A Case Study In Environmental Justice:

Toxics Release Inventory Facilities and Fence-line Communities in the Environmental Protection Agency's Region 10

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Disclaimer

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Background and Project Overview

- **Overview:** Develop a comprehensive process to rapidly and accurately identify Toxics Release Inventory (TRI) facilities that may be impacting vulnerable and disadvantaged communities
  - Proof of Concept: Focus on U.S. Environmental Protection Agency Region 10 (R10)
- **Outcome:** Support research and tool enhancement to more readily assess impacts of TRI facilities on fence-line communities, serving as possible prioritization for follow-up, pollution prevention assistance, or other consideration
- **Project aligns with President Biden's Environmental Justice (EJ) initiatives:**
  - Executive Order 12898 on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
  - Executive Order 13985 on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

Data Construct Methodology

Focus on Emissions of TRI Chemicals to Air

- Risk-Screening Environmental Indicators (RSEI) Modeled Hazard Stack Air Releases
- RSEI Modeled Hazard Fugitive Air Releases

Applies two demographic index scores

- **Demographic Index:**

  The Demographic Index in Environmental Justice Screening and Mapping Tool (EJSCREEN) is a combination of percent low-income and percent minority, the two demographic factors that were explicitly named in Executive Order 12898 on Environmental Justice. For each Census block group, these two numbers are simply averaged together. The formula is as follows: Demographic Index = (% people of color + % low-income) / 2. Source: The Census Bureau's American Community Survey 5-year summary estimates.

- **Socioeconomic Indicator Score:**

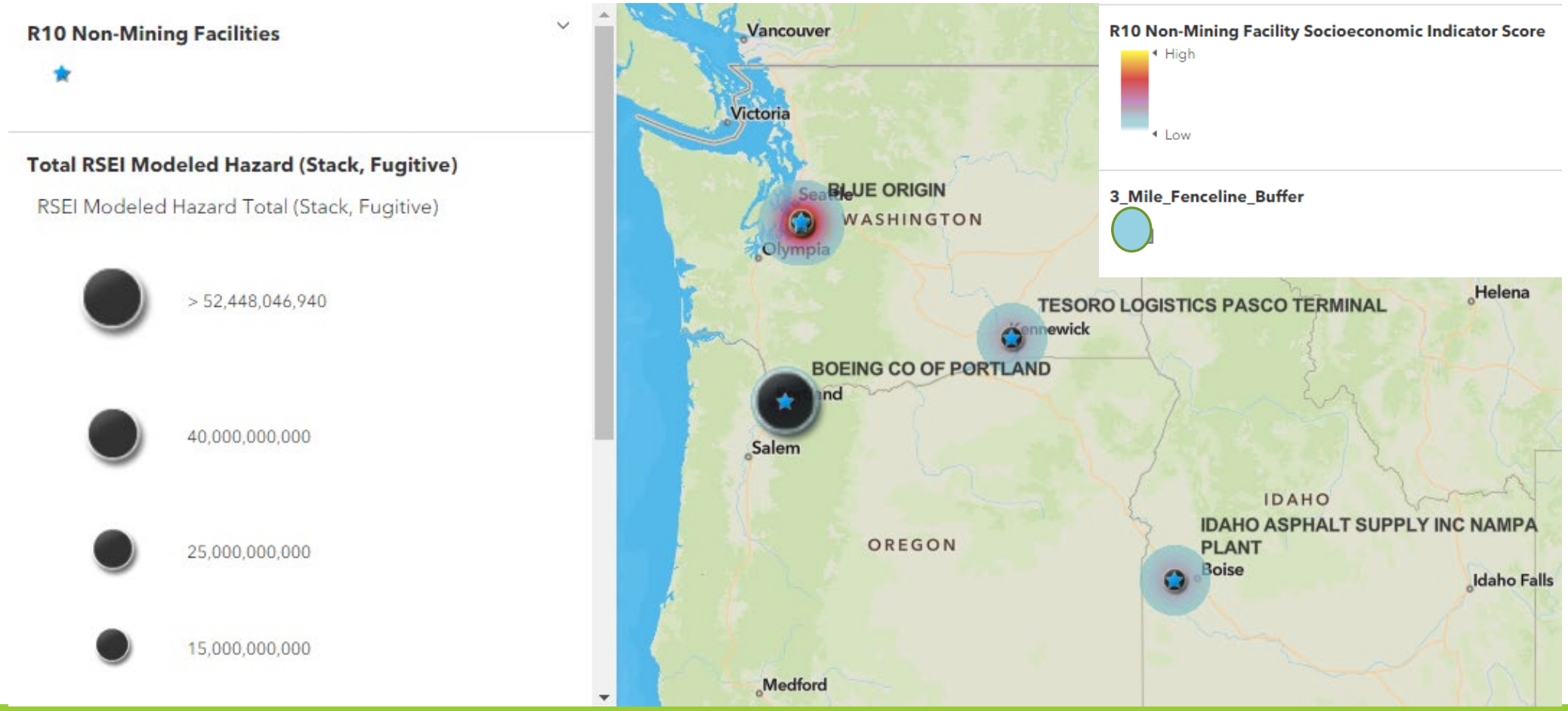
  An Average of 4 Percentiles

Demographic Indicator	Description (Source: 2008-20012 ACS Estimates)
Low-Income	% of block group population at or below twice the federal "poverty level."
Minority	All people other than non-Hispanic white-alone individuals.
Less than high school education	% of people age 25 or older without a high school diploma.
Linguistic isolation	% of people in household in which all members over age 14 years speak English less than "very well."

Data Construct Methodology Attributes

- **Data Attributes**
  - Includes facilities that reported to TRI for reporting year 2019
  - Excludes mining facilities to focus on facilities closer to communities and potentially most impacting ambient air
  - Age variables removed from calculation of "Socioeconomic Indicator Score"
  - Additional demographic information (grocery stores, medical facilities, schools) pulled from ArcGIS Open Street Maps
- **Filtering Options**
  - User has ability to filter by State; City, State; Metropolitan Statistical Area; Top 1%, 5%, 10%, and 25% Socioeconomic Indicator Score; and RSEI Modeled Hazard Stack and Fugitive Air Emission Totals

Region 10 Non-Mining TRI Facilities with a Socioeconomic Indicator Score Above 0.95, a Total RSEI Modeled Hazard Value 1 Million, and 3-Mile Buffer

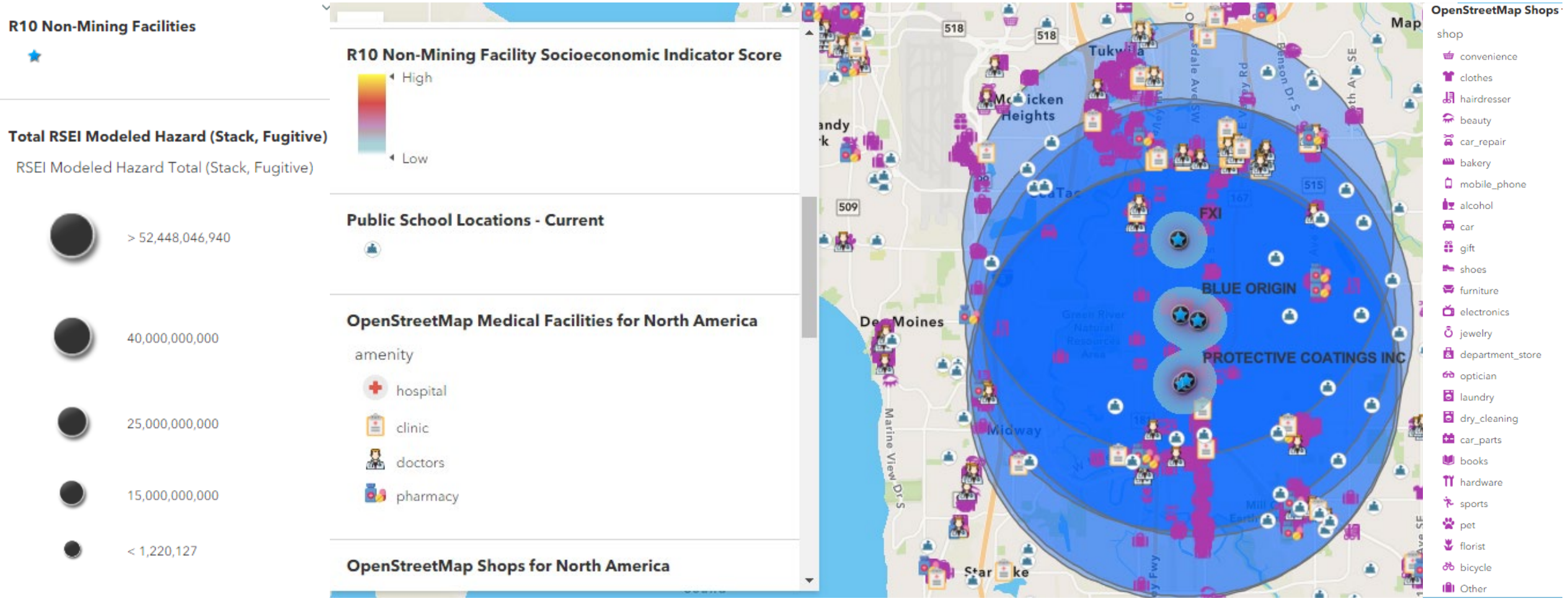


Demographic Information by Census Block Group for TRI Facilities in R10 with RSEI Modeled Hazard Totals > 1 Million & Socioeconomic Indicator Scores Above 0.95

TRI Facility Name	City, State	Industry	% People of Color	% of Pop in Low Income Households	% of Population with < HS Education	% Households with Linguistic Isolation	Demographic Index	Socioeconomic Indicator Score	RSEI Modeled Hazard Total (Stack, Fugitive)
BOEING CO OF PORTLAND	PORTLAND, OR	336 Transportation Equipment	71%	67%	34%	11%	0.690	0.96	★ *52,448,046,940.20*
BLUE ORIGIN	KENT, WA	336 Transportation Equipment	77%	79%	50%	24%	0.781	0.975	103,819,550.00
PROTECTIVE COATINGS INC	KENT, WA	332 Fabricated Metals	77%	79%	50%	24%	0.781	0.975	94,236,877.80
HYTEK FINISHES CO	KENT, WA	332 Fabricated Metals	77%	79%	50%	24%	0.781	0.975	82,175,700.00
REXAM BEVERAGE CAN CO RE: KENT WA FACILITY	KENT, WA	332 Fabricated Metals	77%	79%	50%	24%	0.781	0.975	26,856,000.00
FXI	KENT, WA	326 Plastics and Rubber	77%	79%	50%	24%	0.781	0.975	12,750,000.00
TESORO LOGISTICS PASCO TERMINAL	PASCO, WA	4247 Petroleum Bulk Terminals	90%	83%	66%	32%	0.865	0.99	8,832,112.90
IDAHO ASPHALT SUPPLY INC NAMPA PLANT	NAMPA, ID	324 Petroleum	62%	65%	52%	13%	0.636	0.97	1,220,127.20

★ *Note: A report revision for Boeing Company of Portland was submitted, but this data is not yet reflected on EasyRSEI.*

Kent, Washington (WA)



Kent, WA TRI Facility RSEI Modeled Hazard Release Information

TRI Facility Name	RSEI Media	Chemical	RSEI Modeled Hazard
BLUE ORIGIN	Stack Air Releases	Chromium	55,556,000
BLUE ORIGIN	Fugitive Air Releases	Chromium	21,930,000
BLUE ORIGIN	Stack Air Releases	Nickel	18,786,000
BLUE ORIGIN	Fugitive Air Releases	Nickel	7,533,000
BLUE ORIGIN	Stack Air Releases	Copper	10,350
BLUE ORIGIN	Fugitive Air Releases	Copper	4,200
		Total RSEI Modeled Hazard:	**103,819,550**

TRI Facility Name	RSEI Media	Chemical	RSEI Modeled Hazard
PROTECTIVE COATINGS INC	Stack Air Releases	Chromium	91,564,200
PROTECTIVE COATINGS INC	Stack Air Releases	Nickel	2,659,800
PROTECTIVE COATINGS INC	Stack Air Releases	Nitric acid	9,725
PROTECTIVE COATINGS INC	Stack Air Releases	Copper	1,770
PROTECTIVE COATINGS INC	Fugitive Air Releases	Nitric acid	1,382
		Total RSEI Modeled Hazard:	**94,236,878**

TRI Facility Name	RSEI Media	Chemical	RSEI Modeled Hazard
HYTEK FINISHES CO	Stack Air Releases	Chromium compounds	82,173,000
HYTEK FINISHES CO	Fugitive Air Releases	Nitric acid	1,350
HYTEK FINISHES CO	Stack Air Releases	Nitric acid	1,350
HYTEK FINISHES CO	Fugitive Air Releases	1-Bromopropane	0
		Total RSEI Modeled Hazard:	**82,175,700**

TRI Facility Name	RSEI Media	Chemical	RSEI Modeled Hazard
REXAM BEVERAGE CAN CO RE: KENT WA FACILITY	Stack Air Releases	Glycol ethers	23,400,000
REXAM BEVERAGE CAN CO RE: KENT WA FACILITY	Fugitive Air Releases	Glycol ethers	2,700,000
REXAM BEVERAGE CAN CO RE: KENT WA FACILITY	Stack Air Releases	n-Butyl alcohol	680,000
REXAM BEVERAGE CAN CO RE: KENT WA FACILITY	Fugitive Air Releases	n-Butyl alcohol	76,000
		Total RSEI Modeled Hazard:	**26,856,000**

TRI Facility Name	RSEI Media	Chemical	RSEI Modeled Hazard
FXI	Stack Air Releases	Toluenediisocyanate	12,500,000
FXI	Fugitive Air Releases	Toluenediisocyanate	250,000
		Total RSEI Modeled Hazard:	**12,750,000**

Making TRI Data Findings Actionable

- **Next steps**
  - Use data construct methodology to compare with National Emissions Inventory data
  - Share research outcomes with Region 10 program offices
- **Opportunities for Further Study**
  - Examine facility-level activity (emissions, processes, pollution prevention activities)
  - Identify potential challenges in engaging in source reduction activities
  - Determine best mode of engagement between EPA and TRI facilities
  - Assess surrounding community
    - Study cumulative impact, ambient air monitoring equipment
    - Characterize infrastructure that may be frequently visited
      - E.g.: schools, retail stores, medical facilities

Major Takeaways

- Analysis identified **eight** TRI facilities in Region 10 for potential follow-up:
  - Five facilities fall within EPA's Pollution Prevention National Emphasis Areas (NEA), e.g.:
    - Blue Origin; Boeing Company (Co) of Portland, *NEA #4: Aerospace Product and Parts Manufacturing*
    - Protective Coating, Incorporated; Hytek Finishes Co; and Rexam Beverage Can Co, *NEA #5: Metal Manufacturing and Fabrication*
- Analysis has the potential to inform other EPA efforts
- Serves as a possible model for automation and report development