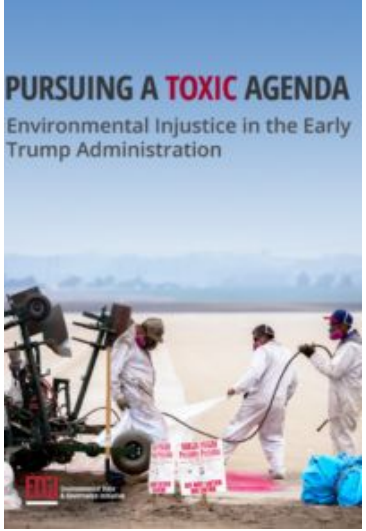
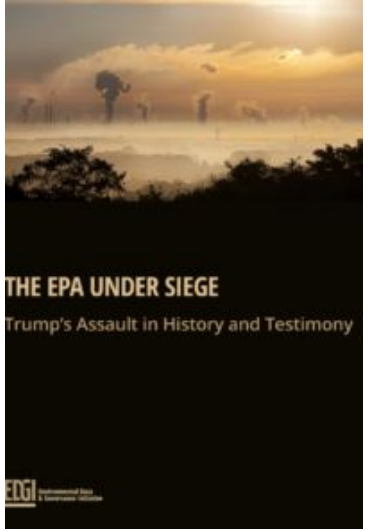
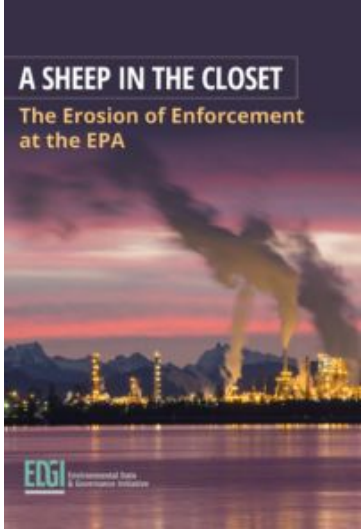
Environmental Enforcement Watch

Environmental Data Justice through Participatory Data Science

Kelsey Breseman @ifoundtheme | EEW @EEW_Network | EDGI @enviroDGI

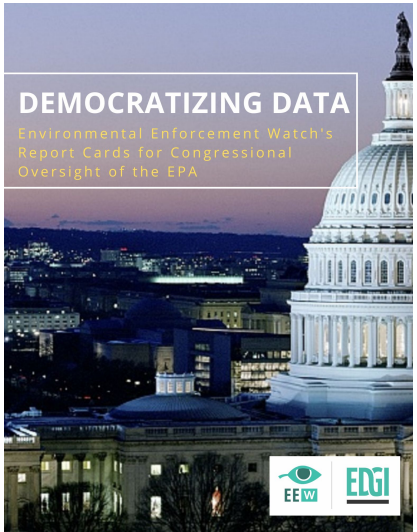






EDGI Environmental Data & Governance Initiative

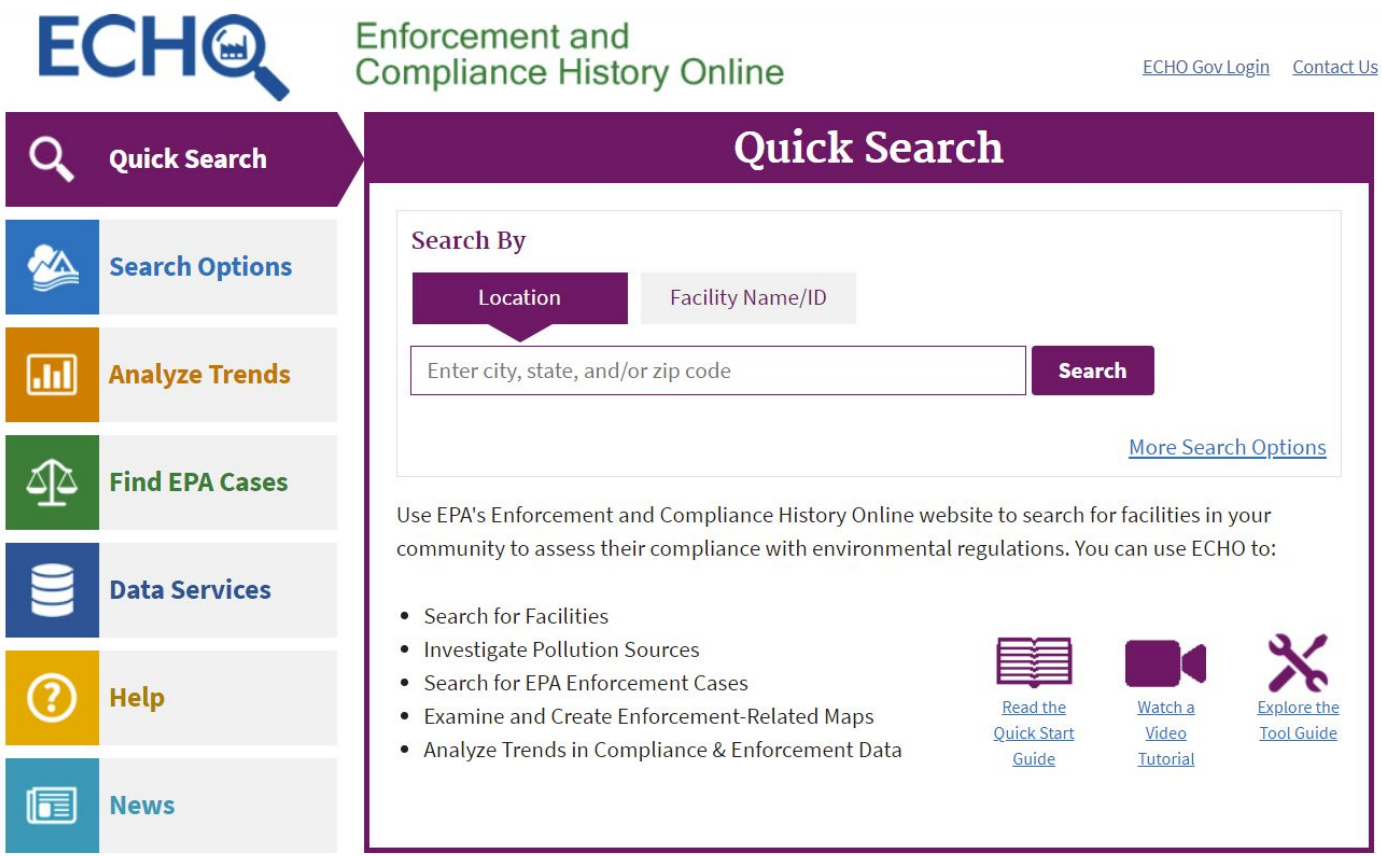
envirodatagov.org/publications



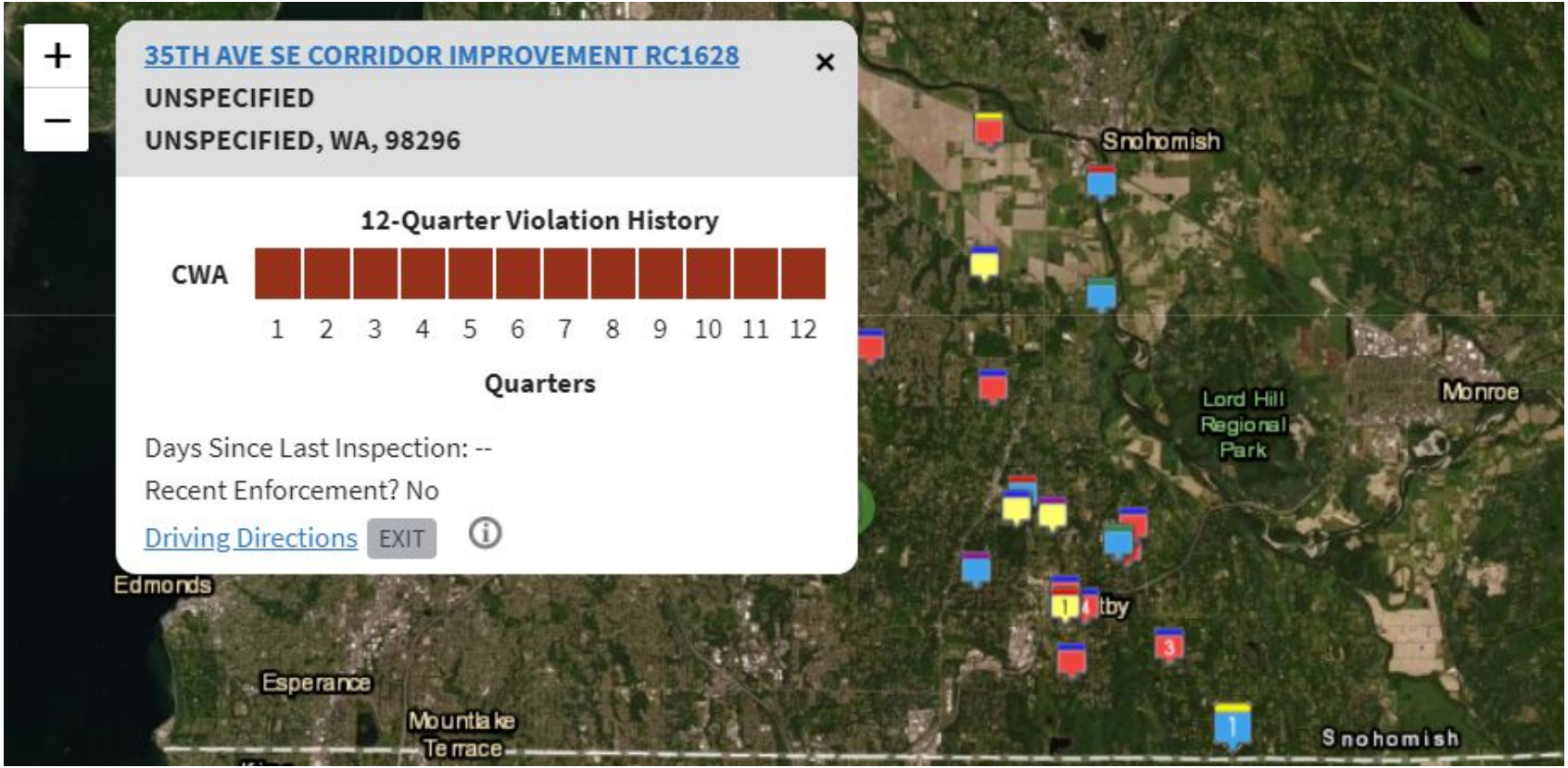
The Challenge

Is the EPA protecting me?

The Data



EPA's Enforcement and Compliance History Online: echo.epa.gov



Searching by Zip code/clicking on a facility

Facility/System Characteristics

System	Statute	Identifier	Universe	Status	Areas	Permit Expiration Date	Indian Country
FRS		110070229475					N
ICIS-NPDES	CWA	WAR306153	Minor: General Permit Covered Facility	Admin Continued	Construction Stormwater	12/31/2020	N

Facility Address

System	Statute	Identifier
FRS		110070229475
ICIS-NPDES	CWA	WAR306153

Facility SIC Codes

System	Identifier	SIC Code	
ICIS-NPDES	WAR306153	1794	Exc

Facility Industrial Effluent Guidelines

Identifier	Effluent Guideline (40 CFR Part)	Efflu
No data records returned		

Compliance Summary Data

Statute	Source ID	Current SNC/HPV	Current As Of	Qtrs with NC (of 12)
CWA	WAR306153	Yes	12/31/2020	11

Three-Year Compliance History by Quarter

Statute	Program/Pollutant/Violation Type	QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	
CWA (Source ID: WAR306153)		01/01-03/31/18	04/01-06/30/18	07/01-09/30/18	10/01-12/31/18	01/01-03/31/19	04/01-06/30/19	07/01-09/30/19	10/01-12/31/19	
	Facility-Level Status	No Violation Identified	No Violation Identified	Violation Identified	Significant/ Category I Noncompliance	Significant/ Category I Noncompliance	Significant/ Category I Noncompliance	Significant/ Category I Noncompliance	Significant/ Category I Noncompliance	S
	Quarterly Noncompliance Report History			Other Violation	Failure to Report DMR - Not Received	Failure to Report DMR - Not Received	Failure to Report DMR - Not Received	Failure to Report DMR - Not Received	Failure to Report DMR - Not Received	Re
	Permit Schedule Violations									
CWA	Schedule Event unachieved and not reported: Permit Application									
	Late or Missing Discharge Monitoring Report (DMR) Measurements									
	Counts of Missing DMR Measurements			4	8	12	12	12	12	

Facility view

Lots of information, but what can I do with it?

Notebooks for Public Environmental Governance

How to Run this Notebook

- If you click on a gray **code** cell, a little “play button” arrow appears on the left. If you click the play button, it will run the code in that cell

). The button will animate. W

Beginner instructions

```
libraries
urllib.parse
import pandas as pd
```

Commented code

```
# In this cell, we are building a query using the SQL language so we can get
the database about the places we're interested in

from the state-selecting widget from the previous block
of the states we're interested in
WHERE'
for st in states_w.value:
    states_selected += ' "states" LIKE \'%'+st+'%\' OR'
states_selected = states_selected[:-3]

# Load data from the Stony Brook University mirror of EPA's ECHO database
# https://gis.stackexchange.com/questions/112057/sql-query-to-have-a-complete-geojson-feature-from-postgis

# This builds the query by appending details about our request to the variable "sql"
sql = """
    SELECT jsonb_build_object(
        'type', 'FeatureCollection', 'features', jsonb_agg(features.feature)
    )
    FROM (
        SELECT jsonb_build_object(
            'type', 'Feature','id', gid, 'geometry',
            ST_AsGeoJSON(geom)::jsonb,'properties',
            to_jsonb(inputs) - 'gid' - 'geom'
        ) AS feature
        FROM (
            SELECT *
    ) features;
"""
```

Mirrored database stitching together data not queryable on ECHO

Unusually accessible Jupyter Notebooks

We want to keep our waterways pristine. Which companies should we talk to about improving their effluent emissions?

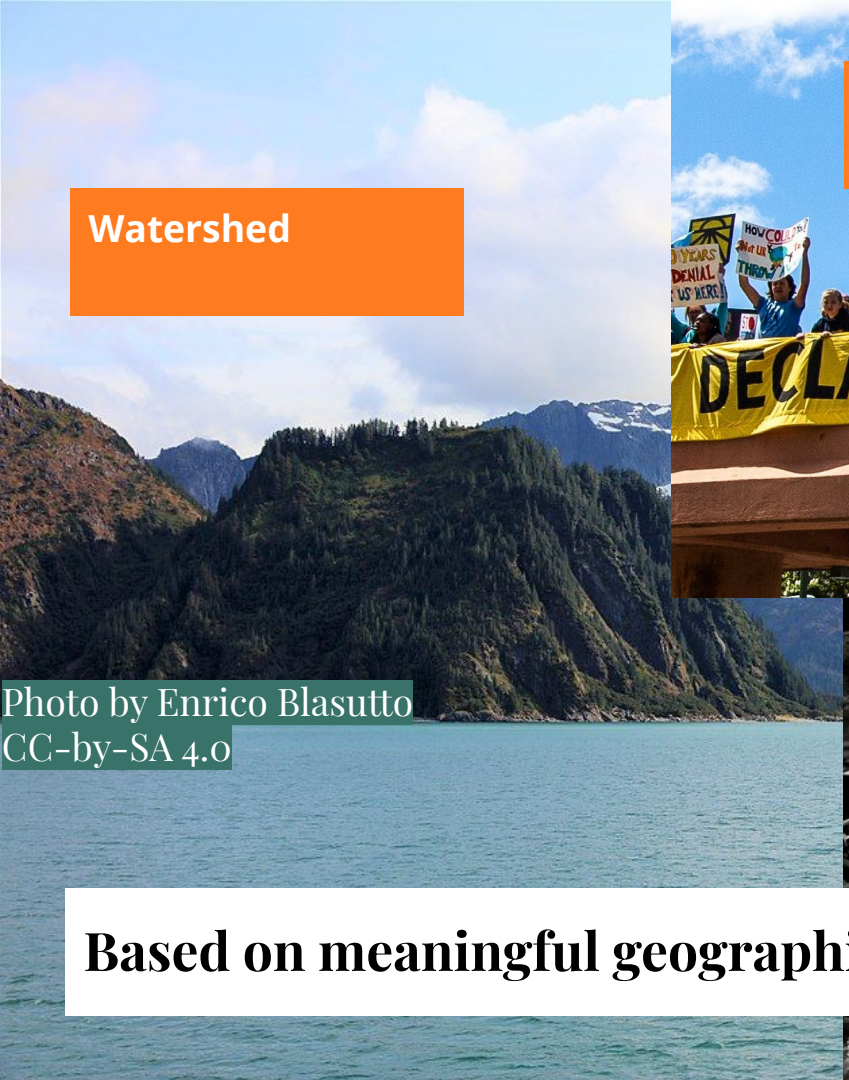
Photo by Enrico Blasutto
CC-by-SA 4.0

Photo by Sunrise Boston

Does my legislative district enforce environmental rules well?

Permits for oil storage facilities in our area are up for review. Will the permits protect our community?

Photo CCo



Watershed

Photo by Enrico Blasutto
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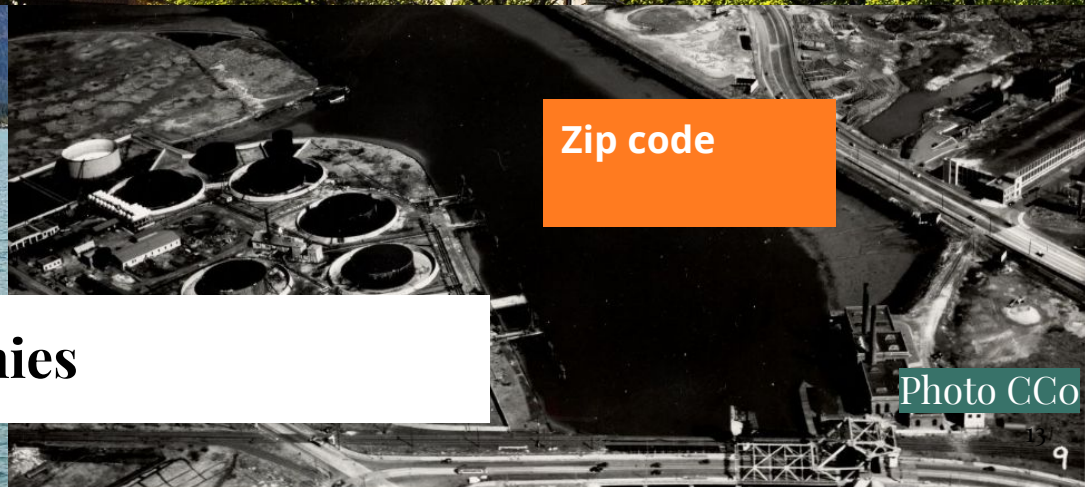
Congressional district

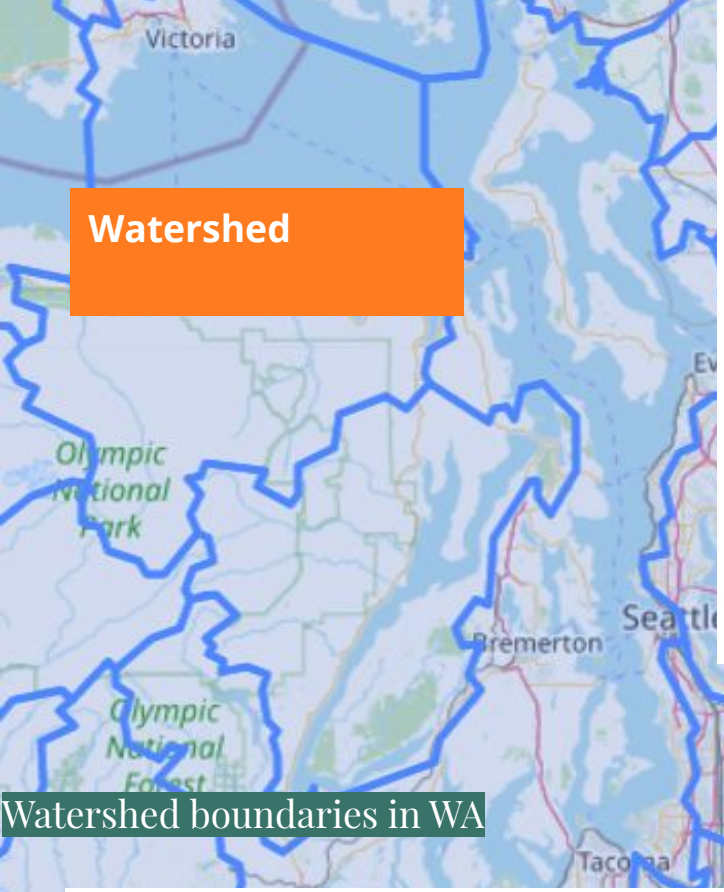
Photo by Sunrise Boston



Zip code

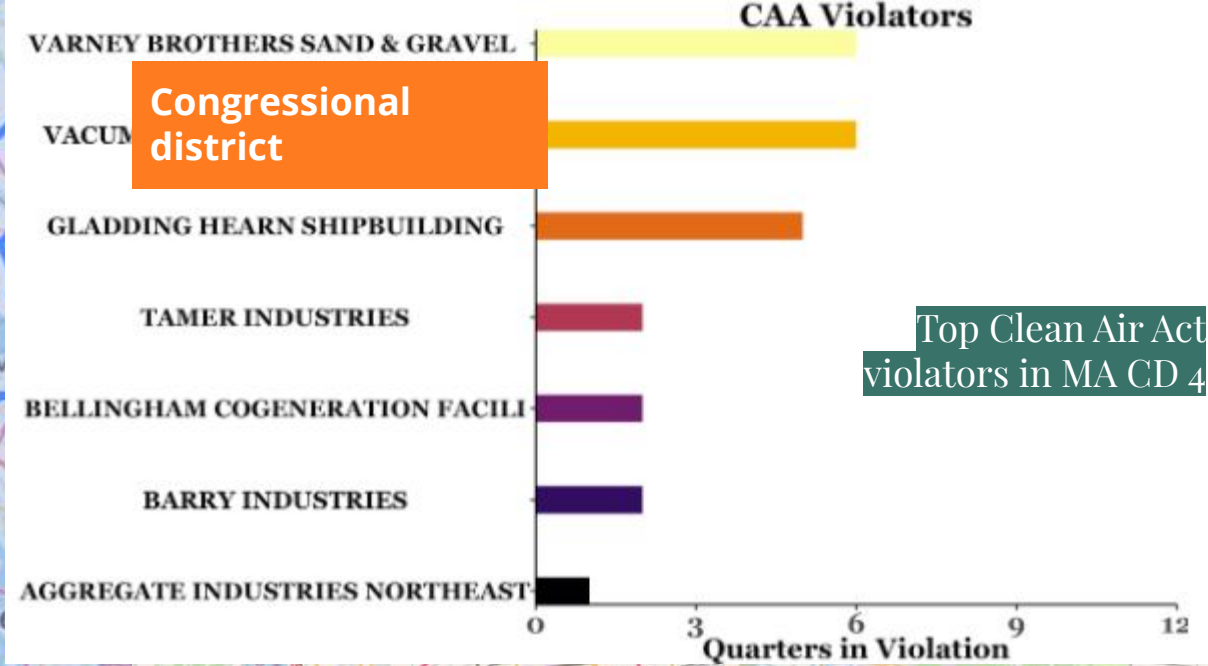
Photo CCo

Based on meaningful geographies



Watershed

Watershed boundaries in WA

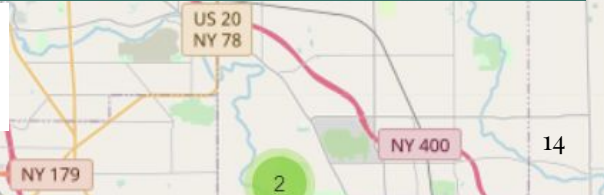


Congressional district

Top Clean Air Act violators in MA CD 4

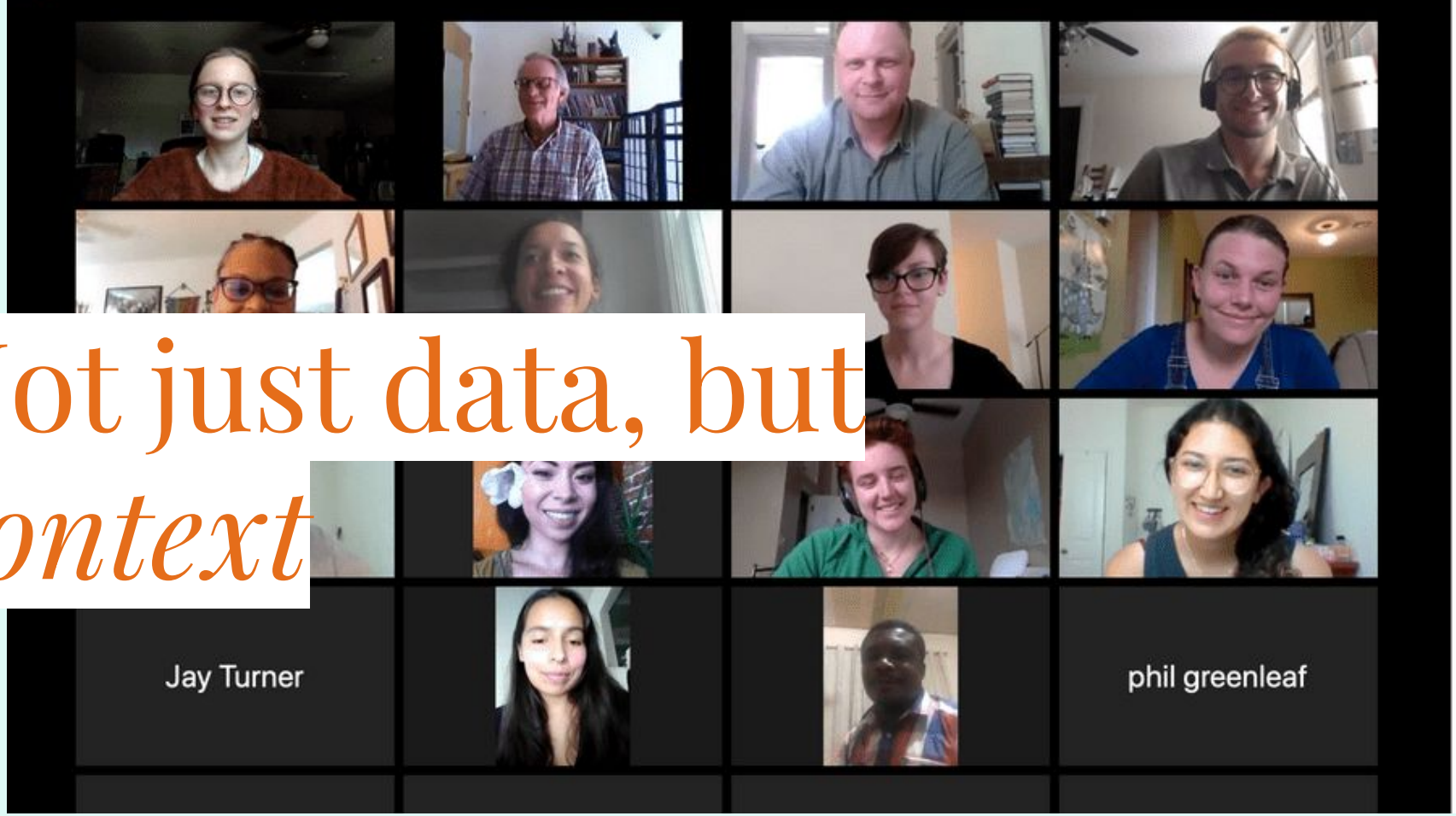
Zip code

Sites of Clean Water Act violations in 14202

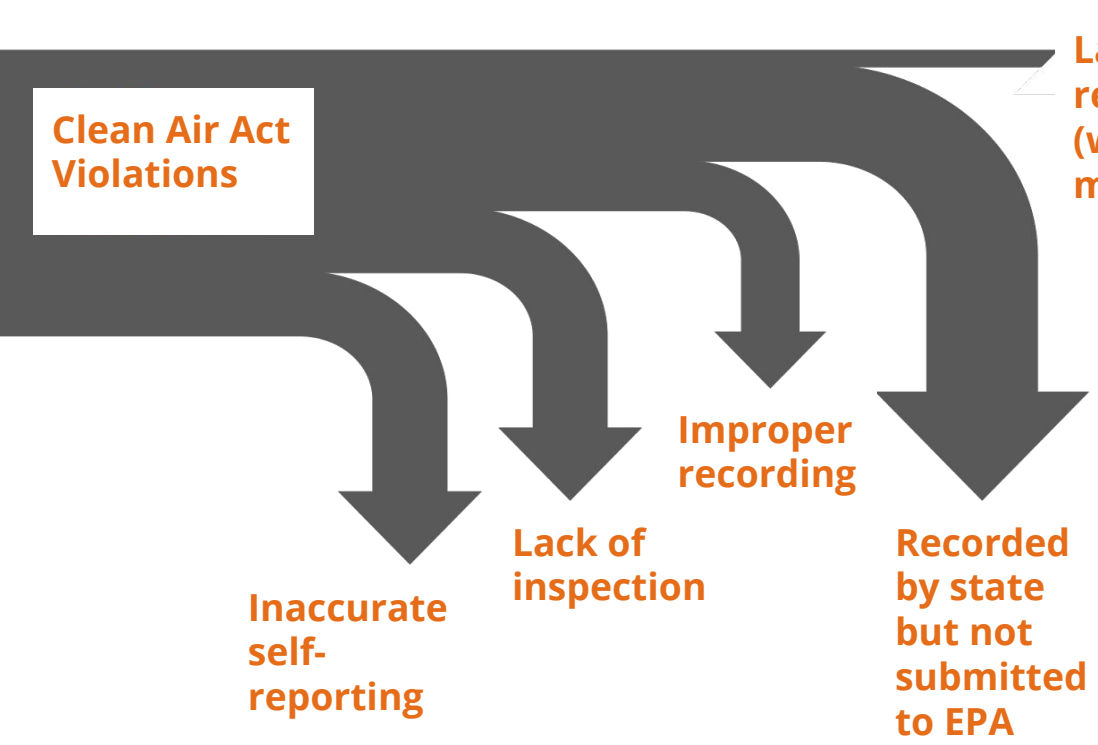


Producing comprehensible results

Not just data, but *context*



More Challenges



*"The last thorough look concluded that states were informing EPA about **less than 15%** of the significant [CAA] violations — and that's just for violations the states knew about."* — Cynthia Giles, former assistant administrator of enforcement at EPA

Missing data and data errors

Environmental data justice (EDJ) emerges from conversations between data ju…he limits and tensions of th… our entanglement in no… …ining how it inf… (EDGI), a dis… the 2016 US pre… …toring fed… …-response rep… …ilizes EDJ to ch… …and data infrastructures. **'Extractive logic' disconnects data from provenance, privileges the matrix of domination, and whitewashes data to generate uncertainty.** We use the dynamic EDJ framework to reflect on EDGI's public comment advising against the US Environmental Protection Agency's proposed rule for Transparent Science. **Through EDJ, EDGI aspires to create new environmental data infrastructures and practices that are participatory and embody equitable, transparent data care.**

"Environmental Data Justice"

When Data Justice and Environmental Justice Meet: Formulating a Response to Extractive Logic Through Environmental Data Justice

Lourdes A. Vera, Dawn Walker, Michelle Murphy, Becky Mansfield, Ladan Mohamed Siad, Jessica Ogden & EDGI. *Information, Communication & Society*, 2019, 22:7, 1012-1028.

How effectively can we govern facilities using data they primarily self-report?

EEW Contributors

Alex Ahmed · Annie Ma · Casey Greenleaf · Chris Sellers · Cole Alder · Cullen Bober · Elizabeth Kelly · Emily Freeman · Eric Nost · Frankie Volz · Gabby Trudo · Hyun Lee · Jay Turner · Kelly Wilkins · Kelsey Breseman · Kyala Shea · Laura Perovich · Leif Fredrickson · Leslie Alanis · Lourdes Vera · Maalvika Bhat · Marcy Beck · Megan Raisle · Monica Unseld · Paul Gordon · Paul St. Denis · Phil Webb · Sara Wylie · Shannan Lenke · Sky Murphy · Sonja Steingrims · Steve Hansen · Sung-Gheel Jang · EDGI

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Any Questions?

Environmental Enforcement Watch (EEW)
environmentalenforcementwatch.org

Kelsey Breseman @ifoundtheme | EEW @EEW_Network | EDGI @enviroDGI