

Power Plants and Neighboring Communities

Highlighting the communities around power plants

July 29, 2021
11:00 AM ET

Two audio options:

- 1) Listen via computer
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- Webinar ID: 160 842 8546

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- En los controles de la reunión o el seminario web, haga clic en Interpretación



- Haga clic en español

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- In your meeting controls, **tap the ellipses icon (...)**
En los controles de la reunion, toque (...)
- Tap **Language Interpretation**. Click **Spanish** option
Toque Interpretación de idiomas
- (Optional) Tap the toggle to **Mute Original Audio**
(Opcional) Toque el botón de alternancia silenciar audio original
- Click **Done**
Haga clic en Finalizado

Other Logistics for Today's Webinar

- Attendees will be muted during presentation
- Questions:
 - We will take questions related to the Power Plants and Neighboring Communities resource at the end of this webinar.
 - Please type your questions using the Q&A function (please include your name and affiliation)
 - After the webinar: email press@epa.gov

Agenda

- Welcome Remarks
 - Joe Goffman, Acting Assistant Administrator for the Office of Air and Radiation, EPA
- Introduction to EPA's Power Plants and Neighboring Communities Project
 - Reid Harvey, Director, Clean Air Markets Division, EPA
- Highlights from the Power Plants and Neighboring Communities Resource
 - Travis Johnson, Clean Air Markets Division, EPA



Welcome Remarks

Joseph Goffman

Acting Assistant Administrator

Office of Air and Radiation

Introduction

EPA's Power Plants and Neighboring Communities Resource

Reid Harvey

Director, Clean Air Markets Division

Office of Air and Radiation

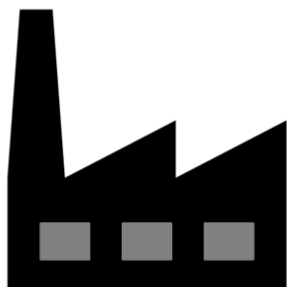
Outline

- Covered power plants
- Key demographics
- Methodology
- Demonstration of the Power Plants and Neighboring Communities Mapping Tool
- Summary graphs
- Additional information
- Q&A



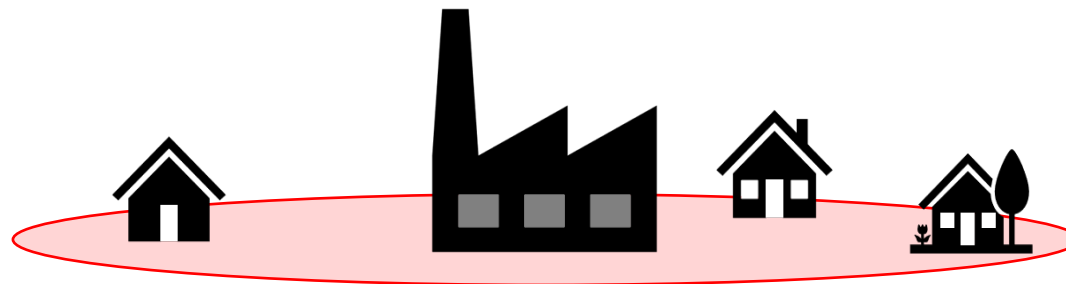
Two Key Publicly Available Data Sets

Power Plant Data



1. Plant characteristics
2. Operating information
3. Fuel use
4. Emissions and emission rates

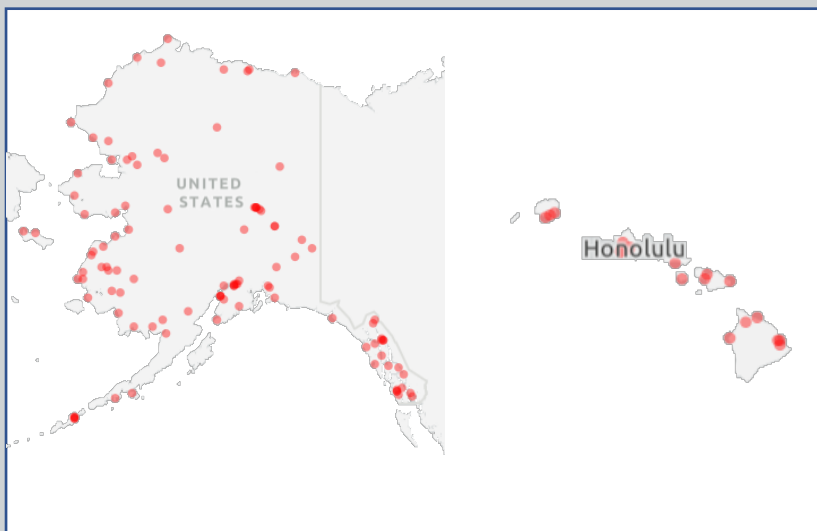
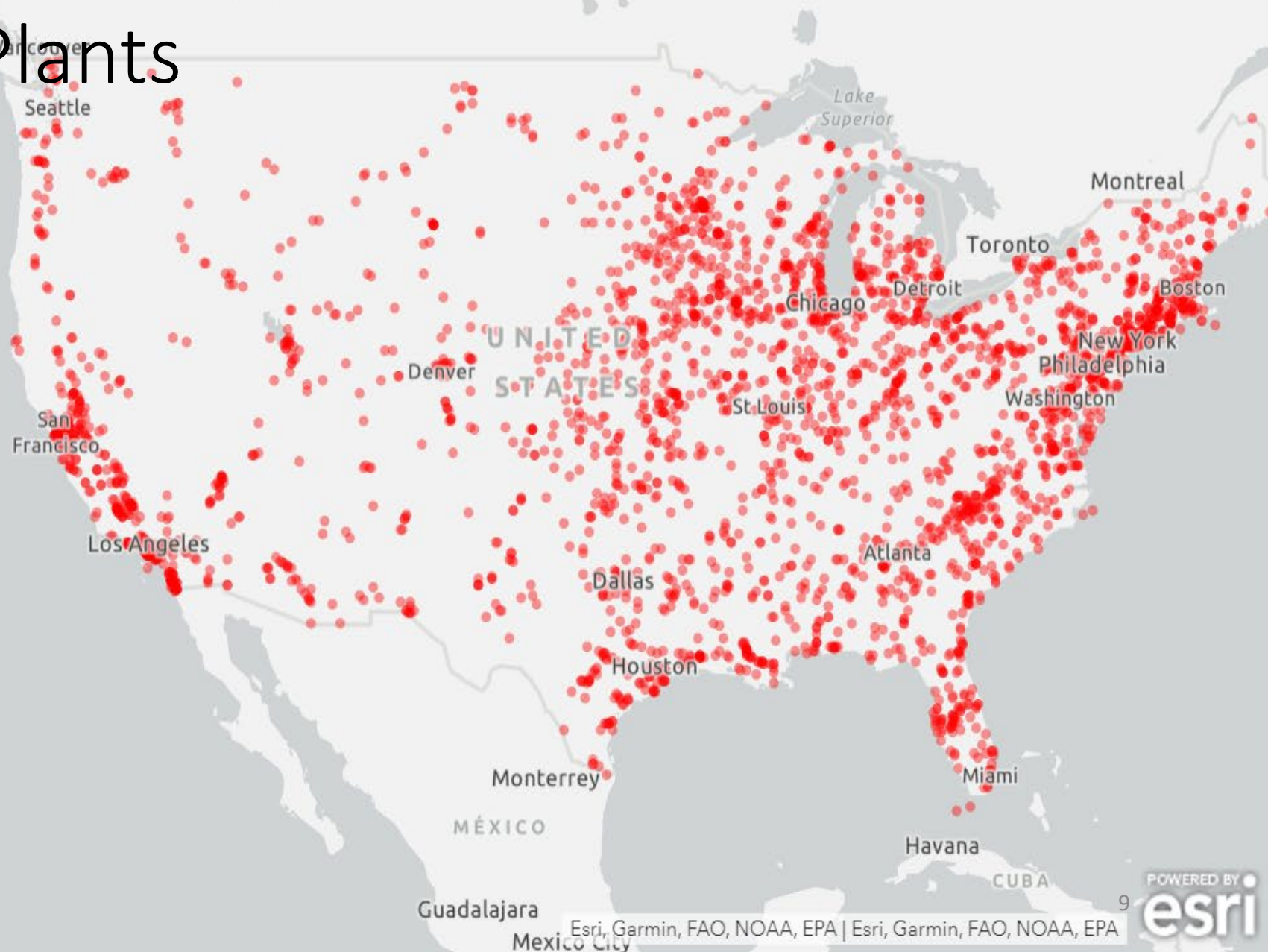
Neighboring Community Demographics



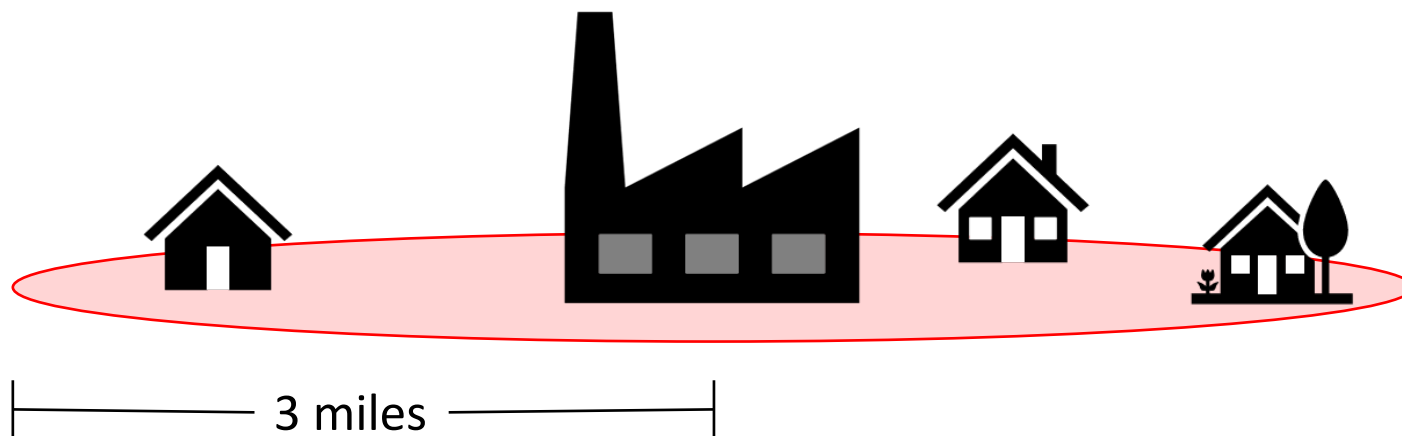
1. Low-Income Population
2. People of Color
3. Population with Less Than High School Education
4. Linguistically Isolated Population
5. Population Under Age 5
6. Population Over Age 64
7. Demographic Index (average of Low-Income and People of Color)

Included Power Plants

- **Over 3,400 combustion power plants**
- **Grid-connected and at a facility over 1 MW**

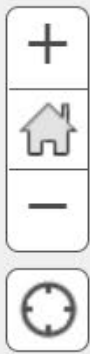


Community Demographics



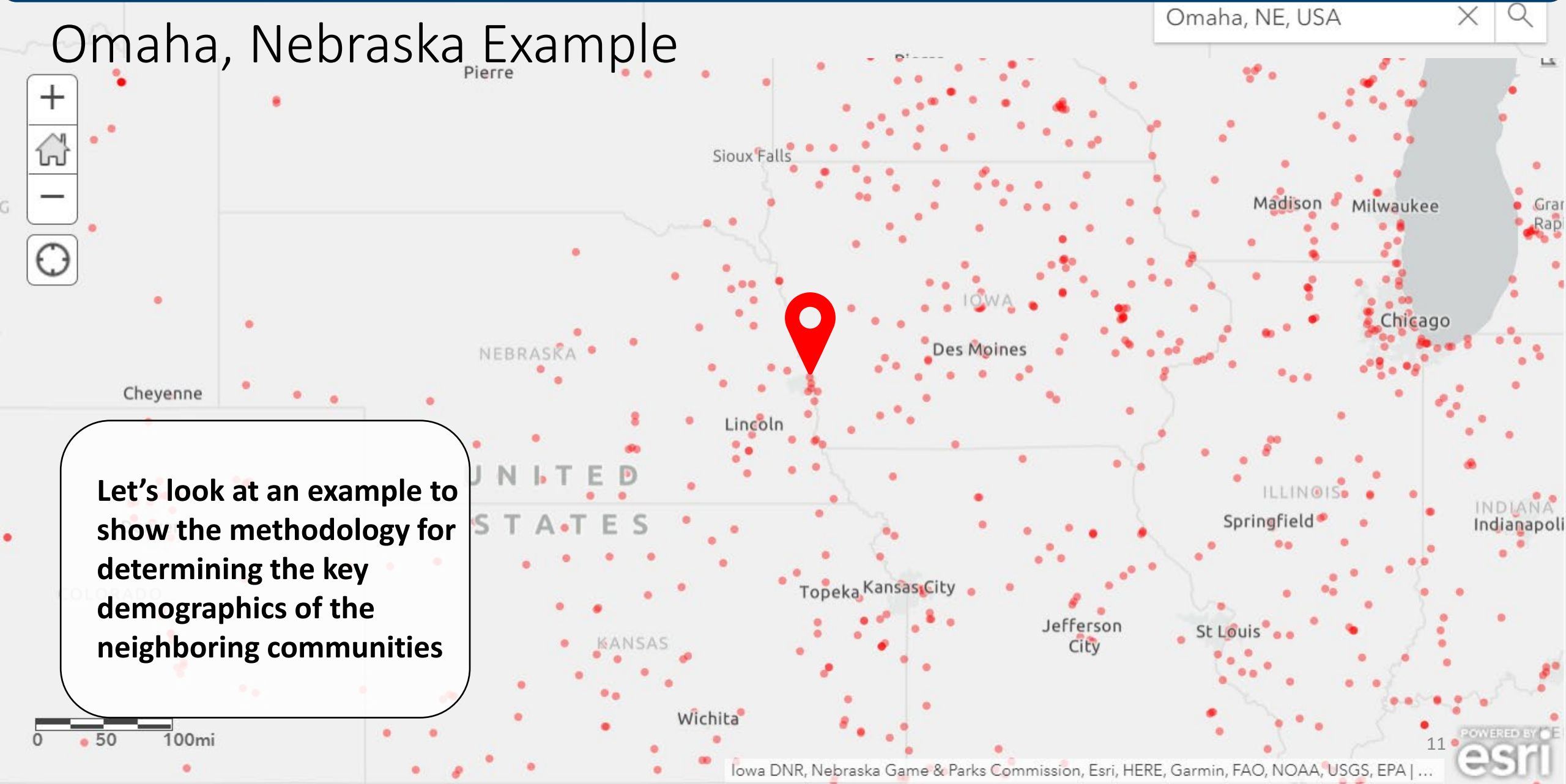
- EPA obtains the demographic information from the U.S. Census Bureau's American Community Survey (ACS) 2014-2018 5-year summary file, which is based on 2018 Census boundaries.
- Key demographics and population metrics are determined for the areas within three miles of each plant using EJSCREEN data and methodology.
- [EJSCREEN](#) is EPA's environmental justice mapping and screening tool that provides a nationally consistent dataset and approach for combining environmental and demographic indicators.

Omaha, Nebraska Example



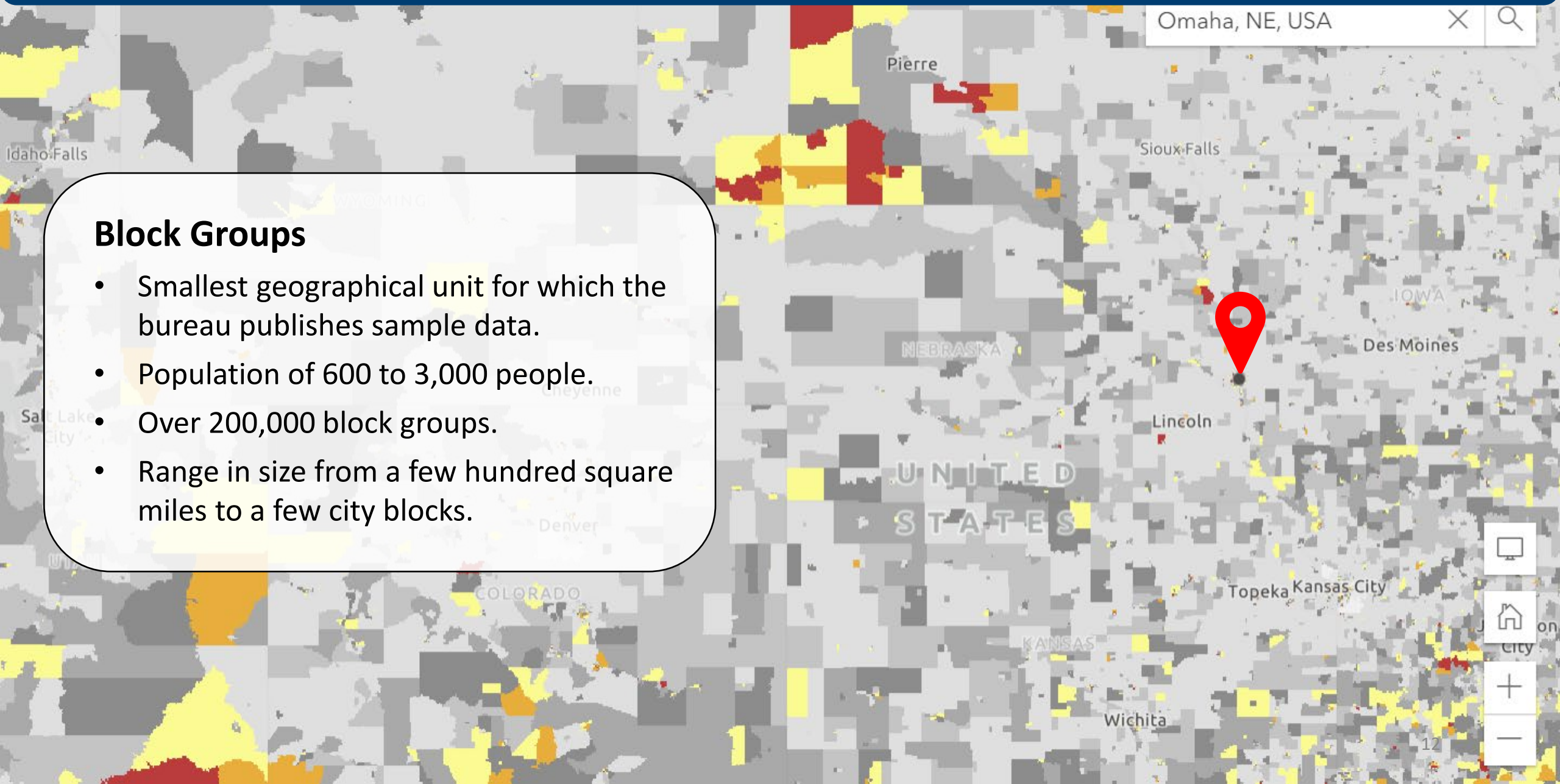
Omaha, NE, USA

Let's look at an example to show the methodology for determining the key demographics of the neighboring communities



Block Groups

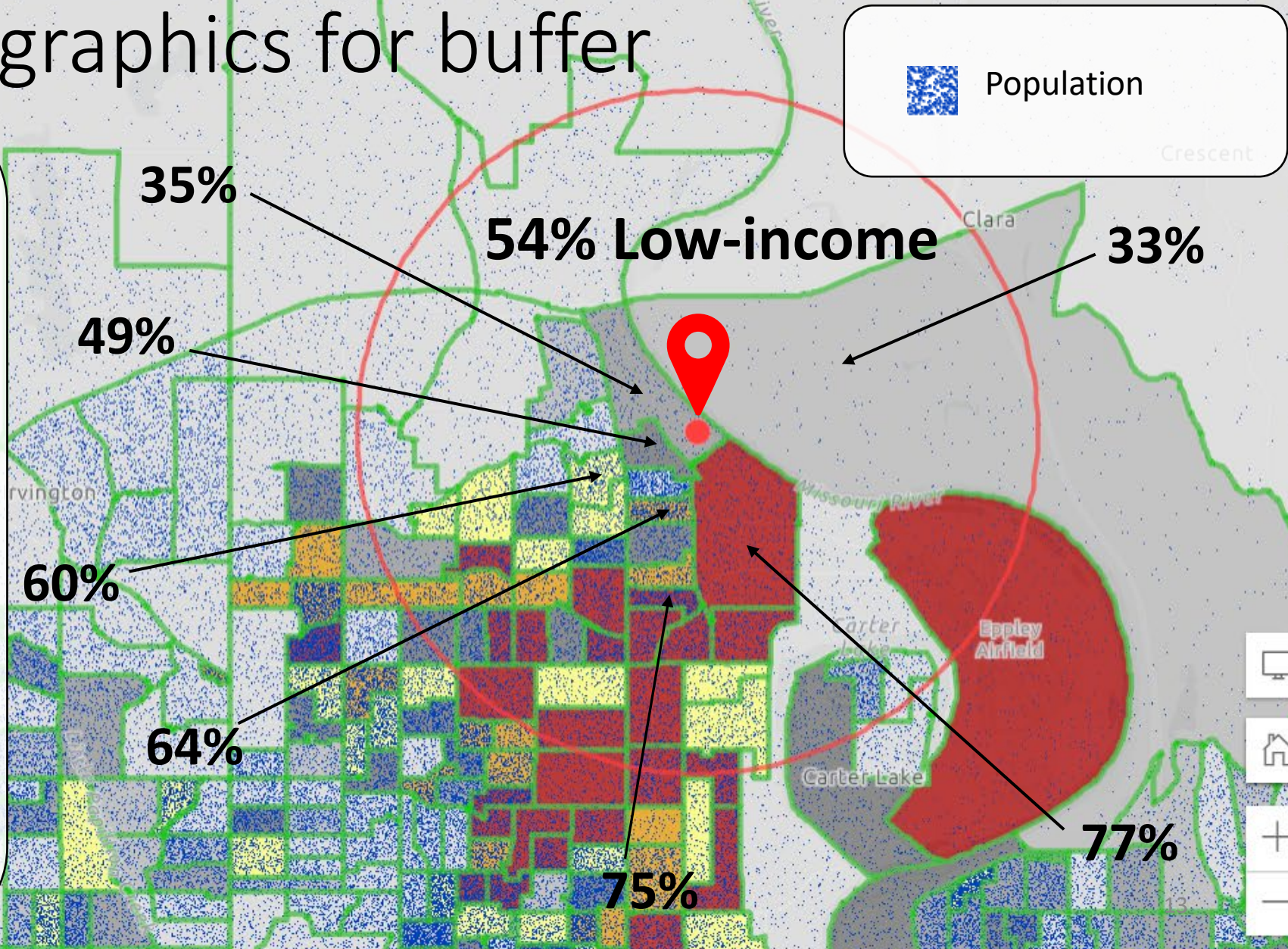
- Smallest geographical unit for which the bureau publishes sample data.
- Population of 600 to 3,000 people.
- Over 200,000 block groups.
- Range in size from a few hundred square miles to a few city blocks.



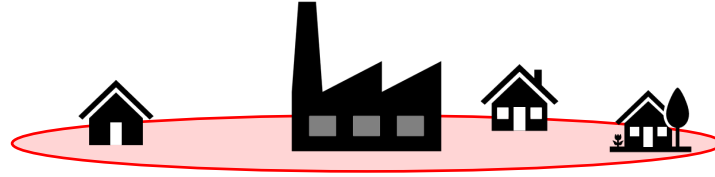
Average demographics for buffer

Summary Demographics Methodology

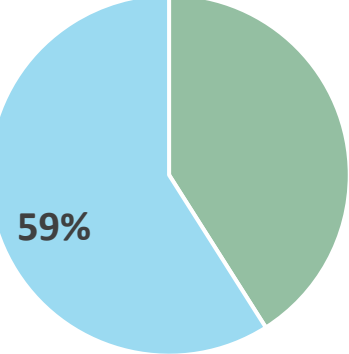
- Determine which Block Groups are fully in or partially in the 3-mile buffer.
- For Block Groups partially in the buffer, estimate how much of each block group's population is inside the buffer.
- Values are based on population-weighted Block Group demographics.
- Designed to represent the average resident within the buffer.
- Provides an estimate of the total population residing in the buffer.



Community Demographics with Percentiles

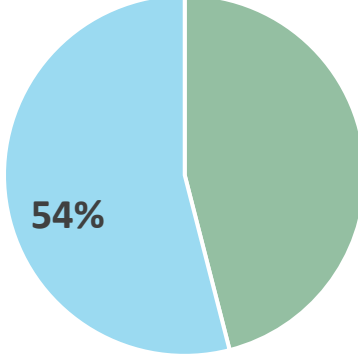


People of Color
(39%)



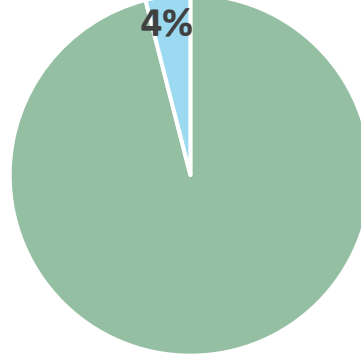
72nd percentile

Low-income
(33%)



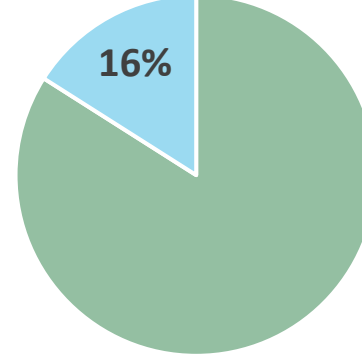
83rd percentile

Linguistically Isolated
(4%)



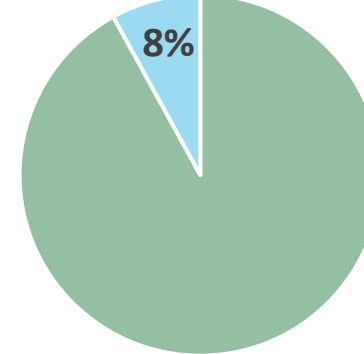
68th percentile

Less Than High School
(13%)



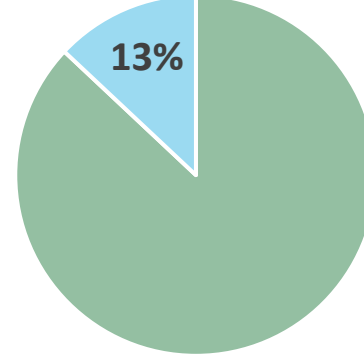
71st percentile

Under Age 5
(6%)



69th percentile

Over Age 64
(15%)




46th percentile



Percentage of Key Demographic in 3-mile radius
(with national average)

Percentages or Percentiles?

- Percentiles are a way to see how residents in a specific area compare to everyone else in the United States.
- The national percentile tells you what percent of the U.S. population has an equal or lower value.
- For example, an area that is at the 83rd national percentile for low-income has a higher low-income population percentage than where 83% of the U.S. population lives.

●	
	A percentage is an absolute term. If you received 80% on a test of one hundred questions you had 80 correct answers.
●	A percentile is a relative term, and tells you how you have done on the test in comparison to the others who took the test. A percentile of 80 means that you scored equal to or better than 80% of people who took the test

Mapping Tool – Demographic Index



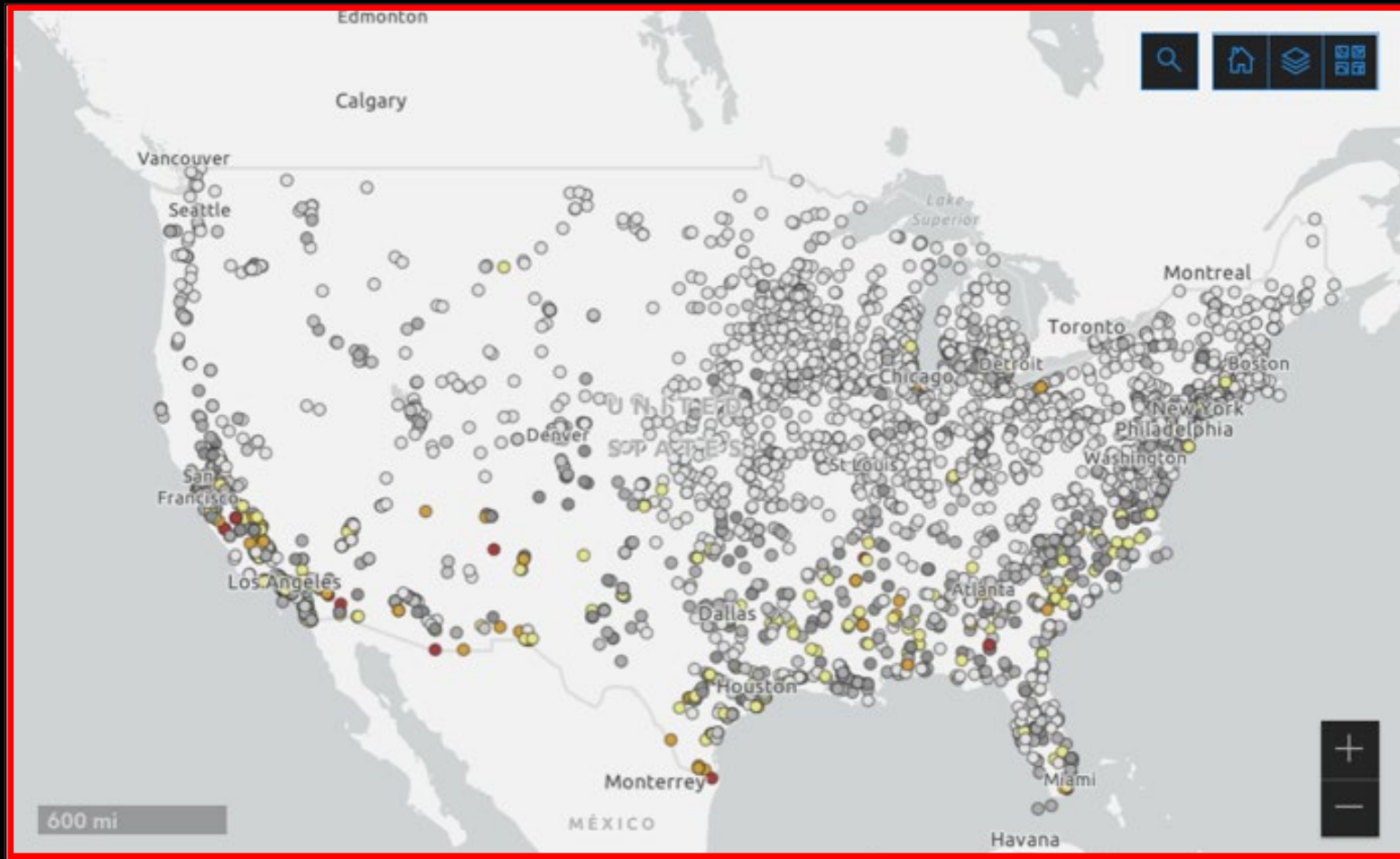
Power Plants and Neighboring Communities Mapping Tool



Filters

- fuel type
- All
 - Biomass
 - Coal
 - Gas
 - Oil
 - Other Fossil

- Demographic Index 0+
- Low-Income 0+
- People of Color 0+
- Less than High School Edu... 0+
- Linguistically Isolated 0+
- Population Less than 5



Legend

- Fossil Fuel Power Plants
- Demographic Index (National Percentile)
- 95 - 100
 - 90 - 94
 - 80 - 89
 - 70 - 79
 - 60 - 69
 - 50 - 59
 - 0 - 49

Number of Power Plants



Layers



Power Plants and Neighboring Communities Mapping Tool



Filters

Fuel Type

All Biomass Coal Gas Oil

Other Fossil

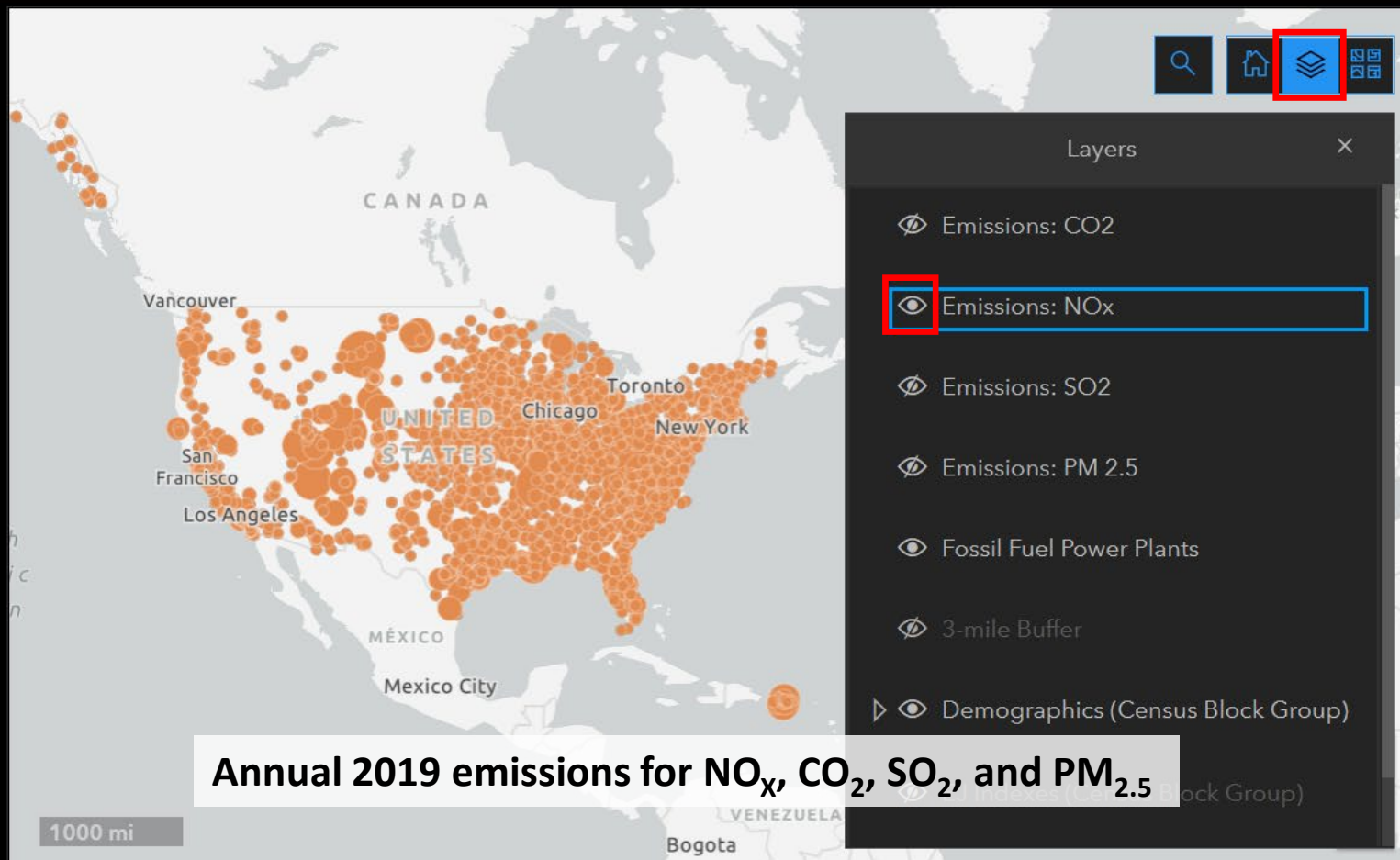
Demographic Index 0+

Low-Income 0+

People of Color 0+

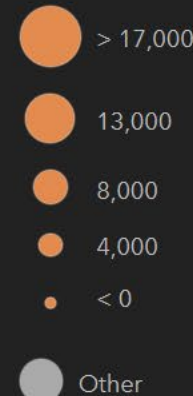
Less than High School Edu... 0+

Linguistically Isolated 0+



Legend

Plant unadjusted annual NO_x emissions (tons)



Number of Power Plants



Tribal Areas



Power Plants and Neighboring Communities Mapping Tool

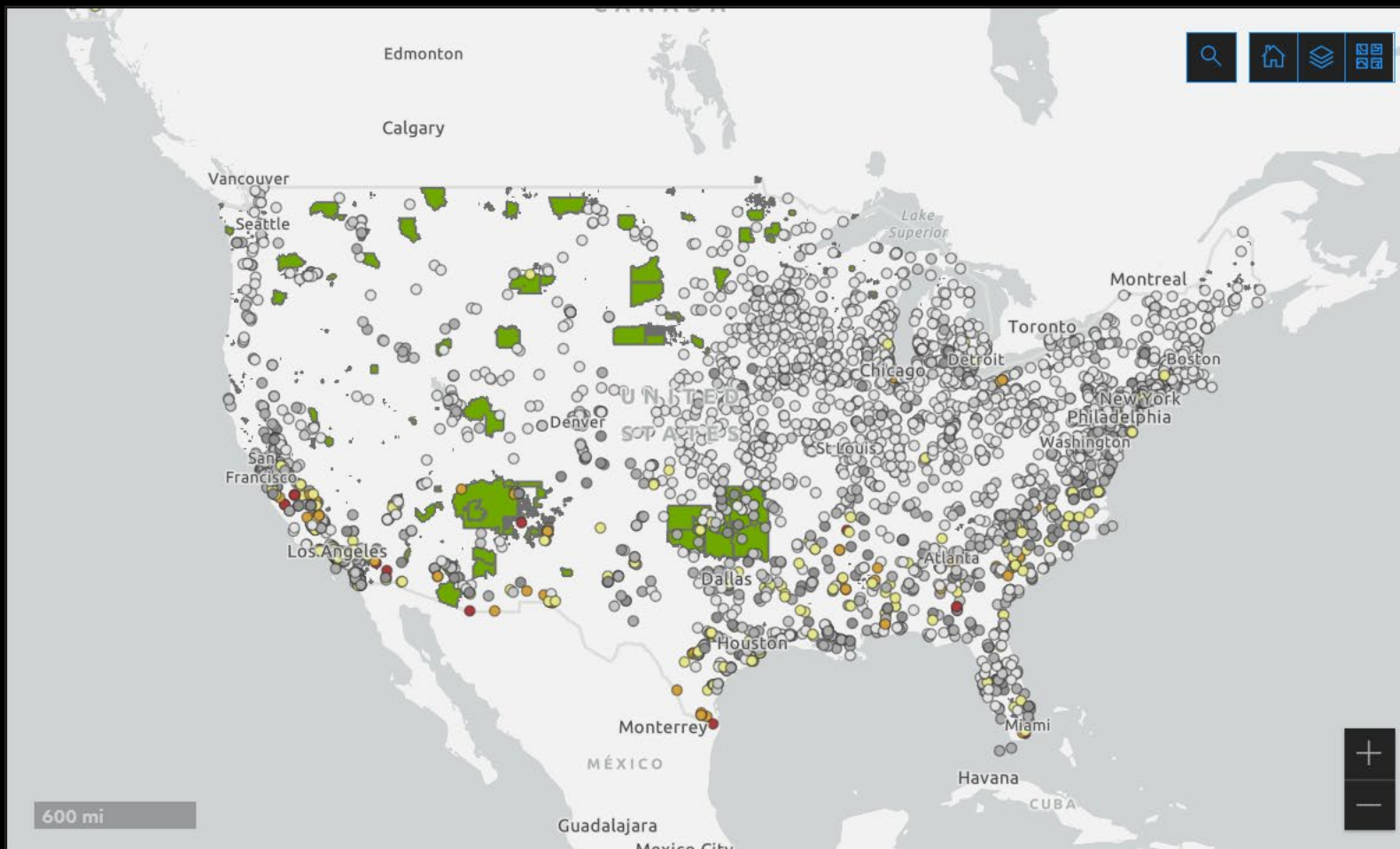


Filters

Fuel Type

- All
- Biomass
- Coal
- Gas
- Oil
- Other Fossil

- Demographic Index 0+ ^
- Low-Income 0+ ^
- People of Color 0+ ^
- Less than High School Edu... 0+ ^
- Linguistically Isolated 0+ ^




Legend


- 80 - 89
- 70 - 79
- 60 - 69
- 50 - 59
- 0 - 49

Tribal Areas

Tribal Areas: Lower 48 States



Number of Power Plants



3,477
18

Filters

Power Plants and Neighboring Communities Mapping Tool



Filters

Fuel Type

- All
- Biomass
- Coal
- Gas
- Oil
- Other Fossil

- Demographic Index 0+
- Low-Income 0+
- People of Color 0+
- Less than High School Edu... 0+
- Linguistically Isolated 0+

Users can filter the map to display plants based on:

- Fuel type
- National percentile of the key demographics (low-income, people of color, less than high school education, linguistically isolated, under age 5, and over age 64)
- Plant nameplate capacity (MW)
- Plant utilization (% of generating capacity)
- Emissions (SO₂, NO_x, CO₂, and PM_{2.5}) (tons)

The number of plants meeting the user-selected criteria is displayed.

Legend

- 80 - 89
- 70 - 79
- 60 - 69
- 50 - 59
- 0 - 49

Tribal Areas

Tribal Areas: Lower 48 States

Number of Power Plants



Power Plants and Neighboring Communities

Filter Example - Coal-fired plants in areas with a low-income national percentile at or above 80



Power Plants and Neighboring Communities Mapping Tool



Filters

Fuel Type

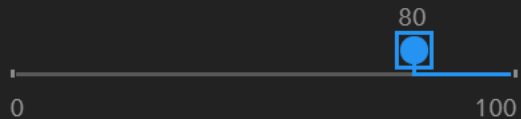
- All
- Biomass
- Coal**
- Gas
- Oil
- Other Fossil

Demographic Index

0+

Low-Income

80+

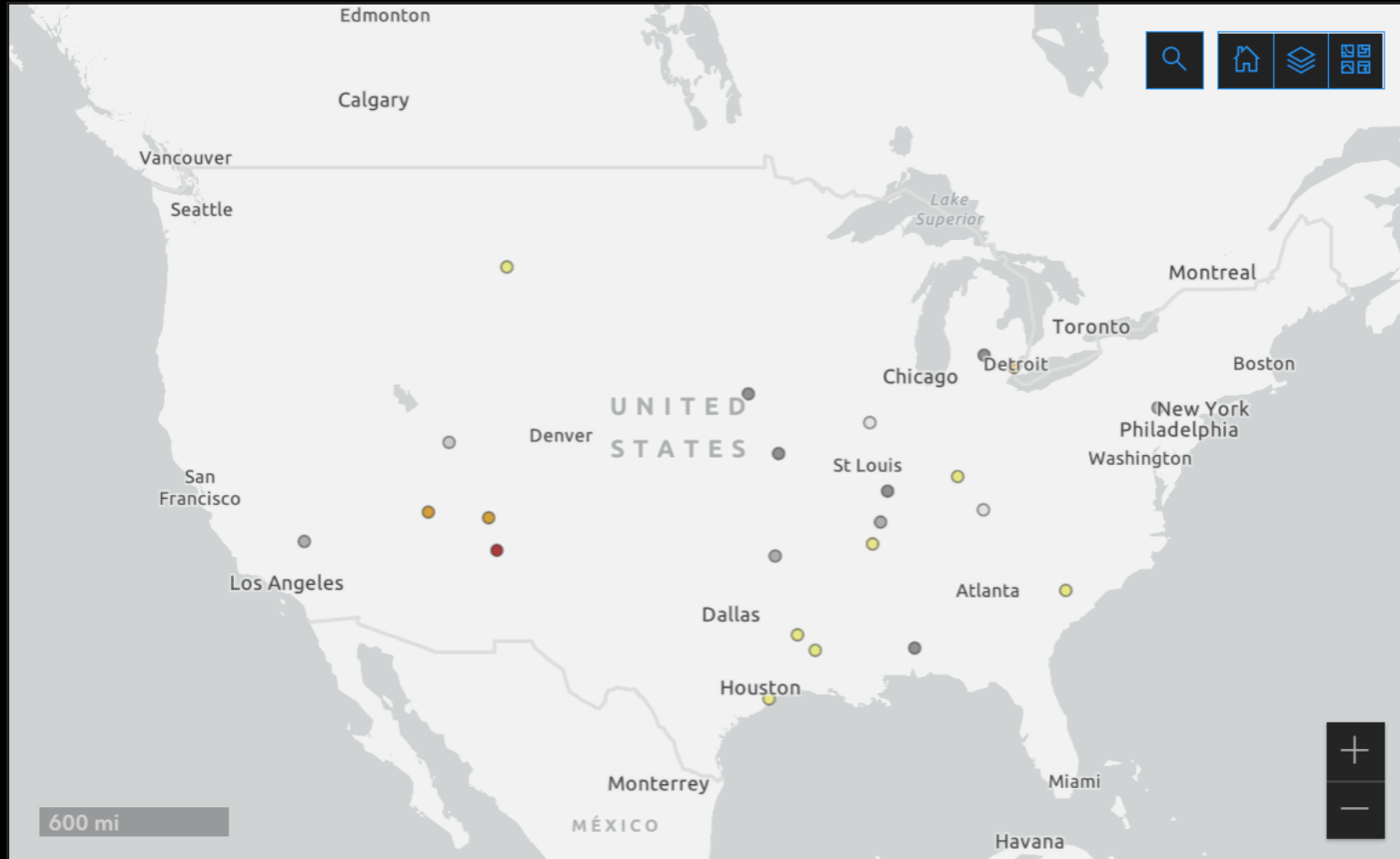


Reset

People of Color

0+

Less than High School Edu...



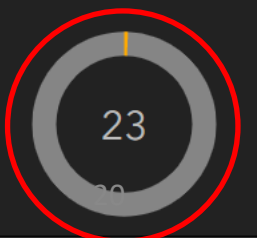
Legend

Fossil Fuel Power Plants

Demographic Index (National Percentile)

- 95 - 100
- 90 - 94
- 80 - 89
- 70 - 79
- 60 - 69
- 50 - 59
- 0 - 49

Number of Power Plants



Going back to the Omaha, Nebraska example



Layers – Census Block Population



Power Plants and Neighboring Communities Mapping Tool

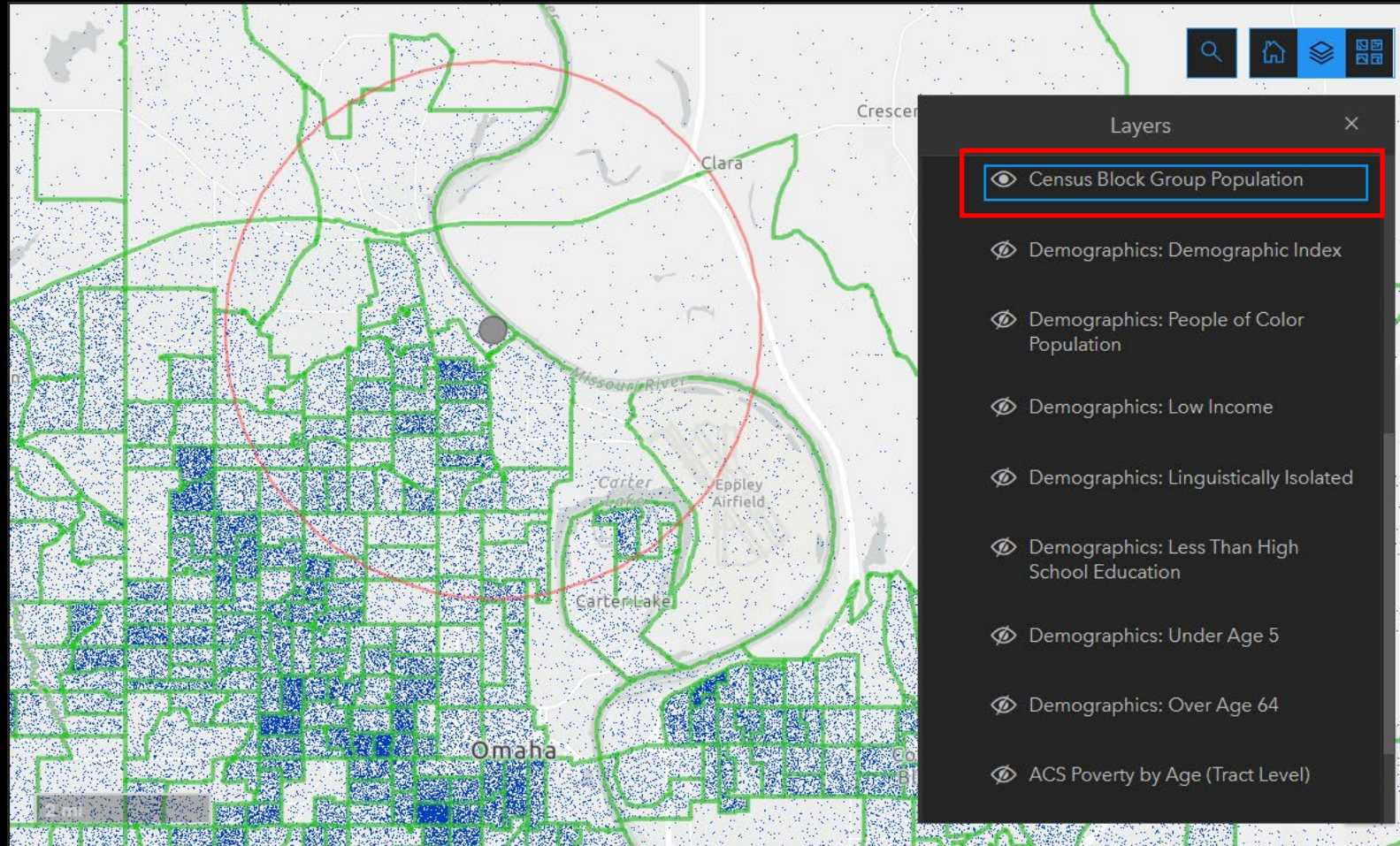


Filters

Fuel Type

- All
- Biomass
- Coal
- Gas
- Oil
- Other Fossil

- Demographic Index
75+
- Low-Income
80+
- People of Color
70+
- Less than High School Edu...
0+
- Linguistically Isolated
0+
- Population Less than 5
0+



Legend

Demographics (Census Block Group)

Census Block Group Boundaries



Census Block Group Population

1 Dot = 6



Number of Power Plants



Layers – Demographic Index



Power Plants and Neighboring Communities Mapping Tool

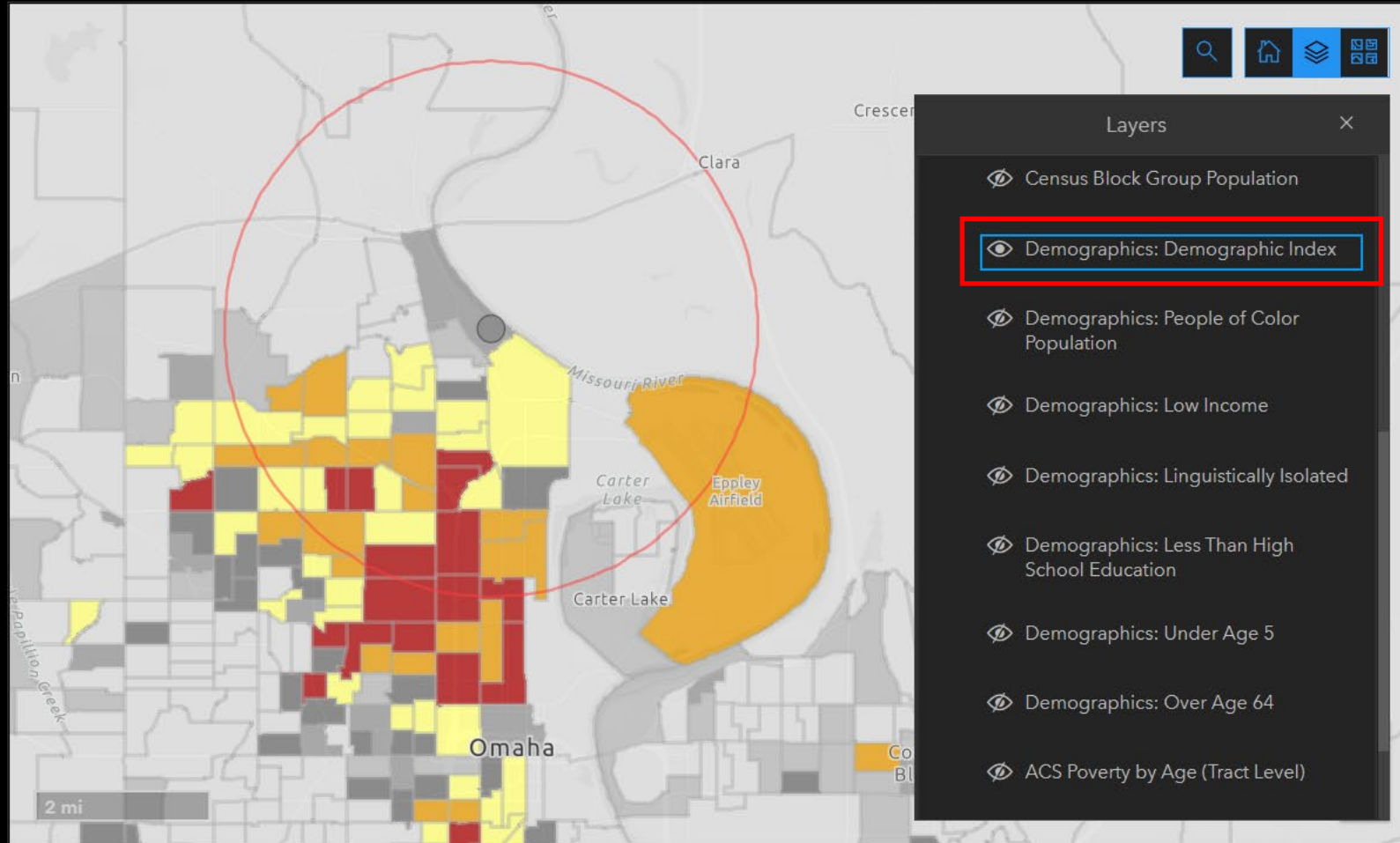


Filters

Fuel Type

- All
- Biomass
- Coal
- Gas
- Oil
- Other Fossil

- Demographic Index 75+
- Low-Income 80+
- People of Color 70+
- Less than High School Edu... 0+
- Linguistically Isolated 0+
- Population Less than 5 0+



Legend

Demographic Index National Percentile

- > 95 - 100%ile
- > 90 - 95%ile
- > 80 - 90%ile
- > 70 - 80%ile
- > 60 - 70%ile
- > 50 - 60%ile
- 0 - 50%ile
- No Data

Number of Power Plants



Detailed Information – Census Block



Power Plants and Neighboring Communities Mapping Tool



Filters

Fuel Type

- All
- Biomass
- Coal
- Gas
- Oil
- Other Fossil

Demographic Index
75+

Low-Income
80+

People of Color
70+

Less than High School Edu...
0+

Linguistically Isolated
0+

Population Less than 5
0+

Zoom to Pan

Census Block Group Key Demographics

ID: 310550002003

Land Area (sq. meters)	1,450,948
State	Nebraska
Demographic Index	40% (64%ile)
% low income	35% (61%ile)
% people of color	45% (62%ile)
% less than high school	10% (53%ile)
% linguistic isolation	0% (45%ile)

% under age 5	4% (31%ile)
% over age 64	17% (65%ile)
Total Population	949
Minority Population	828
Census Block Group ID	310550007001

More information on the key demographics can be found in the [glossary of EJSCREEN terms](#) or the [Technical Documentation for EJSCREEN](#).

Legend

Demographics: Low Income

Low Income National Percentile

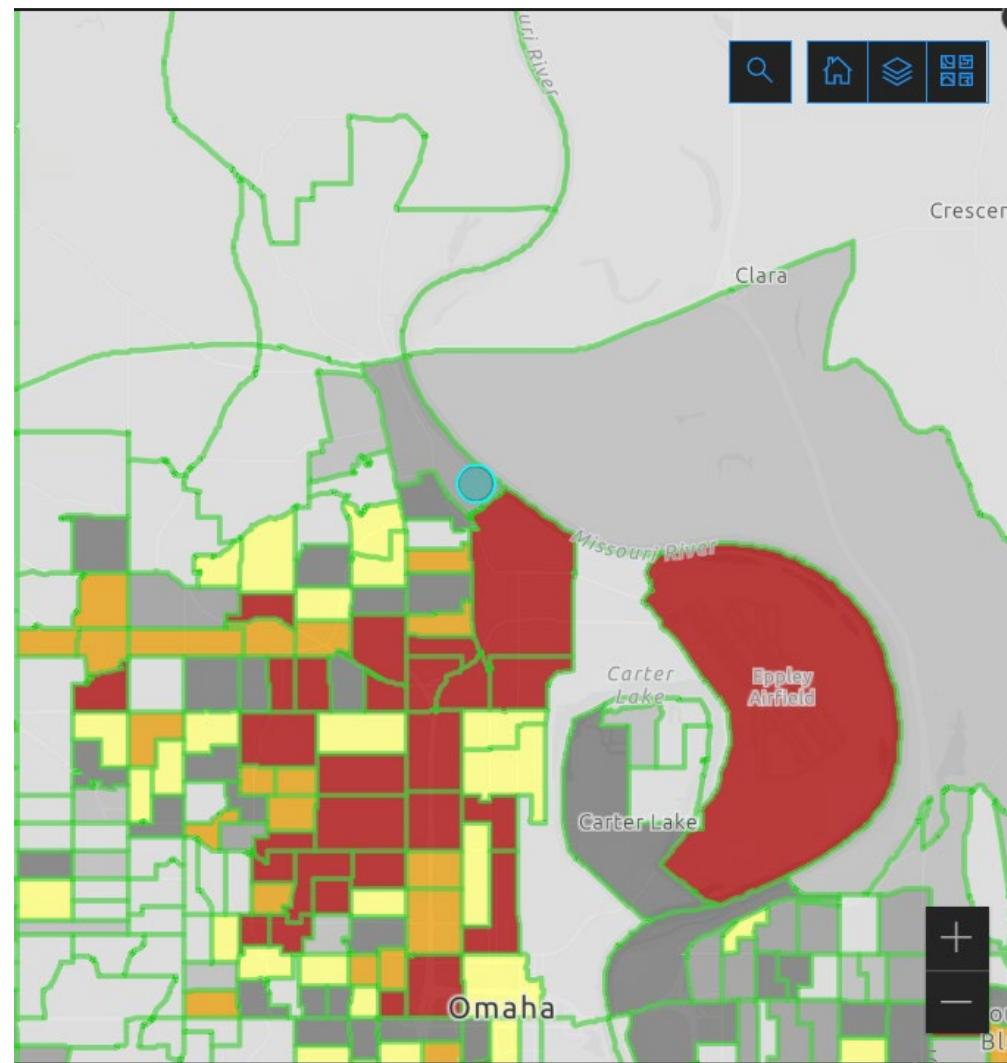
- > 95 - 100%ile
- > 90 - 95%ile
- > 80 - 90%ile
- > 70 - 80%ile
- > 60 - 70%ile

Number of Power Plants



Detailed Information – Plant Level

Plant: North Omaha Station (NE)		2019 Emissions (tons)	
Plant ID	2291	2,331,027 CO2	3,343.1 NOx
Data Year	2019	5,792.8 SO2	79.3 PM2.5
Plant nameplate capacity (MW)	645	2019 Emission rates (lb/MWh)	
Plant Utilization (a.k.a, capacity factor)	33.17%	2,489 CO2	3.6 NOx
Fuels	Primary fuel: Coal Primary combustion fuel: Coal	6.2 SO2	0.1 PM2.5
Total population within 3 miles (ACS2018)	38,348	2020 Emissions	
Demographic Index	57% (79%ile)	Net generation (MWh)	Total generation: 1,873,296 Generation from combustion: 1,873,296
Low-Income	54% (83%ile)		
People of Color	59% (72%ile)		
Less than High School Education	16% (71%ile)		
Linguistically Isolated	0% (68%ile)		
Population under Age 5	8% (69%ile)		
Population over Age 64	13% (46%ile)		



Plant data, key demographic data, emissions, emissions rates, and generation.

Links to Power Plant Data

Power Plants

More information about this power plant's attributes, operation, and emissions can be found in eGRID and CAMD's [Power Sector Emissions Data](#).

Demographics

More information about the area surrounding this power plant can be found in the [EJSCREEN Standard Report](#) and help with interpreting the EJSCREEN report can be found [here](#).

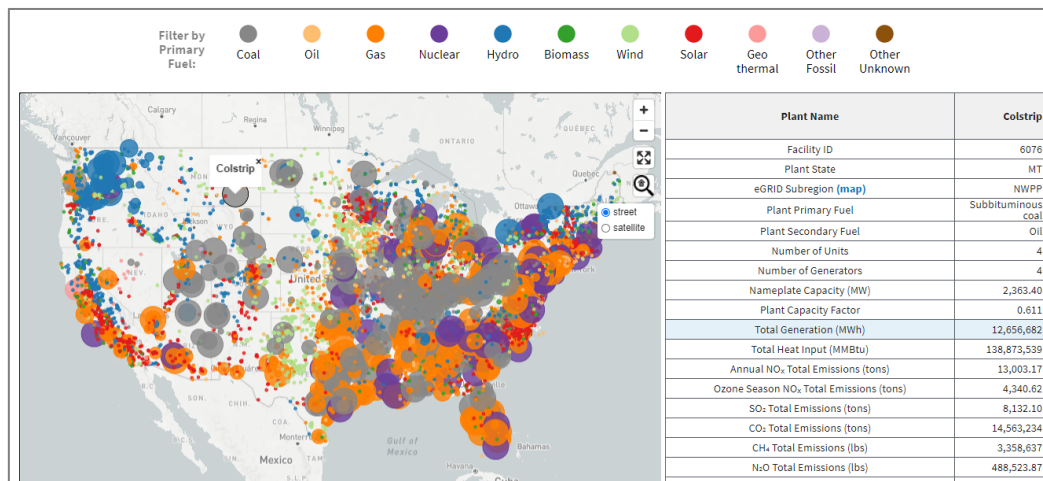
Health

More information about environmental health issues for the county or state where the plant is located can be found at [CDC's National Environmental Public Health Tracking Network](#).

Compliance

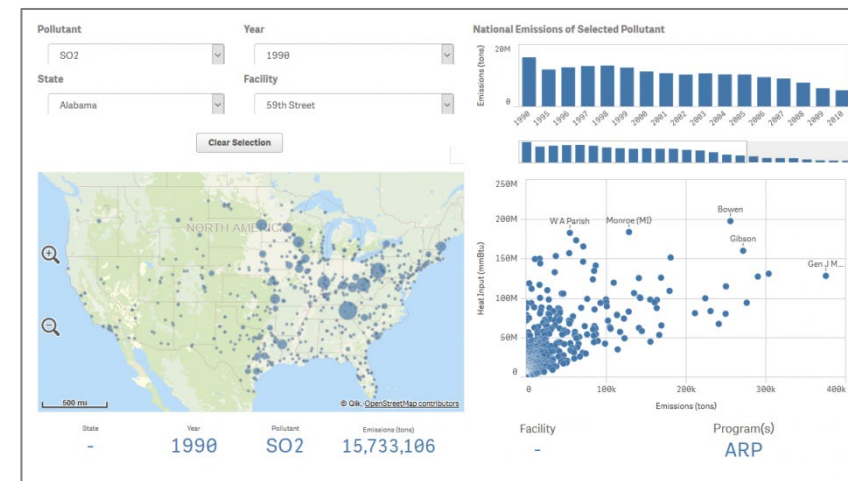
More information about the compliance- and enforcement-related information for EPA-regulated facilities can be found at EPA's [Enforcement and Compliance History Online \(ECHO\)](#).

eGRID



- Annual data compiled from the EPA and the Energy Information Administration (EIA) and primarily used to determine emissions associated with electricity consumption.
- Unit- and plant-level data on facility attributes, emissions and emission rates, operation, fuel use, ownership, and service areas.
- The 2019 annual data is available.

CAMD Power Sector Data



- Emission data supports compliance assessment with emission reduction programs and policy development.
- Unit-level hourly emissions and operating data from larger plants (at least 25 MW).
- The 2020 annual data is available.

Link to EJSCREEN Report

Power Plants

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Compliance

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EJSCREEN Report (Version 2020)

3 mile Ring Centered at 41.329090,-95.944660

NEBRASKA, EPA Region 7

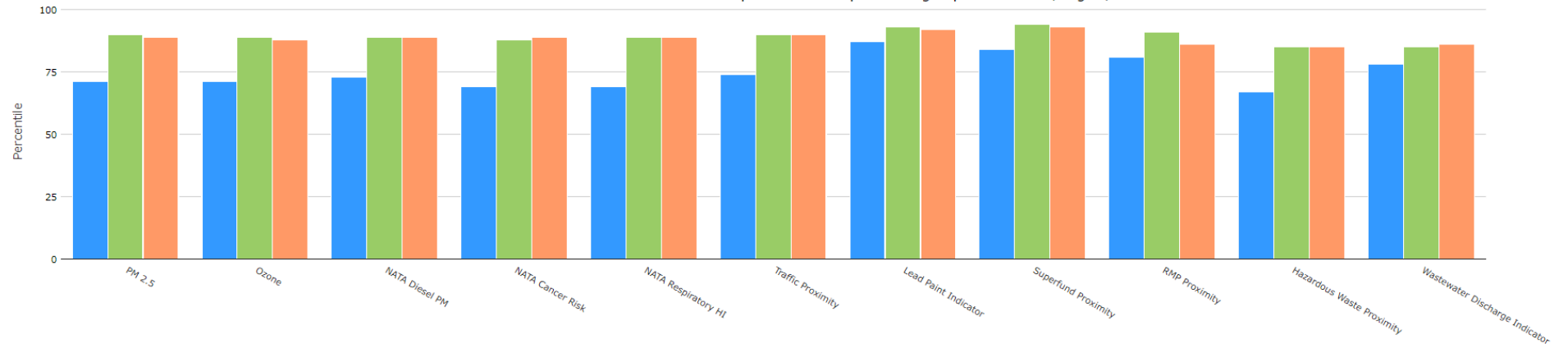
Approximate Population: 38,348

Input Area (sq. miles): 28.27



Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	89	90	71
EJ Index for Ozone	88	89	71
EJ Index for NATA* Diesel PM	89	89	73
EJ Index for NATA* Air Toxics Cancer Risk	89	88	69
EJ Index for NATA* Respiratory Hazard Index	89	89	69
EJ Index for Traffic Proximity and Volume	90	90	74
EJ Index for Lead Paint Indicator	92	93	87
EJ Index for Superfund Proximity	93	94	84
EJ Index for RMP Proximity	86	91	81
EJ Index for Hazardous Waste Proximity	85	85	67
EJ Index for Wastewater Discharge Indicator	86	85	78

EJ Index for the Selected Area Compared to All People's Blockgroups in the State/Region/US



Report includes information on EJ Indexes (shown above), environmental indicators, and demographic indicators. 27

Link to CDC Environmental Health Report

Power Plants

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Demographics

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Health

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Compliance

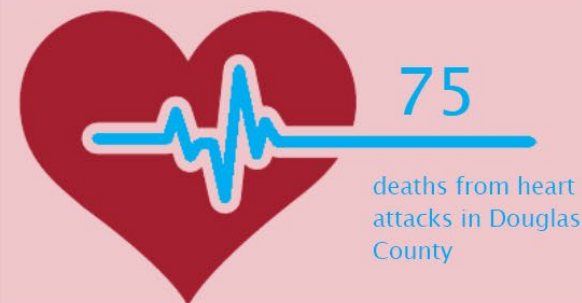
More information about the compliance- and enforcement-related information for EPA-regulated facilities can be found at EPA's Enforcement and Compliance History Online (ECHO).

Heart Attacks[†]

The environment is one of **several factors** that can lead to an increased risk for heart disease. High levels of air pollution and extreme hot and cold temperatures have been linked to increases in heart disease and deaths from heart attacks. A heart attack happens when a part of the heart muscle dies or gets damaged because of reduced blood supply.

In 2019, there were

- 75 deaths from heart attacks in Douglas County.
- 595 deaths from heart attacks in Nebraska.



Discover the data | Learn more about this topic

[†] 2019 data from the National Environmental Public Health Tracking Network



Report includes information on county or state demographics, asthma, ground-level ozone and particulate matter, smoking, extreme heat, heart attacks (shown above), access to parks, and proximity to highways.

Link to ECHO – Enforcement and Compliance Report

Power Plants

More information about this power plant's attributes, operation, and emissions can be found in [eGRID](#) and [CAMD's Power Sector Emissions Data](#).

Demographics

More information about the area surrounding this power plant can be found in the [EJSCREEN Standard Report](#) and help with interpreting the EJSCREEN report can be found [here](#).

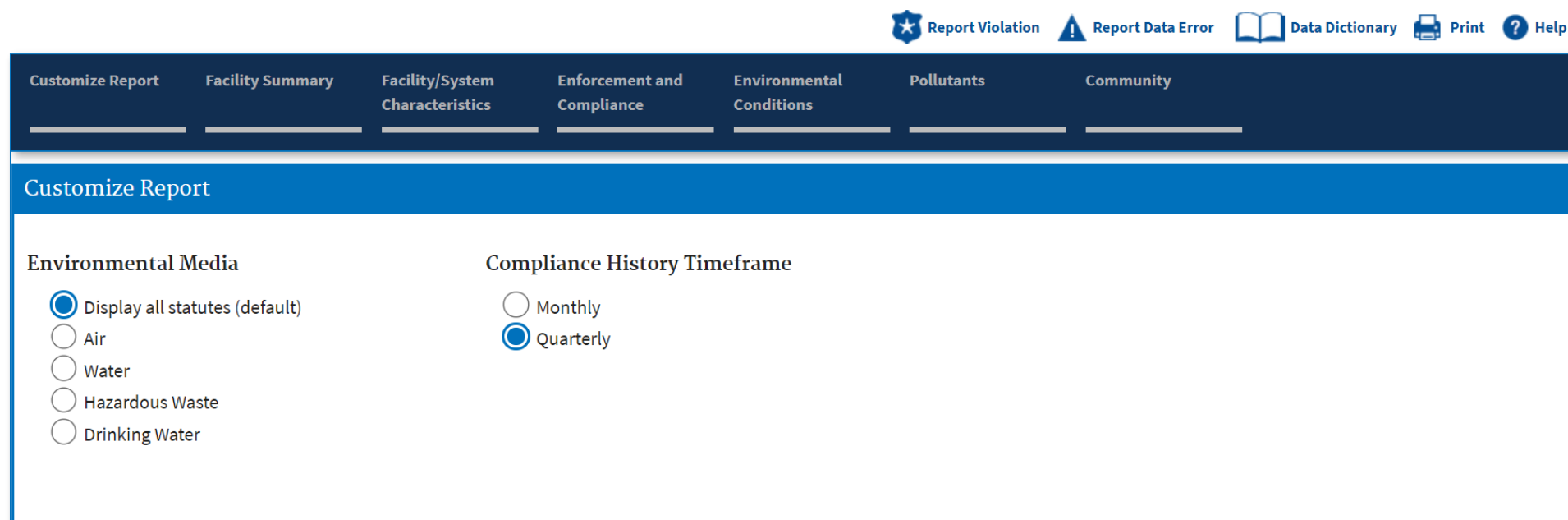
Health

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Compliance

More information about the compliance- and enforcement-related information for EPA-regulated facilities can be found at EPA's [Enforcement and Compliance History Online \(ECHO\)](#).

Detailed Facility Report



The screenshot shows the ECHO Detailed Facility Report interface. At the top right, there are navigation links: Report Violation (star icon), Report Data Error (warning icon), Data Dictionary (book icon), Print (printer icon), and Help (question mark icon). Below these is a horizontal menu with seven tabs: Customize Report, Facility Summary, Facility/System Characteristics, Enforcement and Compliance, Environmental Conditions, Pollutants, and Community. The 'Customize Report' tab is selected and highlighted in blue. The main content area is titled 'Customize Report' and contains two sections: 'Environmental Media' and 'Compliance History Timeframe'. Under 'Environmental Media', there are radio buttons for 'Display all statutes (default)' (selected), 'Air', 'Water', 'Hazardous Waste', and 'Drinking Water'. Under 'Compliance History Timeframe', there are radio buttons for 'Monthly' and 'Quarterly' (selected).

Report includes information on plant-level characteristics, enforcement, compliance, environmental conditions, pollutants, and community.

Other User Tools



Power Plants and Neighboring Communities Mapping Tool

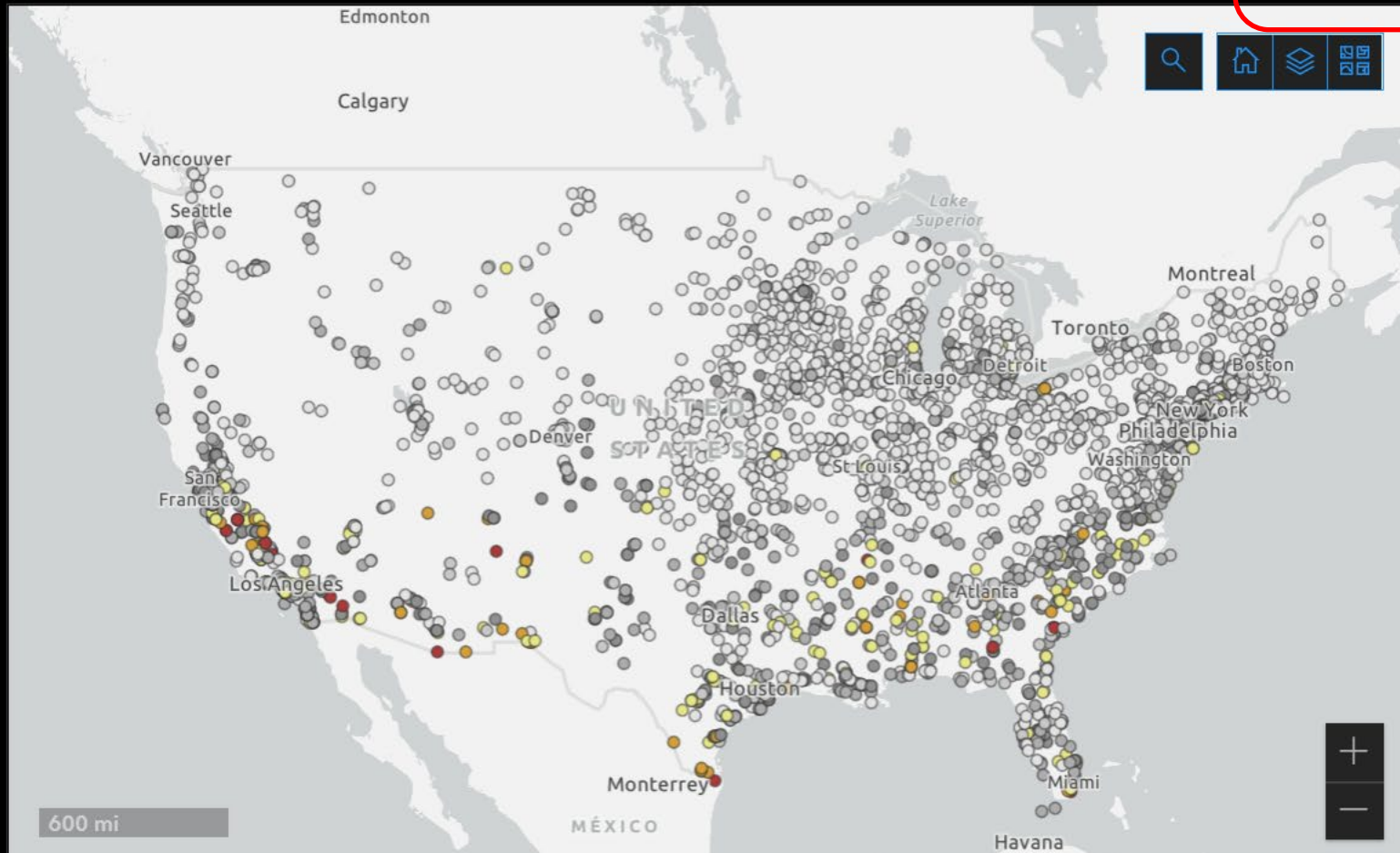


Filters

Fuel Type

- All
- Biomass
- Coal
- Gas
- Oil
- Other Fossil

- Demographic Index 0+
- Low-Income 0+
- People of Color 0+
- Less than High School Edu... 0+
- Linguistically Isolated 0+



Legend

Fossil Fuel Power Plants

Demographic Index (National Percentile)

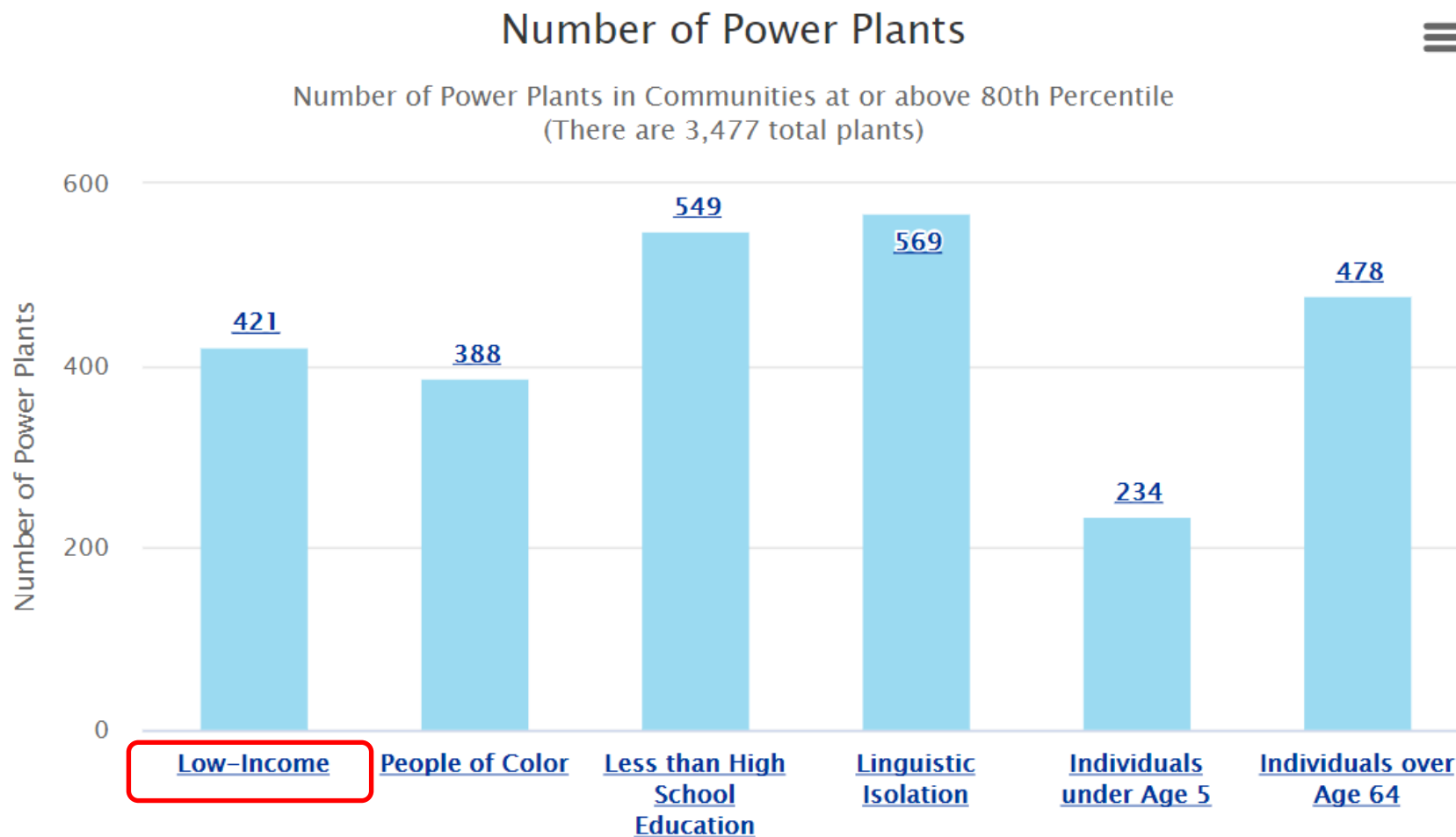
- 95 - 100
- 90 - 94
- 80 - 89
- 70 - 79
- 60 - 69
- 50 - 59
- 0 - 49

Number of Power Plants



Website – Summary Graph

The mapping tool is linked from a webpage which provides context, additional information about the data sources, and interactive summary graphs.

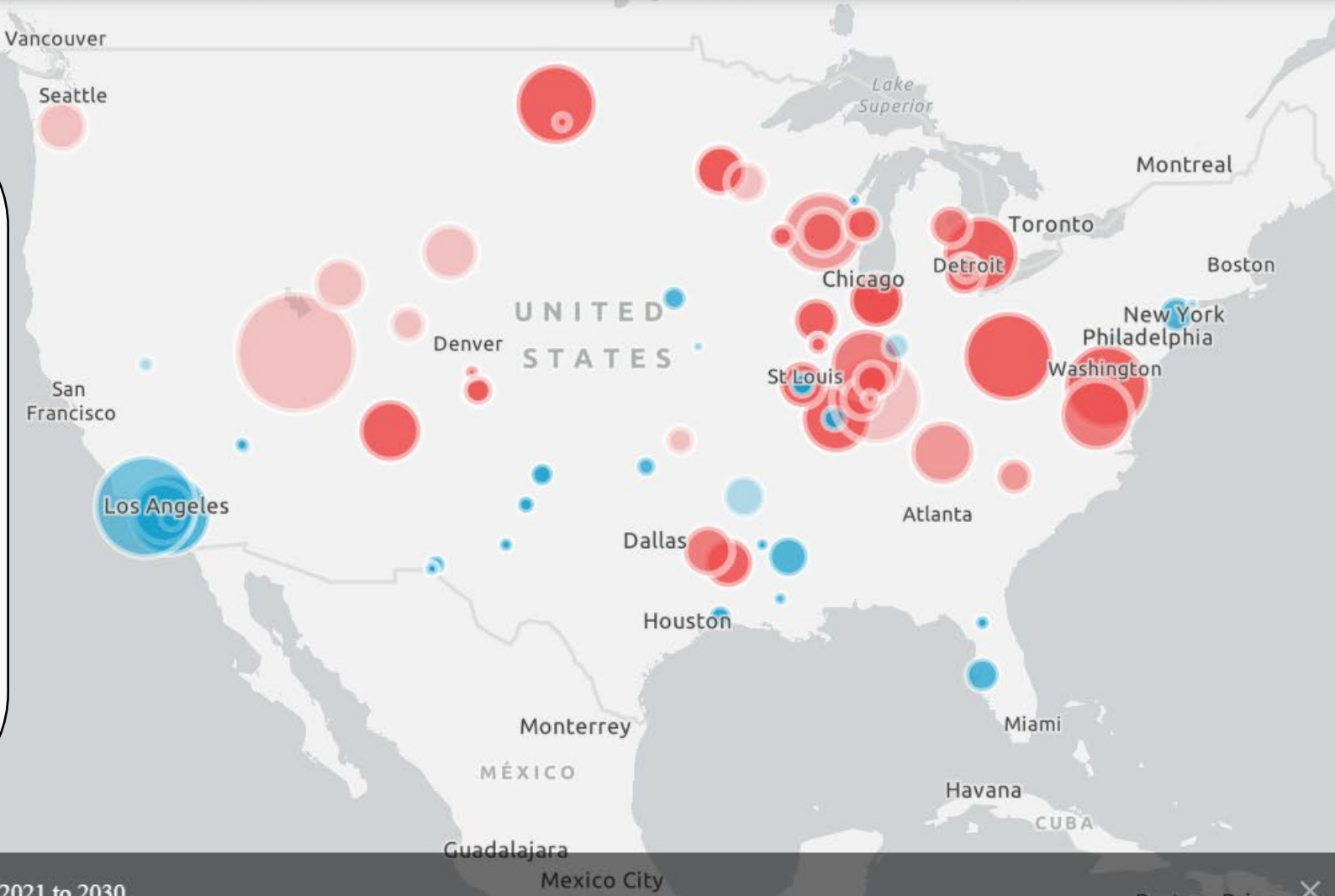


Power Plants and Neighboring Communities

Announced Power Plant Retirements



- Closing large fossil fuel-fired power plants may have immediate and lasting effects on the surrounding communities.
- The color of the marker indicates fuel type (coal is red and natural gas is blue).
- The color saturation level indicates projected retirement year with earlier years lighter in shade.
- The marker size represents projected retirement capacity.



2021 to 2030



Port-au-Prince

32
Caribbean
Sea
1x

Questions about how to use this tool?

- Please enter your question in the Q&A box
- If your question is not answered or for additional questions and comments email: press@epa.gov
- Webinar will be posted on the website:
<https://www.epa.gov/airmarkets/power-plants-and-neighboring-communities>