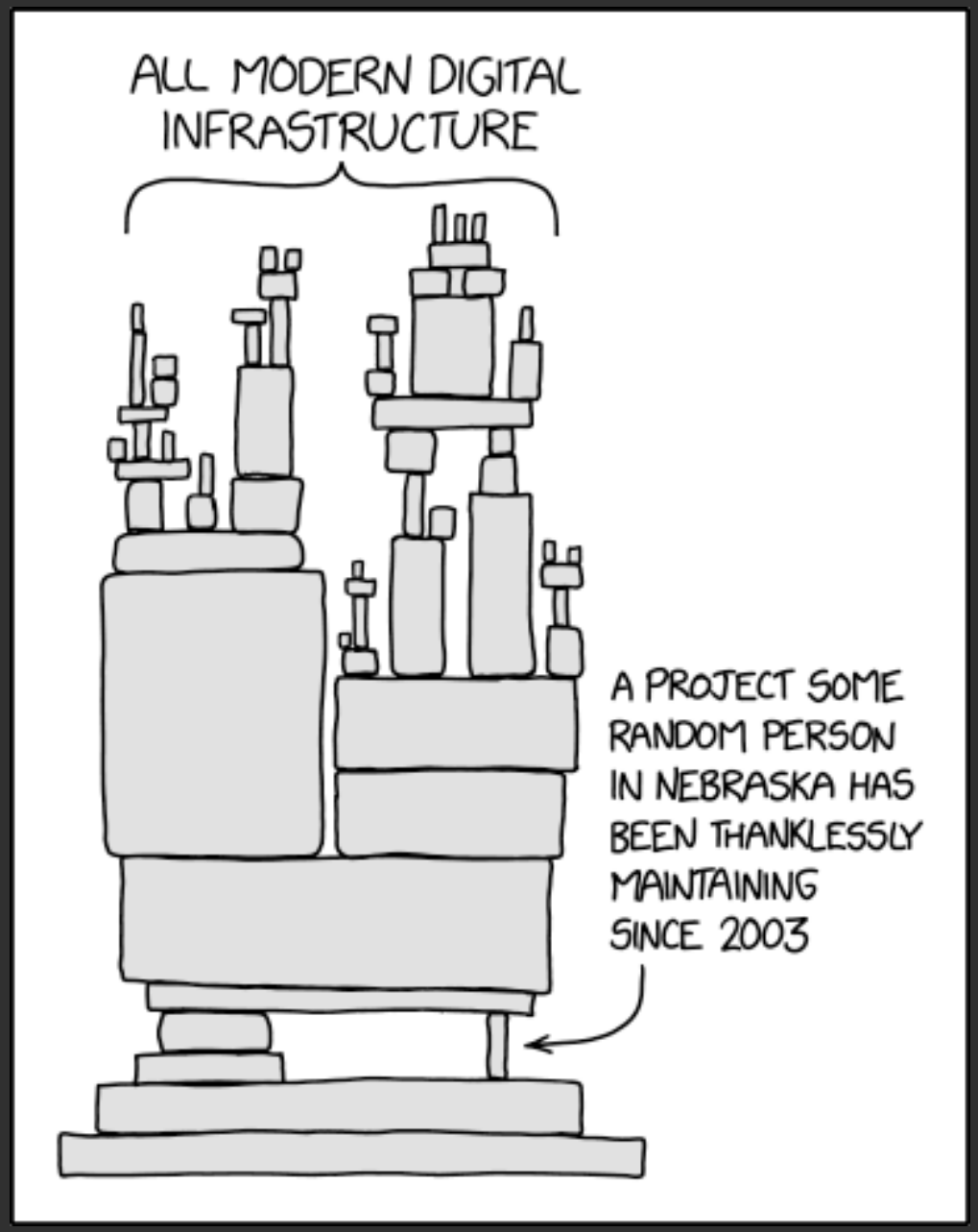
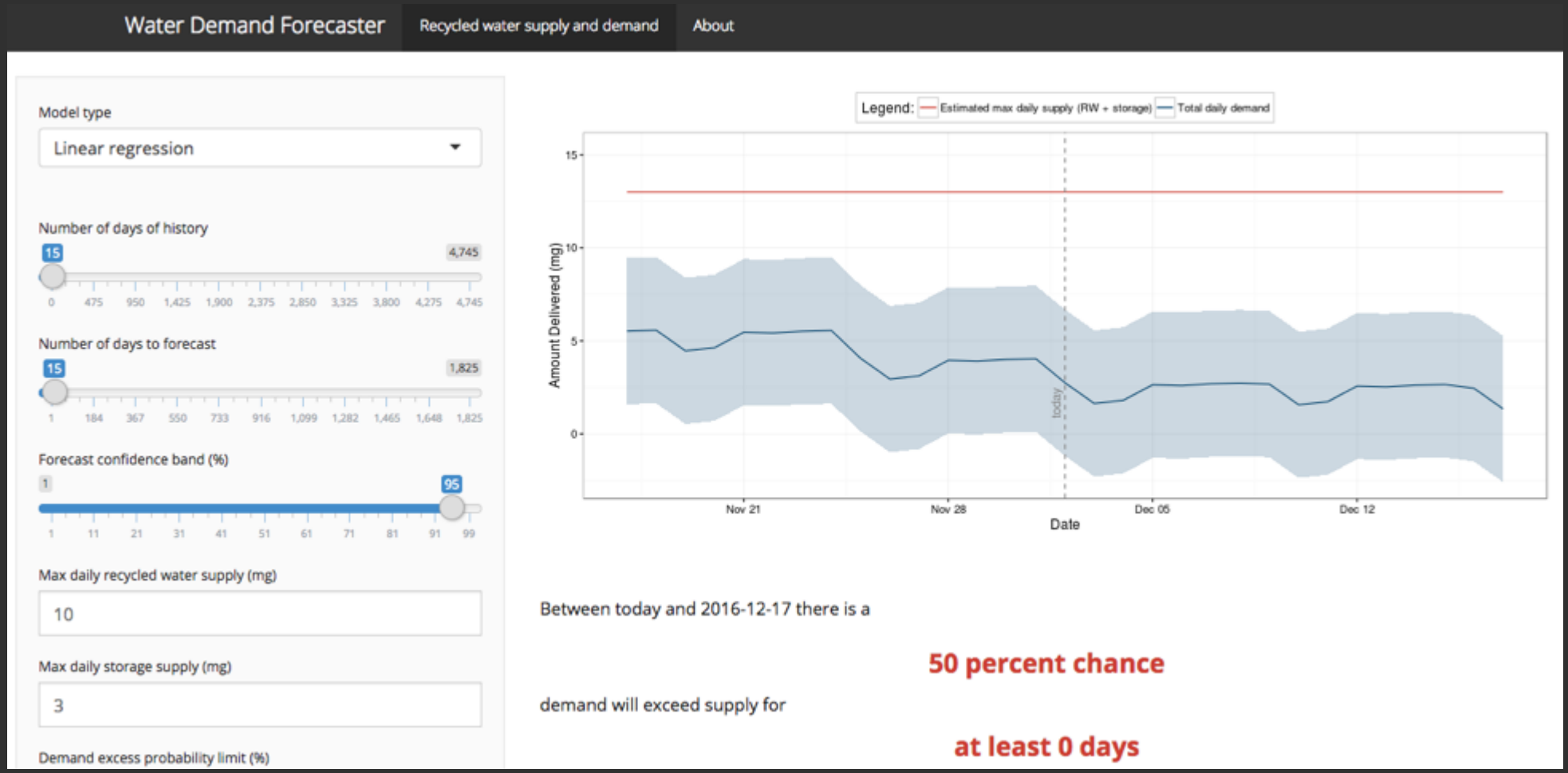


Image source: xkcd, cc-by-2.5-nc

2

Plan for solution sustainability from the start

The Water Demand Forecaster connects municipal data with external climate and weather data to build a forecast using machine learning to predict demand so as to manage local supply effectively. Moulton Niguel Water District has saved over $5M / year relative to baseline after implementing these predictive tools.



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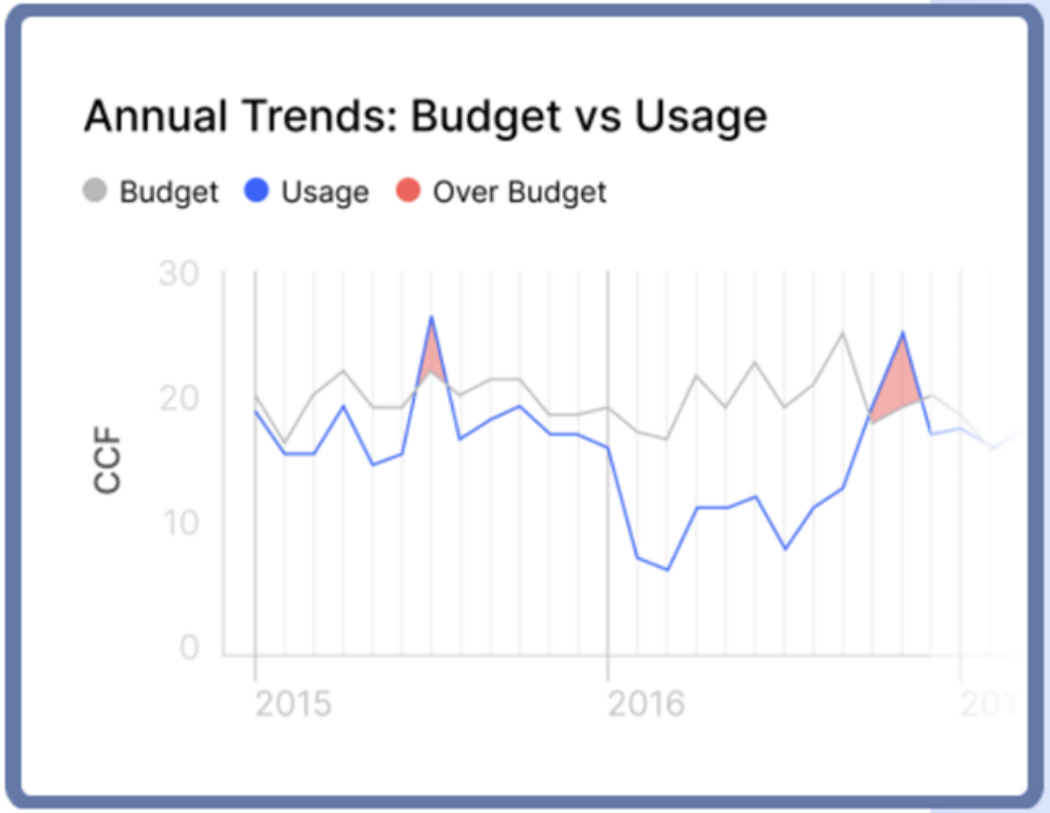
Gain clarity on water usage by setting goals, analyzing trends, and benchmarking customer usage with precision

- Calculate your Water Use Objective to stay on track
- Gain insight, then act decisively
- Compare customer usage to budgets or neighbors for reference
- Track usage over time, seasonally, & with local weather comparison



CALIFORNIA DATA COLLABORATIVE

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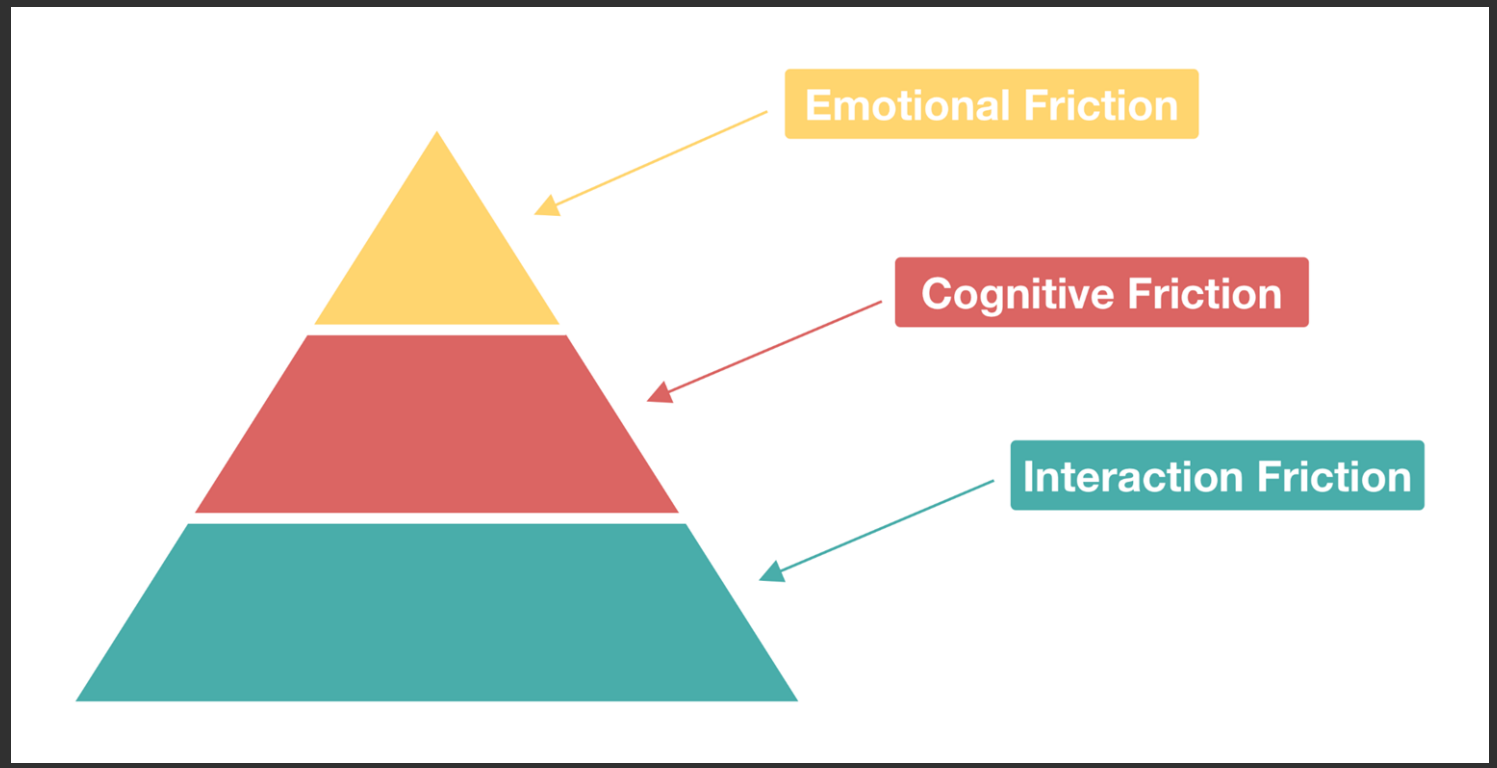


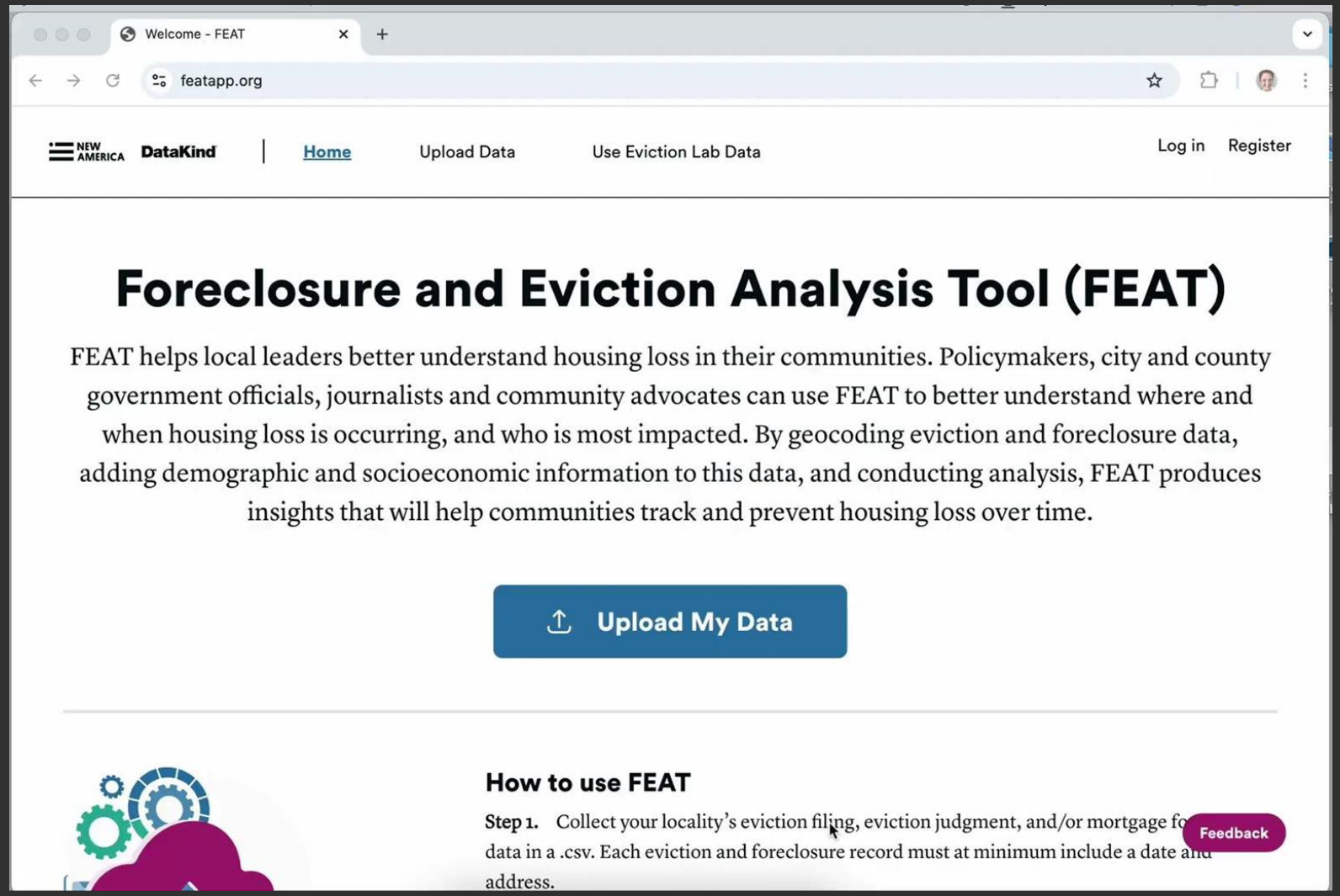
Image source: Sachin Rekhi via Tyler Wince

3

Meet your users where they are

User-driven design includes:

- no-code interface
- single sign on
- drag-and-drop upload
- activity dashboard with saved analysis
- visualizations, analysis, and interpretations for each upload
- accessible analysis of Eviction Lab data without upload for 9 states and 29 cities



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November 2024 all-up reporting

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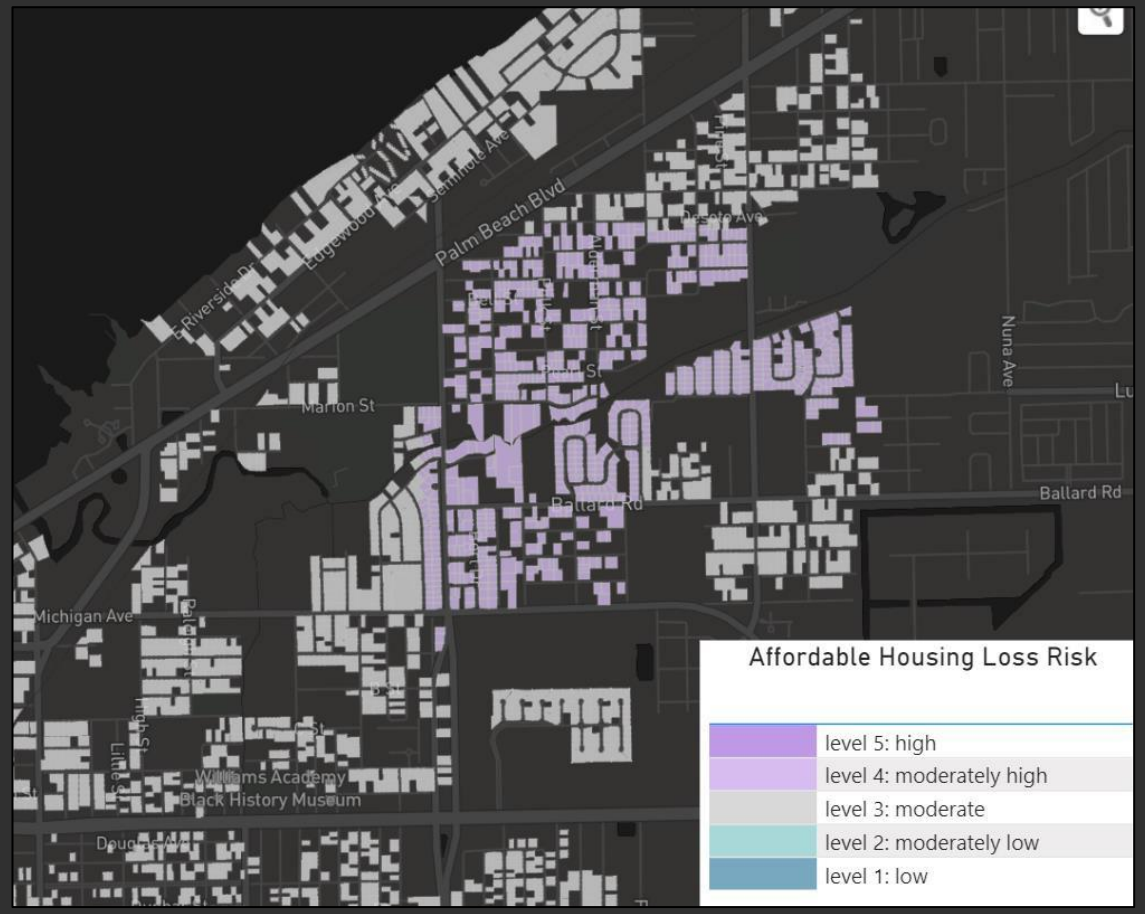
In Florida, this led to disaster resilience assessments and an interactive dashboard designed to help understand the risk of affordable housing loss post-disaster.



Department of Homeland Security, 2022

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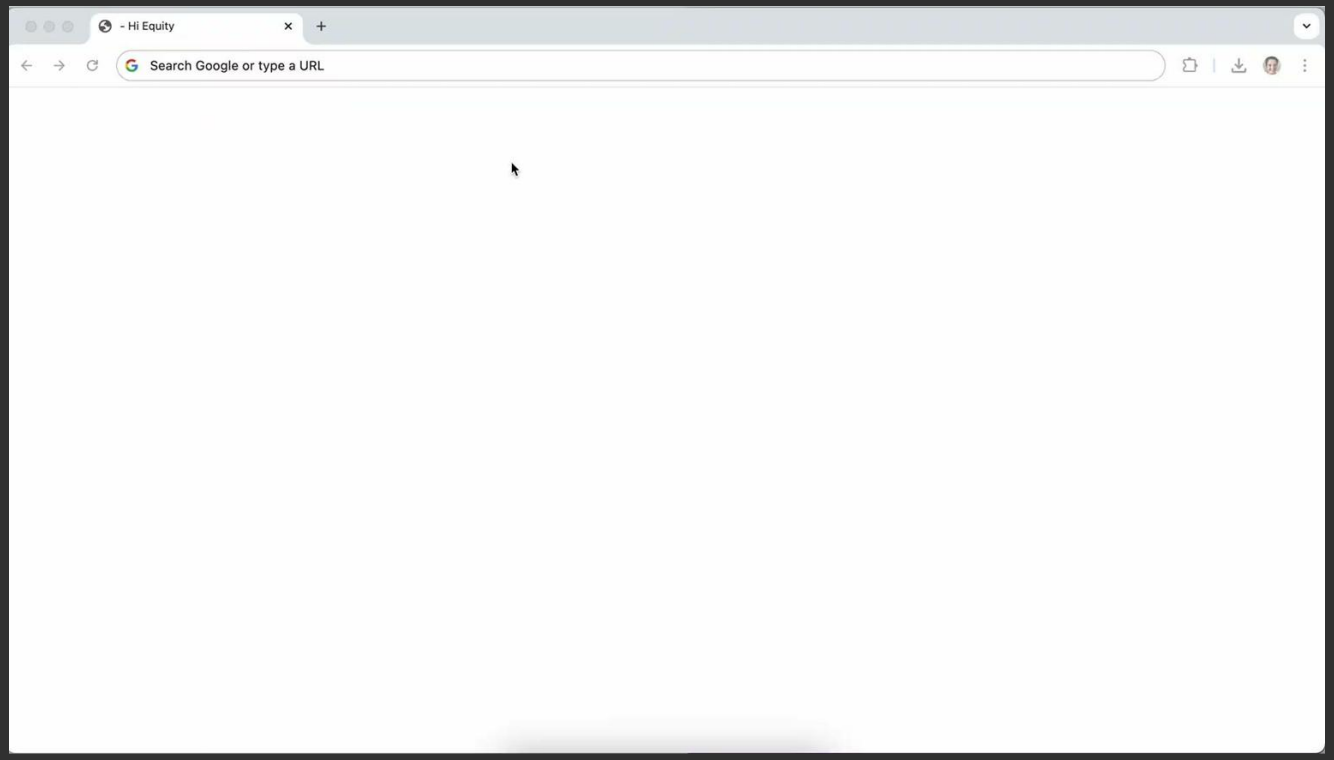
This also led to a now-national tool called HI Equity (health indicators for equity) that enables access standardized data on target communities of impact and taking meaningful action while promoting equity.



Second Harvest FOOD BANK OF CENTRAL FLORIDA

HEALTH & HUNGER TASK FORCE OF CENTRAL FLORIDA

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Image source: Hans Hollein, via Scott Berkun

4

Realize AI can take many shapes, and it is just one tool our collective toolbox.

Thank you.

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Resources (representative)

- Products
  - https://www.colandrcommunity.com/
  - https://www.featapp.org/
  - https://hiequitymap.org/
  - https://github.com/datakind/Data-Observation-Toolkit
  - https://hdip.datakind.org

- Publications
  - https://digitalcommons.wcupa.edu/jarihe/vol7/iss1/2/
  - https://academic.oup.com/oodh/article/2/Supplement_2/ii25/7911912
  - https://www.tandfonline.com/toc/ucha20/34/3
  - https://conbio.onlinelibrary.wiley.com/doi/10.1111/cobi.13117
  - https://ssir.org/articles/entry/how_the_social_sector_can_use_natural_language_processing
  - https://www.weforum.org/stories/2024/10/digital-technology-framework-advancing-data-equity/

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A few favorite GenAI resources from DataKind's community

+ DataKind webinar introducing GenAI
+ Algorithmic Justice League's (AJL's) equitable & accountable AI Definition
+ Report on GenAI for humanitarians
+ WEF Data Equity: Foundational Concepts for Generative AI
+ Technical blogs for DataKind's GenAI project work
+ Ted talk on "The magical AI assistants of the future — and the engineering behind them"
+ A Matrix for Selecting Responsible AI Frameworks
+ DataKind's Playbook