

Using EJSCREEN for MARC Grants

Technical Assistance for Brownfields Program
EPA Region 1

Marisa Chrysochoou, Program Director



Tab.program.uconn.edu

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Learning Objectives for today's webinar

1. Generate maps and reports for your Target Area and community in EJSCREEN
2. Select the appropriate indicators for each subsection
3. Interpret the indicators to demonstrate Community Need according to the EPA evaluation criteria



Sections to use EJSCREEN

2a.
Community
Need
points

ii. The
Community's
Need for
Funding

Determine whether your community is
low-income

2a.
Community
Need

ii. Threats to
Sensitive
Populations

1. Health or Welfare of Sensitive
Populations – 5

2. Greater Than Normal Incidence of
Disease and Adverse Health
Conditions – 5

3. Promoting Environmental Justice -
10



Examples from successful grants



Community Wide
Assessment Grant,
Middletown, CT
(population 46,000)



Cleanup Grant, Former
Allied Leather Site, 56
Commercial Street,
Boscawen, NH (population
4,000)



Maps and Reports in EJSCREEN

Maps

- Visual representation of indicators
- All shown in **Percentiles**
- Useful for identifying the **geographic units** that are your Target Area, and obtaining the Asthma Indicator

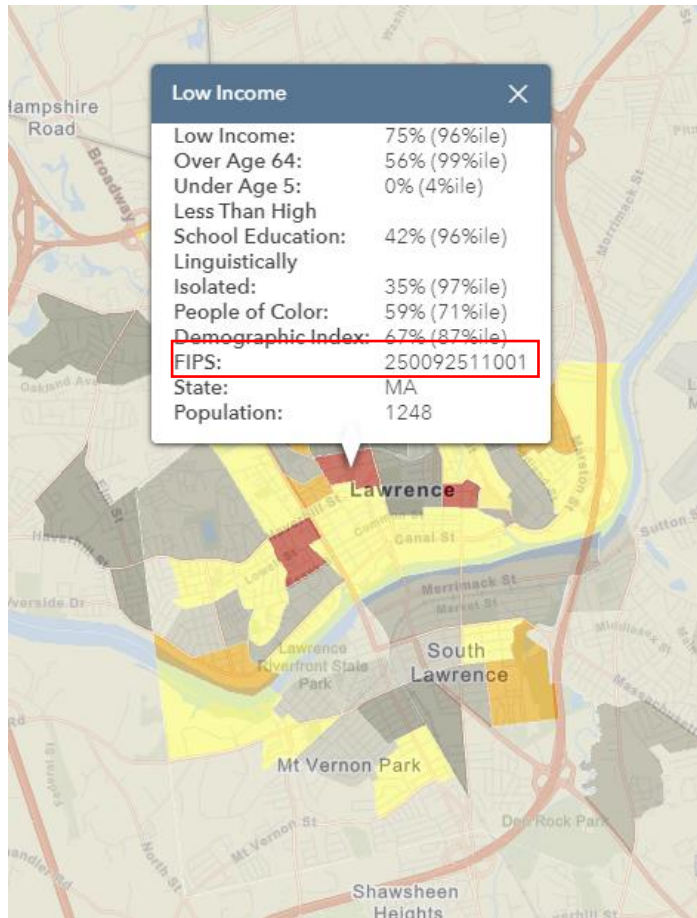
Reports

- Can obtain in Excel format
- Include **raw values** and **percentiles** for different **geographic units**
- Useful for obtaining all Demographic and Environmental Indices for your Target Area



Geographic units in EJSCREEN

Federal Information Processing Series (FIPS)



Frequently only the first four digits of the tract are used (when the last two digits are zero), except when it is 2511.01 and 2511.02 as two separate tracts

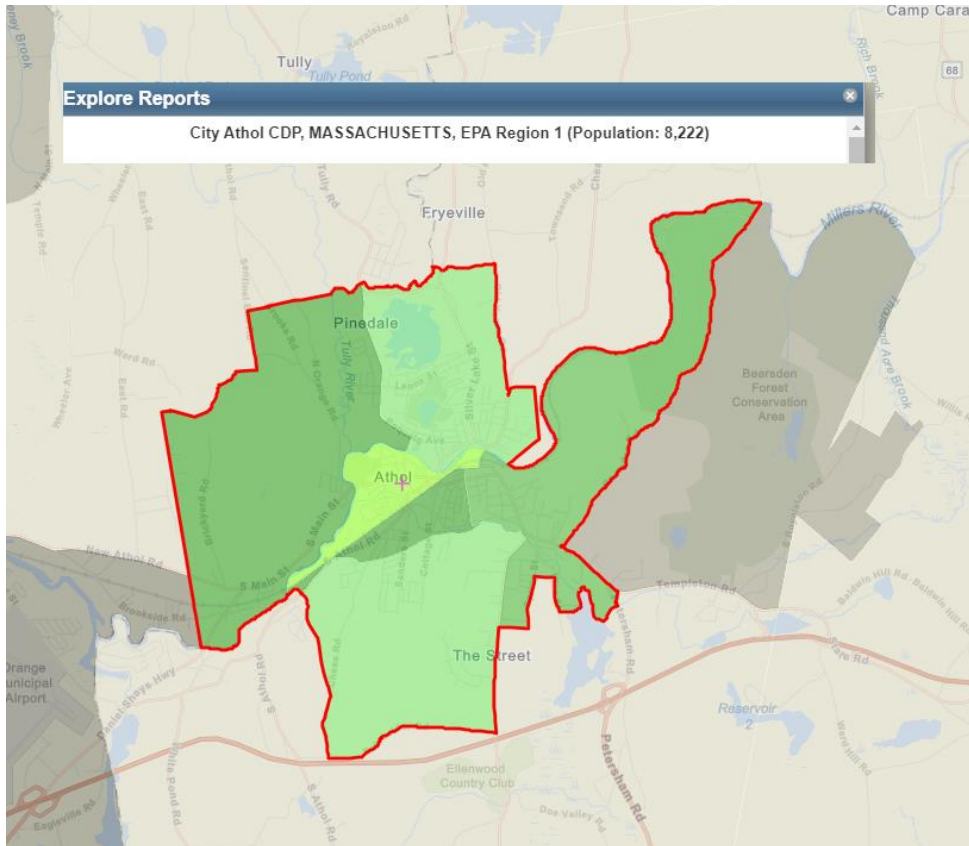
Reference maps for different demographic units can be obtained from the Census website in the following links

[U.S. Census 2020 Reference Census Tract Maps](#)

[U.S. Census 2020 Reference Block Group Maps](#)



Special geographic units in EJSCREEN

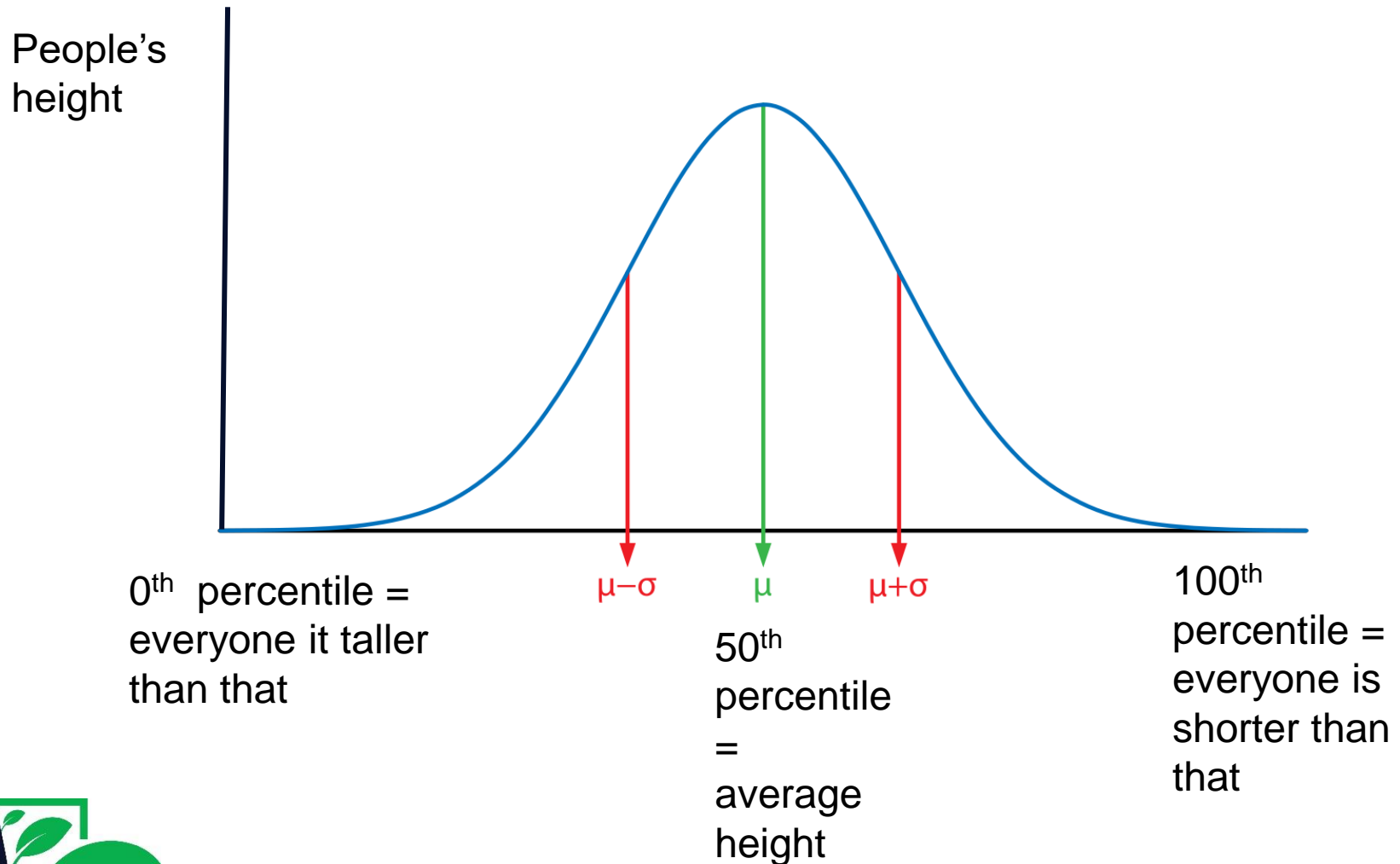


CDP: Census Designated Place statistical geographic entities representing closely settled, unincorporated communities that are locally recognized and identified by name

They are usually sub-parts of other census tracts, but their demographics are provided independently



What are percentiles?



Percentiles in EJSCREEN



National

- Indices compared every block group across the United States

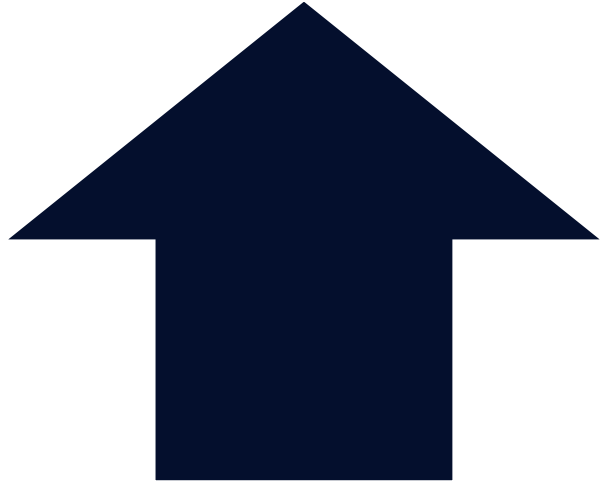


State

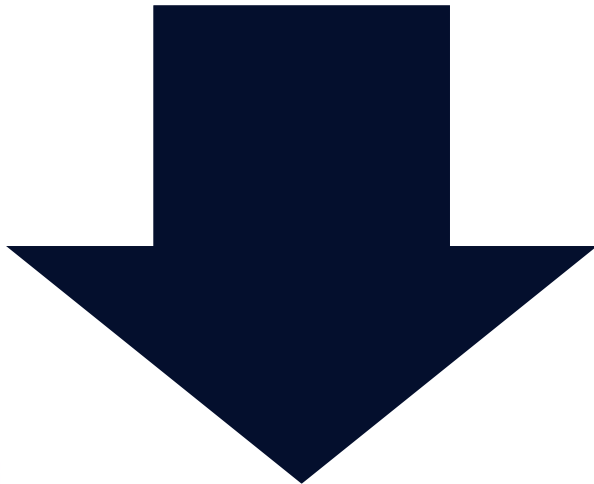
- Indices compared to the block groups across the particular state



Define your Target Area



Cleanup Grants: can be the neighborhood (0.25-0.5 mile radius around site), the block group, or the census tract that contains that site for smaller towns



Community-Wide Assessment, RLF and Multipurpose grants: can be one or more block groups or census tracts that contain the priority sites or even the entire town
For regional entities, it may be several towns



How to choose?

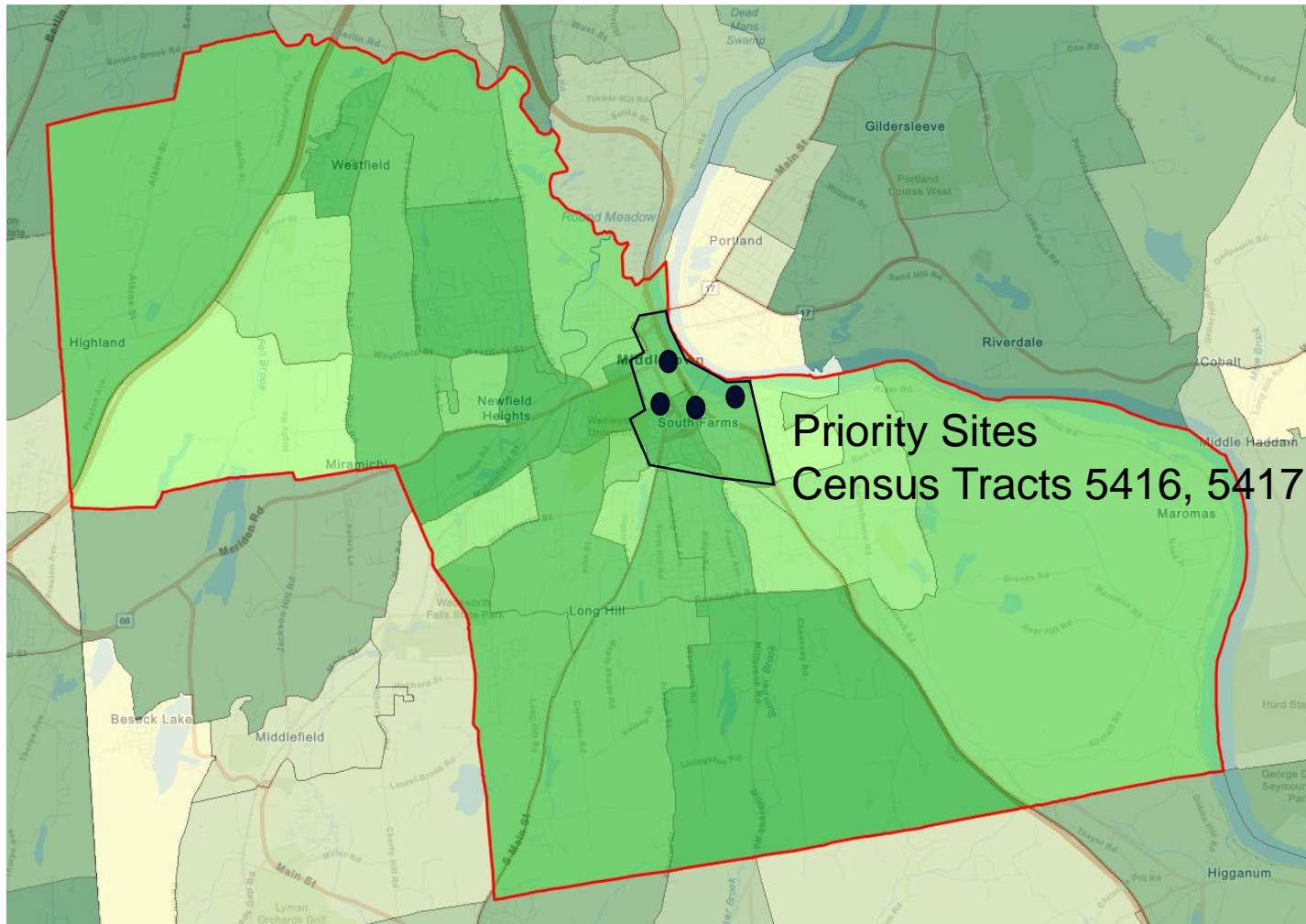
Identify the block groups or tracts of your priority sites

Use the EJSCREEN maps to visualize key demographics and/or generate reports for at least two different Target Areas (e.g. a tract versus a whole town)

Choose the Target Area that includes your sites and demonstrates the maximum need



Example - Middletown, CT



Demographics Table Census Tracts 5416, 5417 versus entire City of Middletown

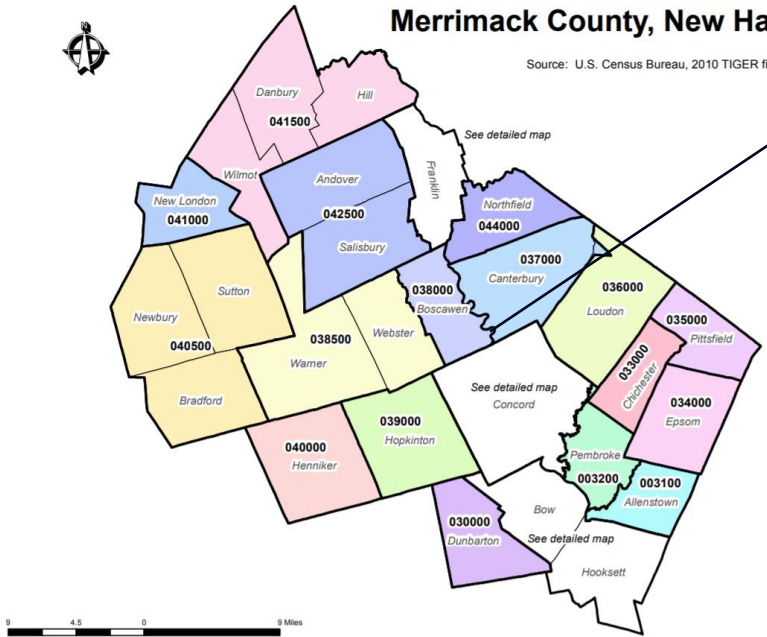
	Census Tracts	Values			
		City	State	EPA Region	USA
People of Color Population	40%	32%	32%	24%	39%
Low Income Population	58%	23%	23%	24%	33%
Unemployment Rate	10%	6%	6%	5%	5%
Linguistically Isolated Population	5%	4%	5%	5%	4%
Population with Less Than High School Education	13%	8%	10%	9%	13%
Population under Age 5	5%	6%	5%	5%	6%
Population over Age 64	20%	14%	16%	17%	15%



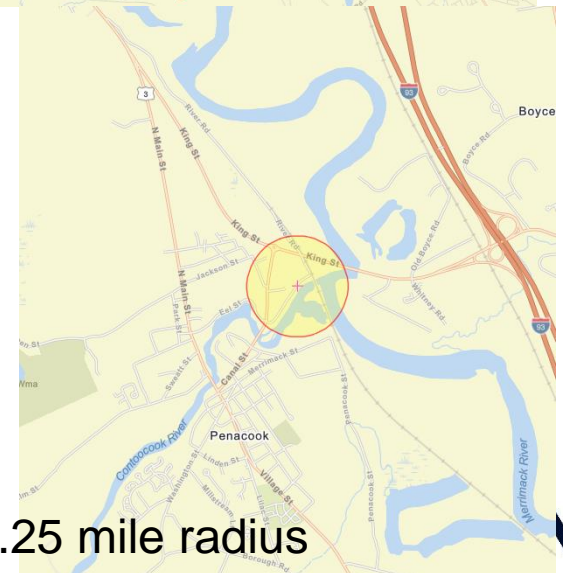
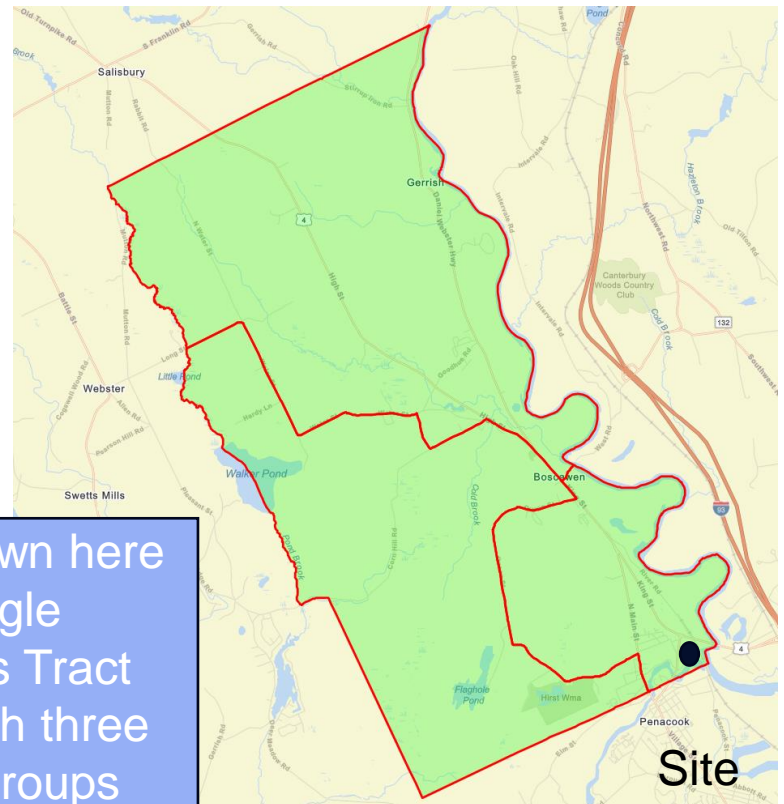
Boscawen, NH

2010 Census Tract Boundaries Merrimack County, New Hampshire

Source: U.S. Census Bureau, 2010 TIGER files



The Town here
is a single
Census Tract
380 with three
block groups



Site-specific report – 0.25 mile radius



Demographics Table 0.25 mile radius around site versus Census Tract 380

	Values					
	0.25 mi radius	Block Group 380-003	Census Tract 380 (Town)	State	EPA Region	USA
People of Color Population	0%	0%	2%	10%	25%	40%
Low Income Population	23%	23%	16%	19%	23%	31%
Unemployment Rate	2%	2%	2%	4%	5%	5%
Linguistically Isolated Population	0%	0%	0%	1%	5%	5%
Population with Less Than High School Education	14%	14%	11%	7%	9%	12%
Population under Age 5	6%	6%	5%	5%	5%	6%
Population over Age 64	19%	19%	21%	17%	17%	16%



Either may be chosen

Identify Sensitive Populations

- Look at all your demographic indicators
- Choose the ones that are higher than the State average (ideally also than the EPA Region 1 average) – if it also higher than the national average, even better;
- Also, the higher the percentile, the better
 - >50th mention if you don't have much else
 - >70th mention
 - >90th emphasize!!!

EJSCREEN

- People of Color
- Low Income
- Less than High School Education
- Linguistically isolated
- Age >65
- Age <5

American
Community
Survey

- Veterans
- People with Disabilities



Example – Middletown CT Census Tracts 5416, 5417

	Target Area	Values				Percentiles for Target Area		
		City	State	EPA Region	USA	State	Region	USA
People of Color Population	40%	32%	32%	24%	39%	80	86	73
Low Income Population	58%	23%	23%	24%	33%	68	78	58
Unemployment Rate	10%	6%	6%	5%	5%	92	93	87
Linguistically Isolated Population	5%	4%	5%	5%	4%	70	73	72
Population with Less Than High School Education	13%	8%	10%	9%	13%	75	77	64
Population under Age 5	5%	6%	5%	5%	6%	52	53	41
Population over Age 64	20%	14%	16%	17%	15%	71	70	75



>50 ok
>70 better
>85 highlight

Example – Boscawen NH

	Values					Percentiles for 0.25 miles		
	0.25 mi	Town	State	EPA		State	Region	USA
				Region	USA			
People of Color Population	0%	2%	10%	25%	40%	5	2	1
Low Income Population	23%	16%	19%	23%	31%	67	59	41
Unemployment Rate	2%	2%	4%	5%	5%	28	22	21
Linguistically Isolated Population	0%	0%	1%	5%	5%	71	47	45
Population with Less Than High School Education	14%	11%	7%	9%	12%	89	80	68
Population under Age 5	6%	5%	5%	5%	6%	70	66	54
Population over Age 64	19%	21%	17%	17%	16%	63	64	71



You can also include town level data points instead of the 0.25 mile radius

>50 ok
>70 better
>85 highlight

Health Related Indicators on EJSCREEN – Census Tract level

Low Life Expectancy

- Average Life Expectancy data
- [U.S. Small-area Life Expectancy Estimates Project](#)

Heart Disease

- Heart disease prevalence among adults
- [PLACES](#) database

Asthma

- Asthma prevalence among adults by
- [PLACES](#) database



What is Prevalence of Asthma?

- It is NOT actual incidences of asthma; it is based on responses to a survey (part of PLACES which contains the same data for cancer) that were extrapolated to larger geographic units using a model
- **Numerator:** Respondents aged ≥ 18 years who report ever having been told by a doctor, nurse, or other health professional that they have any asthma.
- **Denominator:** Respondents aged ≥ 18 years (excluding those who refused to answer, had a missing answer, or answered “don’t know/not sure”)



Westfield

Map navigation icons: Layers, Location, Print, Edit

Compare to US Compare to State

Environmental Justice Indexes

Pollution and Sources

Socioeconomic Indicators

Health Disparities

- Low Life Expectancy
- Heart Disease
- Asthma**

Climate Change Data

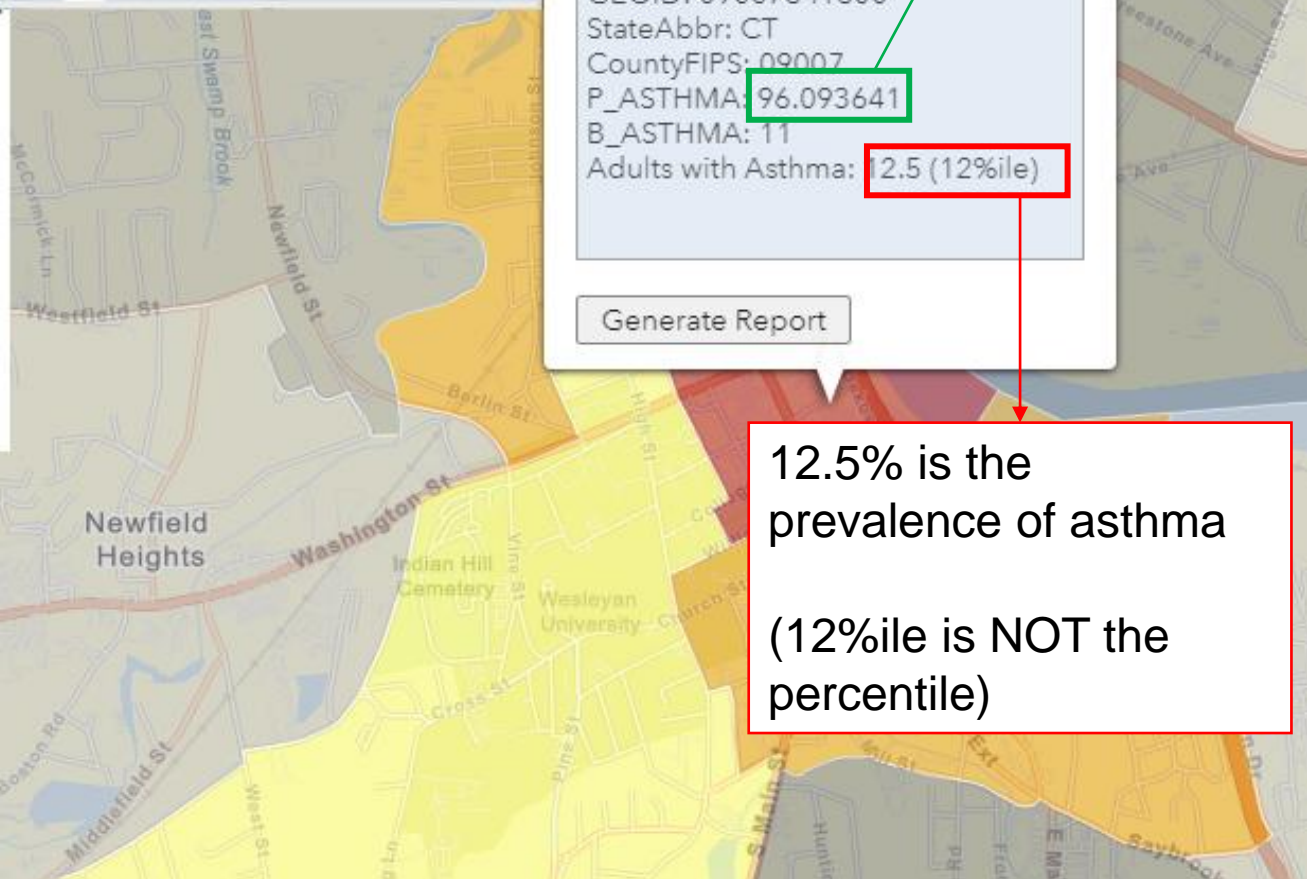
Critical Service Gaps

More Demographics

Map Contents

- Asthma**
- Current Asthma**

95-100%ile
90-95%ile
80-90%ile
70-80%ile
60-70%ile
50-60%ile
Less than 50%ile
Data Not Available



P_ASTHMA is the percentile

Current Asthma

ASTHMA: 12.5
GEOID: 09007541600
StateAbbr: CT
CountyFIPS: 09007
P_ASTHMA: 96.093641
B_ASTHMA: 11
Adults with Asthma: 2.5 (12%ile)

Generate Report

12.5% is the prevalence of asthma (12%ile is NOT the percentile)

Q. How do you get average Asthma Prevalence rates across several Census Tracts?

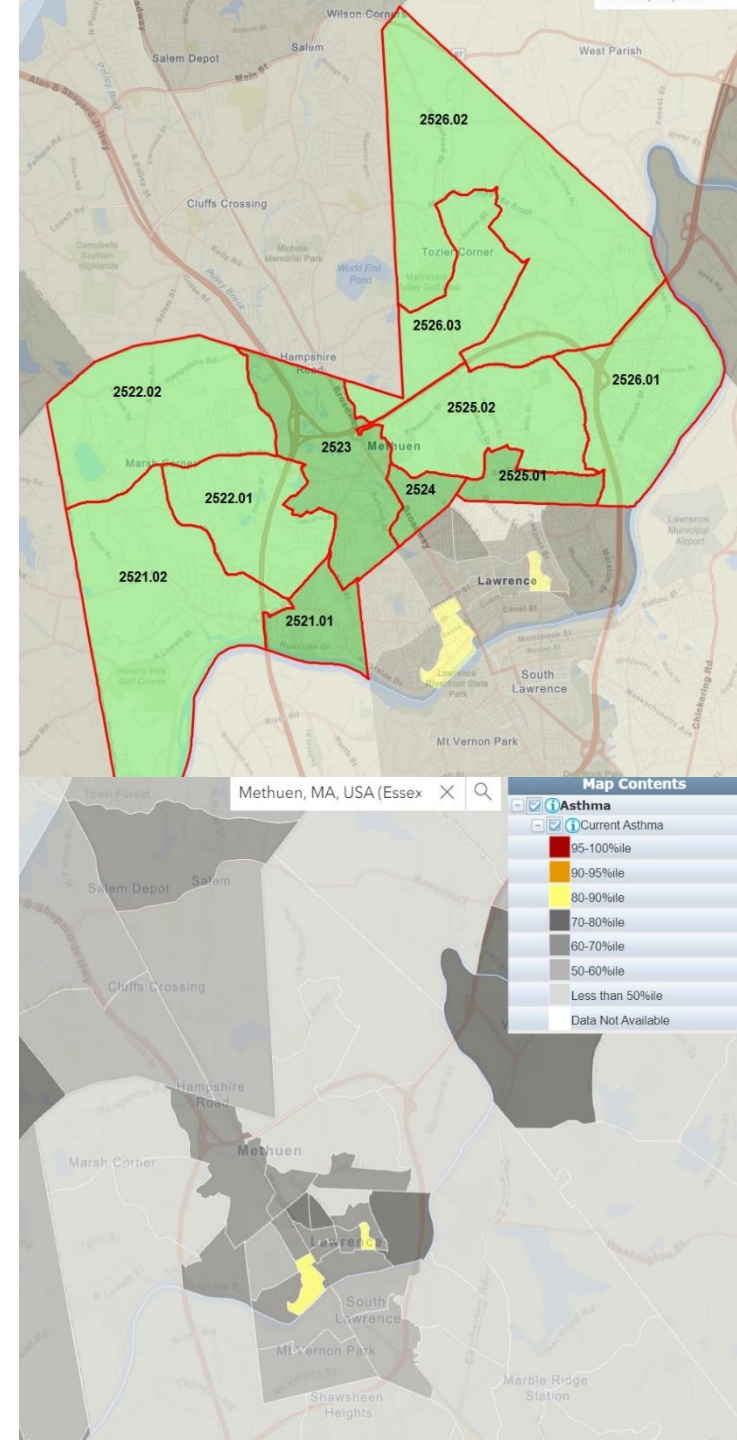
A. You cannot, you have to talk about the range of Asthma rates in the Census Tracts across your Target Area (or look at alternative data sources)



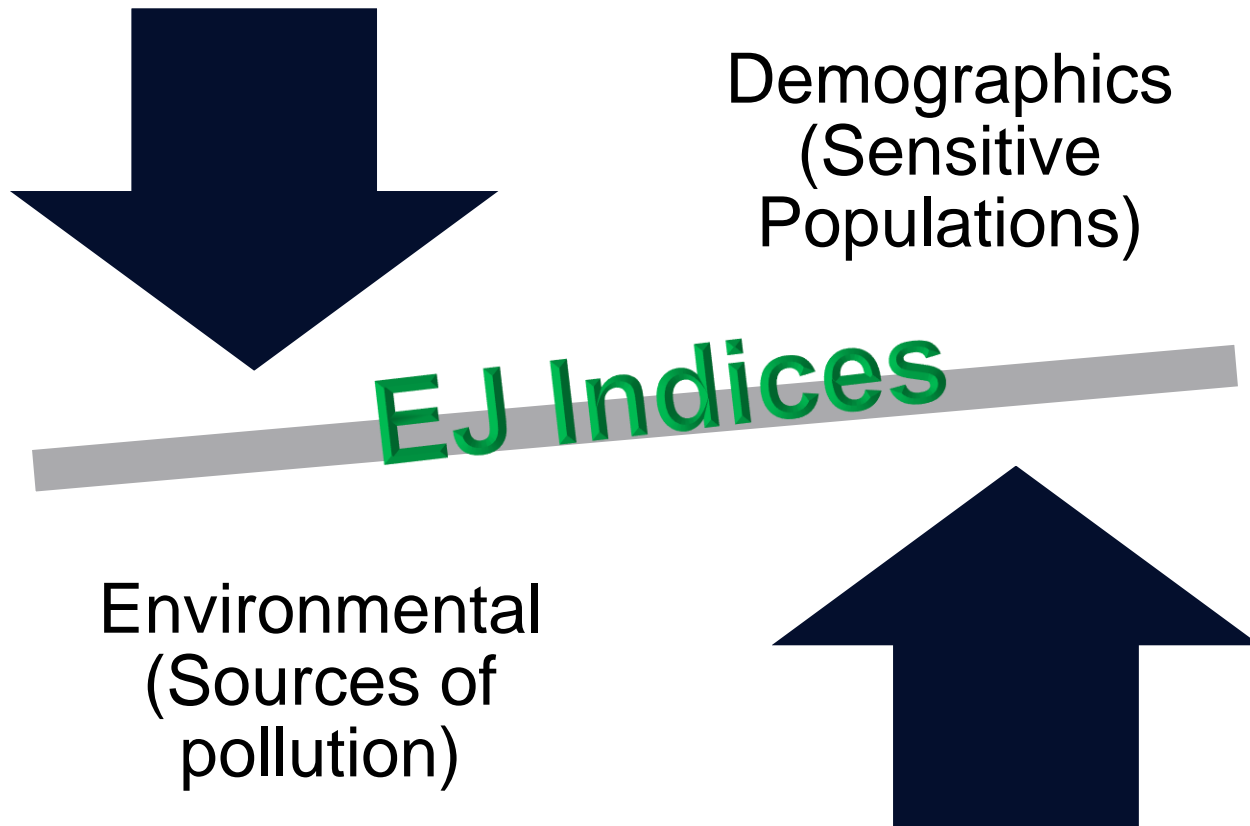
Example – Methuen, MA

Census Tract	Population	Asthma Incidence	Percentile
2523	7755	10	64.8
2521.01	3683	10.1	67.49
2524	4607	9.9	61.99
2525.01	4318	10	64.83
2525.02	4786	9.3	44.4
2526.03	2897	8.9	32.74
2526.02	4418	9.1	38.44
2526.01	7115	9.2	41.37
2522.02	3193	9.1	38.44
2522.01	3394	9.4	47.59
2522.02	4414	9.2	41.37
Total	50580		
Population in Tracts over 60th percentile	20363		
% of total population	40%		

Use that for narrative, i.e. *“40% of the adult population in Methuen has asthma prevalence above the national average”*



Promoting Environmental Justice



EJ Indices and how to interpret them

EJ Index = → ***Risk of excess sensitive populations exposed to environmental hazard***

(Environmental Indicator) → Environmental hazard

X (Demographic Index for Block Group – Demographic Index for US) → Excess proportion of sensitive populations

X (Population count for Block Group)

→ Total excess of sensitive population

Demographic Index = (% minority + % low-income) / 2

→ Average indicator of key sensitive populations

If you have a sensitive population that is NOT captured in the demographic index (kids or elderly) then you have to discuss environmental indicators separately



Environmental Indicators

Compare to US Compare to State

 Environmental Justice Indexes

 Pollution and Sources

Particulate Matter 2.5

Ozone

2017 Diesel Particulate Matter

2017 Air Toxics Cancer Risk

2017 Air Toxics Respiratory HI

Traffic Proximity

Lead Paint

Superfund Proximity

RMP Facility Proximity

Hazardous Waste Proximity

Underground Storage Tanks

Wastewater Discharge


Air pollution indicators


Average annual daily traffic within 500 m
% pre-1960 housing

Proximity to other pollution sources
(number within 5 km)

Within 1500 ft
Stream Proximity and Toxic Concentration

 Socioeconomic Indicators

 Health Disparities

 Climate Change Data

 Critical Service Gaps

 More Demographics

Definitions: <https://www.epa.gov/ejscreen/ejscreen-map-descriptions#category-environmental>

Evaluating Environmental Indicators

	Area Avg	City Avg	State Avg.	EPA Region Avg.	USA Avg.	%ile in State	%ile in EPA Region	%ile in USA
Particulate Matter 2.5 (ug/m3)	7.43	7.47	7.39	6.68	8.74	41	76	19
Ozone (ppb)	42.5	42.5	42.8	39.8	42.6	53	85	52
2017 Diesel Particulate Matter (ug/m3)	0.199	0.187	0.201	0.227	0.295	52	50-60th	<50th
2017 Air Toxics Cancer Risk (risk per MM)	20	23	23	23	29	67	60-70th	<50th
2017 Air Toxics Respiratory HI	0.3	0.3	0.28	0.28	0.36	100	90-95th	<50th
Traffic Proximity (daily traffic count/distance to road)	2100	600	600	1300	710	92	85	92
Lead Paint (% pre-1960s housing)	0.67	0.37	0.44	0.44	0.28	80	76	87
Superfund Proximity (site count/km distance)	0.11	0.12	0.14	0.15	0.13	68	64	70
RMP Facility Proximity (facility count/km distance)	0.5	0.32	0.56	0.6	0.75	63	65	59
Hazardous Waste Proximity (facility count/km distance)	5.6	2.8	3	3.8	2.2	81	82	89
Underground Storage Tanks	8.80	3.30	3.10	3.00	3.90	89	90	87
Wastewater Discharge (toxicity-weighted concentration/m distance)	1.80	0.35	0.05	0.40	12.00	99	99	94

>50 ok
>70 better
>85 highlight



Reminder – This was the Demographics Table

	Values					Percentiles for Target Area		
	Target Area	City	State	EPA Region	USA	State	Region	USA
	People of Color Population	40%	32%	32%	24%	39%	80	86
Low Income Population	58%	23%	23%	24%	33%	68	78	58
Unemployment Rate	10%	6%	6%	5%	5%	92	93	87
Linguistically Isolated Population	5%	4%	5%	5%	4%	70	73	72
Population with Less Than High School Education	13%	8%	10%	9%	13%	75	77	64
Population under Age 5	5%	6%	5%	5%	6%	52	53	41
Population over Age 64	20%	14%	16%	17%	15%	71	70	75

Value > State and > Region These are your sensitive populations for section 2a – highlight >USA

>50 ok
>70 better
>85 highlight



EJ Indices – Middletown, CT

	%ile in State	%ile in EPA Region	%ile in USA
EJ Index for Particulate Matter 2.5	80	87	71
EJ Index for Ozone	80	87	73
EJ Index for 2017 Diesel Particulate Matter	79	85	70
EJ Index for 2017 Air Toxics Cancer Risk	79	85	68
EJ Index for 2017 Air Toxics Respiratory HI	81	87	70
EJ Index for Traffic Proximity	92	92	90
EJ Index for Lead Paint	83	88	87
EJ Index for Superfund Proximity	83	88	79
EJ Index for RMP Facility Proximity	81	86	74
EJ Index for Hazardous Waste Proximity	83	88	87
EJ Index for Underground Storage Tanks	87	92	85
EJ Index for Wastewater Discharge	99	99	96

Because People of Color index is high, all EJ indices are high, even for the lower Environmental Indicators



EJ Narrative for Target Area in Middletown, CT

- The disadvantaged community, which has a disproportionately higher percentage of People of Color, low income population with high unemployment rates and less than high education, as well as aging population, also faces high environmental burdens
- Proximity to Traffic leads to high air respiratory toxics, exposure to Pb paint is more likely and proximity to other pollution sources such as hazardous waste, Usts and polluted streams also exceeds the 85th percentile nationally
- The combination of these factors causes every EJ index to exceed the 85th percentile In EPA Region 1 and the 70th percentile nationally



Note: this is not taken from the actual proposal

Environmental Indicators for Boscawen, NH

	Values					0.25 miles		
	0.25 mi	Town	State	EPA		State	Region	USA
				Region	USA			
Particulate Matter 2.5 (ug/m3)	5.06	5.06	5.33	6.68	8.74	12	2	0
Ozone (ppb)	35.7	35.7	36.8	39.8	42.6	17	8	14
2017 Diesel Particulate Matter (ug/m3)	0.0715	0.0715	0.124	0.227	0.295	26<50th	<50th	
2017 Air Toxics Cancer Risk (risk per MM)	20	20	22	23	29	8060-70th	<50th	
2017 Air Toxics Respiratory HI	0.2	0.2	0.26	0.28	0.36	44<50th	<50th	
Traffic Proximity (daily traffic count/distance to road)	330	140	450	1300	710	65	48	59
Lead Paint (% pre-1960s housing)	0.45	0.39	0.31	0.44	0.28	76	54	74
Superfund Proximity (site count/km distance)	0.022	0.021	0.18	0.15	0.13	4	2	19
RMP Facility Proximity (facility count/km distance)	0.07	0.093	0.24	0.6	0.75	32	13	8
Hazardous Waste Proximity (facility count/km distance)	0.56	0.53	1.1	3.8	2.2	57	28	46
Underground Storage Tanks	1.90	1.10	3.30	3.00	3.90	69	60	57
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00	0.00	0.27	0.40	12.00	64	53	47

Include all >50th



Final Demographics Table – Boscawen NH

	Values					Percentiles for 0.25 miles		
	0.25 mi	Town	State	EPA		State	Region	USA
				Region	USA			
People of Color Population	0%	2%	10%	25%	40%	5	2	1
Low Income Population	23%	16%	19%	23%	31%	67	59	41
Unemployment Rate	2%	2%	4%	5%	5%	28	22	21
Linguistically Isolated Population	0%	0%	1%	5%	5%	71	47	45
Population with Less Than High School Education	14%	11%	7%	9%	12%	89	80	68
Population under Age 5	6%	5%	5%	5%	6%	70	66	54
Population over Age 64	19%	21%	17%	17%	16%	63	64	71



>50 ok
 >70 better
 >85 highlight

EJ Indices – Boscawen NH

	%ile in State	%ile in EPA Region	%ile in USA
EJ Index for Particulate Matter 2.5	58	47	35
EJ Index for Ozone	57	40	26
EJ Index for 2017 Diesel Particulate Matter	66	59	42
EJ Index for 2017 Air Toxics Cancer Risk	59	40	28
EJ Index for 2017 Air Toxics Respiratory HI	64	46	34
EJ Index for Traffic Proximity	28	29	14
EJ Index for Lead Paint	20	22	6
EJ Index for Superfund Proximity	83	66	38
EJ Index for RMP Facility Proximity	64	61	44
EJ Index for Hazardous Waste Proximity	40	47	22
EJ Index for Underground Storage Tanks	28	19	13
EJ Index for Wastewater Discharge	32	29	27

There is little connection between these indices and your populations or the environmental indicators – not very helpful for narrative



EJ Narrative for Boscawen, NH

- There is a high percentage of elderly and low income people with less than high school education. The percentages of sensitive populations such as people with disabilities and veterans are also higher than the national average
- These populations live in old housing that increases likelihood of exposure to Pb paint, at the 74th percentile nationally
- The proximity to traffic and associated health risks, as well as other sources of pollution (hazardous waste, USTs) also exceed the state and region average, which is unusual given the rural character of the region – EJ issue



Note: this is not taken from the actual proposal

Additional resources

- [EPA EJSCREEN demonstration for Brownfields Grant Applications](#)
- [EPA EJSCREEN Training page](#)
- UCONN TAB – EJSCREEN Short Course

