

Duwamish Valley Cumulative Health Impacts Analysis: Seattle, Washington



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Just Health Action

EPA Toxic Release
Inventory Conference
May 7, 2014



Today

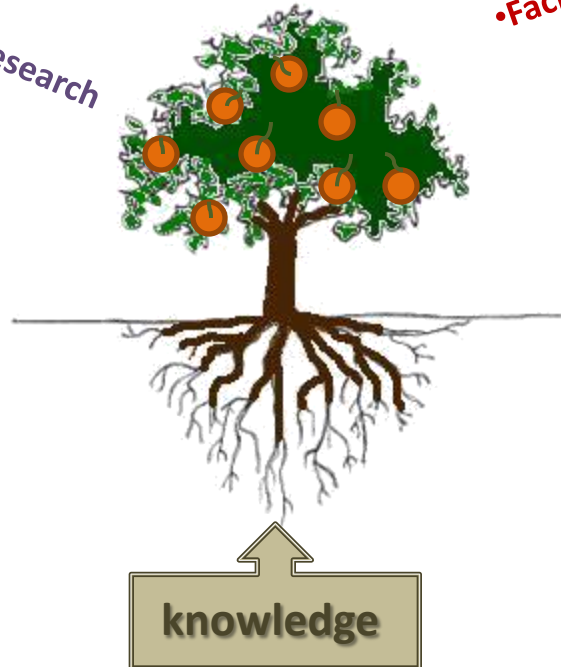


- What is JHA?
- Where is the Duwamish Valley?
- Cumulative impacts
- Method
- Results and limitations
- How used?

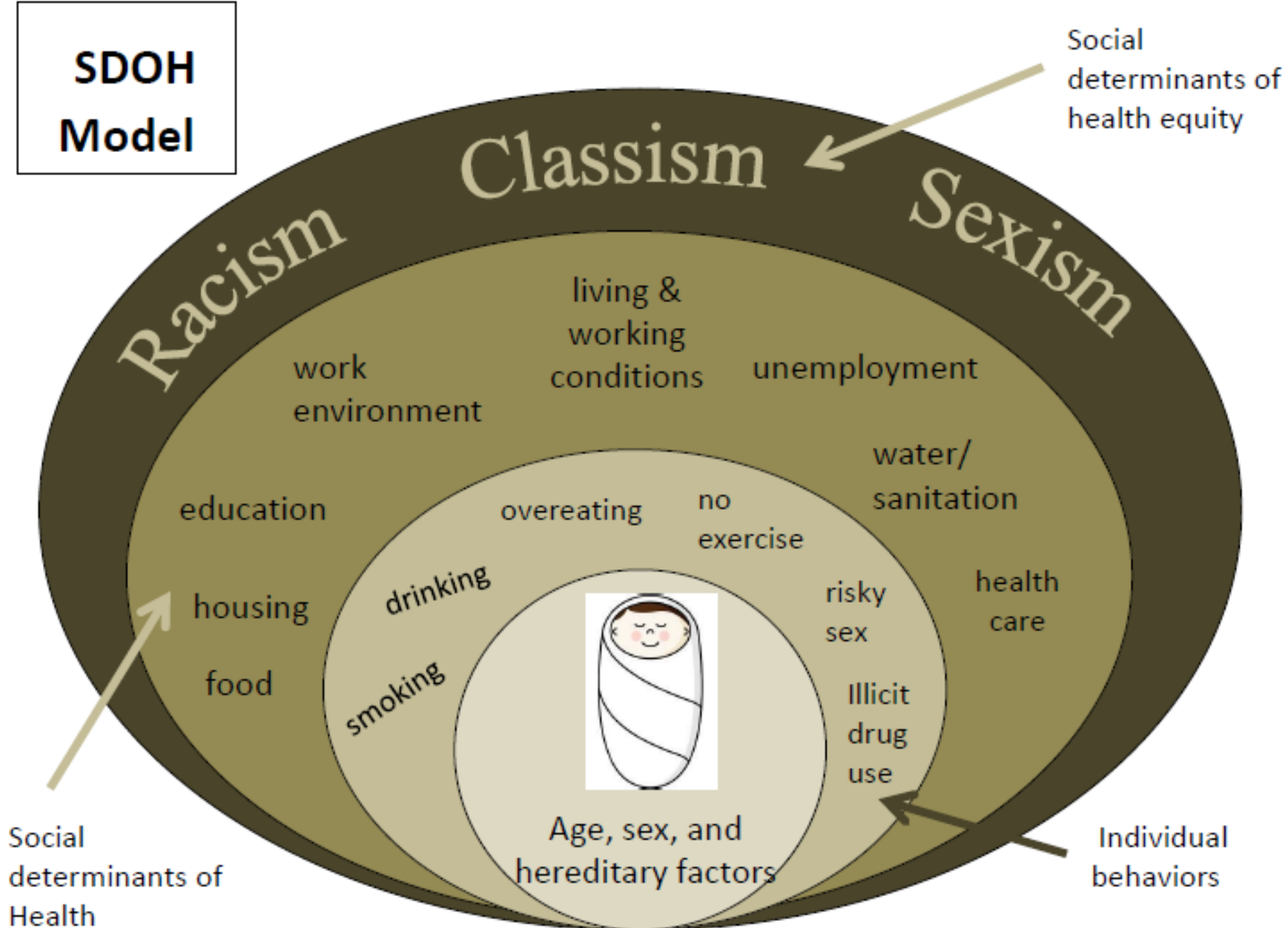
JHA: working towards health equity

- Research**
- Health Impact Assessment
 - Cumulative Health Impacts Analysis
 - Environmental Justice analyses
 - Community Based Participatory Research

- Education**
- Teaching
 - Curriculum development
 - Facilitation



**SDOH
Model**



Seattle

Duwamish River



Duwamish Valley contamination – soils, air, ground water, Duwamish River Superfund site



Assets too!



SP Community Center



Duwamish Valley Disparities

Indicator	Duwamish Valley	King County
Life expectancy*	79.4	81.3
% below poverty**	17.6%	9.7%
Foreign born**	31.9%	19%
No high school degree**	20.2%	8.2%
Uninsured*	20%	13%
Lung cancer*	52.3 per 100,000	41.4 per 100,000
Homicide*	10.5 per 100,000	3.4 per 100,000
Asthma hospitalization*	240.4 per 100,00	143.4 per 100,000
Assault*	70.9 per 100,00	31 per 100,00
Low birth weight*	6.0%	4.9%
No leisure time physical activity*	24%	15%

Source: Public Health Seattle & King County.

* p=.05; **p=.10

Cumulative Effects - Imagine



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OR



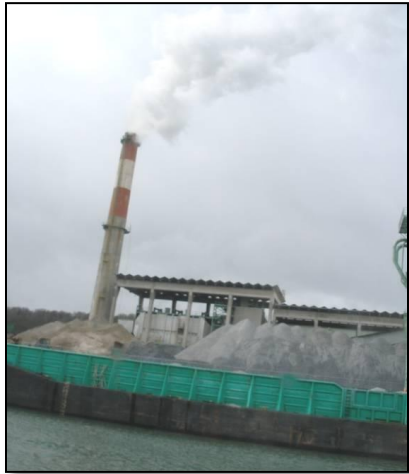
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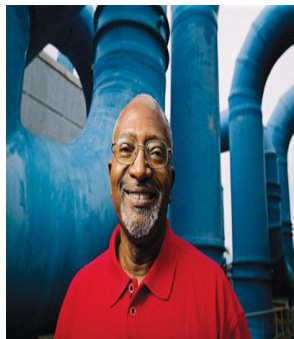
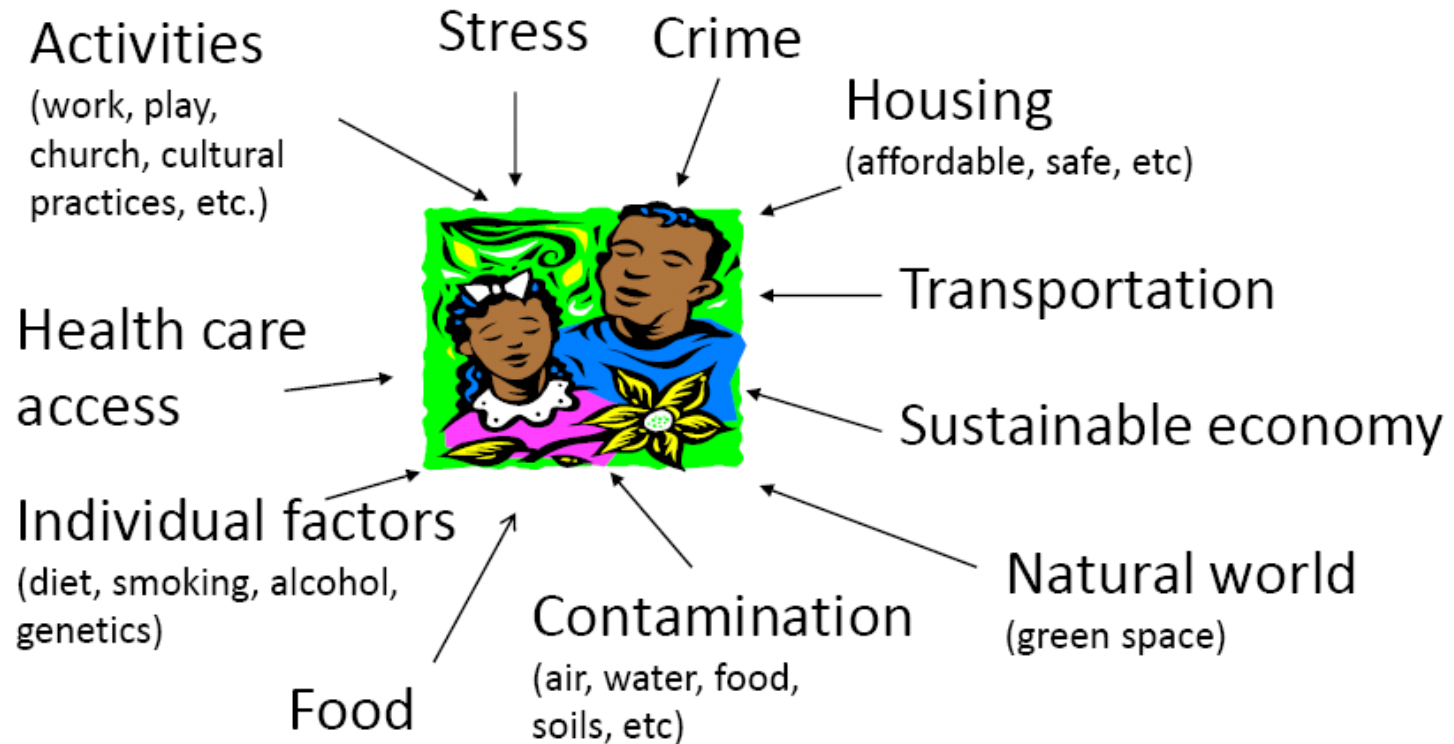


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ENVIRONMENTAL JUSTICE



“The environment is everything: where we live, work, play, go to school, as well as the physical and natural world. And so we can’t separate the physical environment from the cultural environment.”

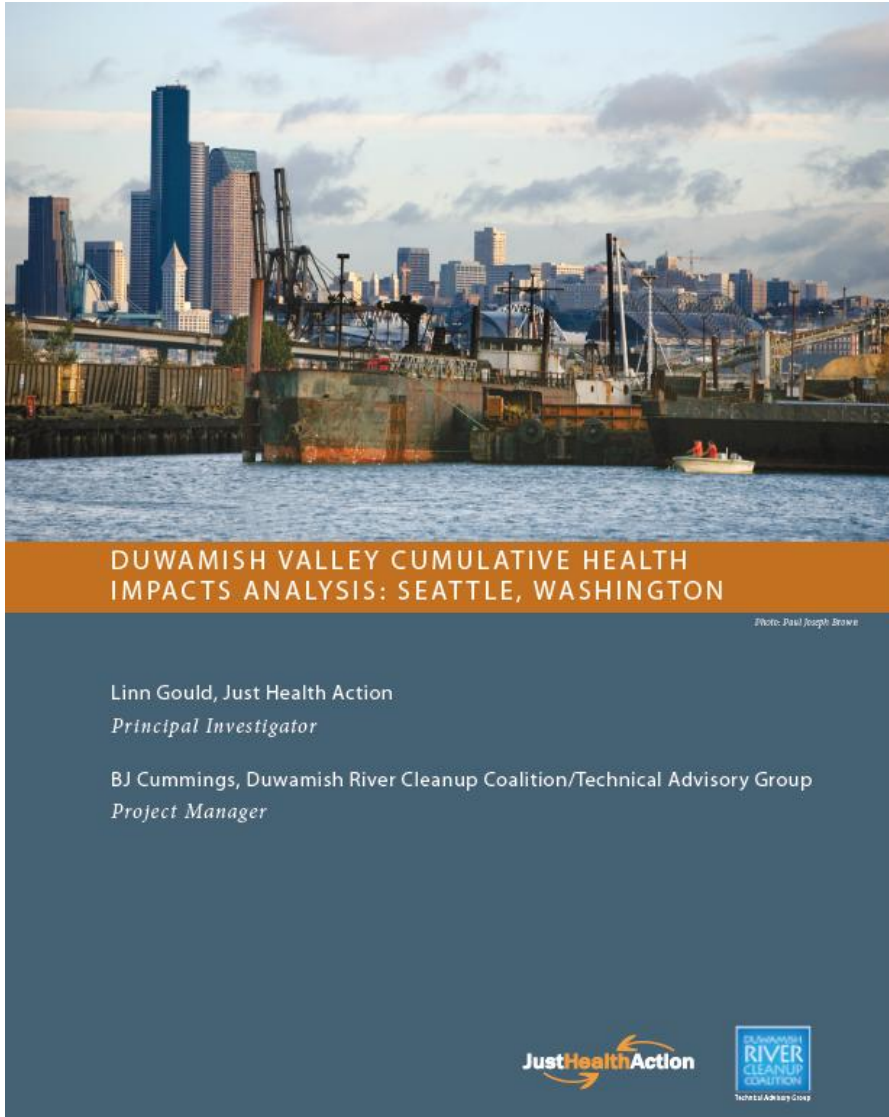
(Robert Bullard, 1999)

What does the “community” want?





EPA Environmental Justice Research Grant



1. Inform EPA’s Duwamish River Superfund Site Cleanup decisions
2. Develop risk reduction strategies for communities impacted by site
3. Improve health outcomes in the affected community
4. Inform action by regional public and private agencies



Technical Advisory Group



Methodology – CAL/EPA and OEHHA

CUMULATIVE IMPACTS: BUILDING A SCIENTIFIC FOUNDATION



December 2010

Linda S. Adams, Secretary
California Environmental Protection Agency

Joan E. Denton, Ph.D., Director
Office of Environmental Health Hazard Assessment



DEFINITION:

Any exposures, public health or environmental effects from the combined emission and discharges in a geographic area, including environmental pollution from all sources, whether a single or multi-media, routinely, accidentally, or otherwise released

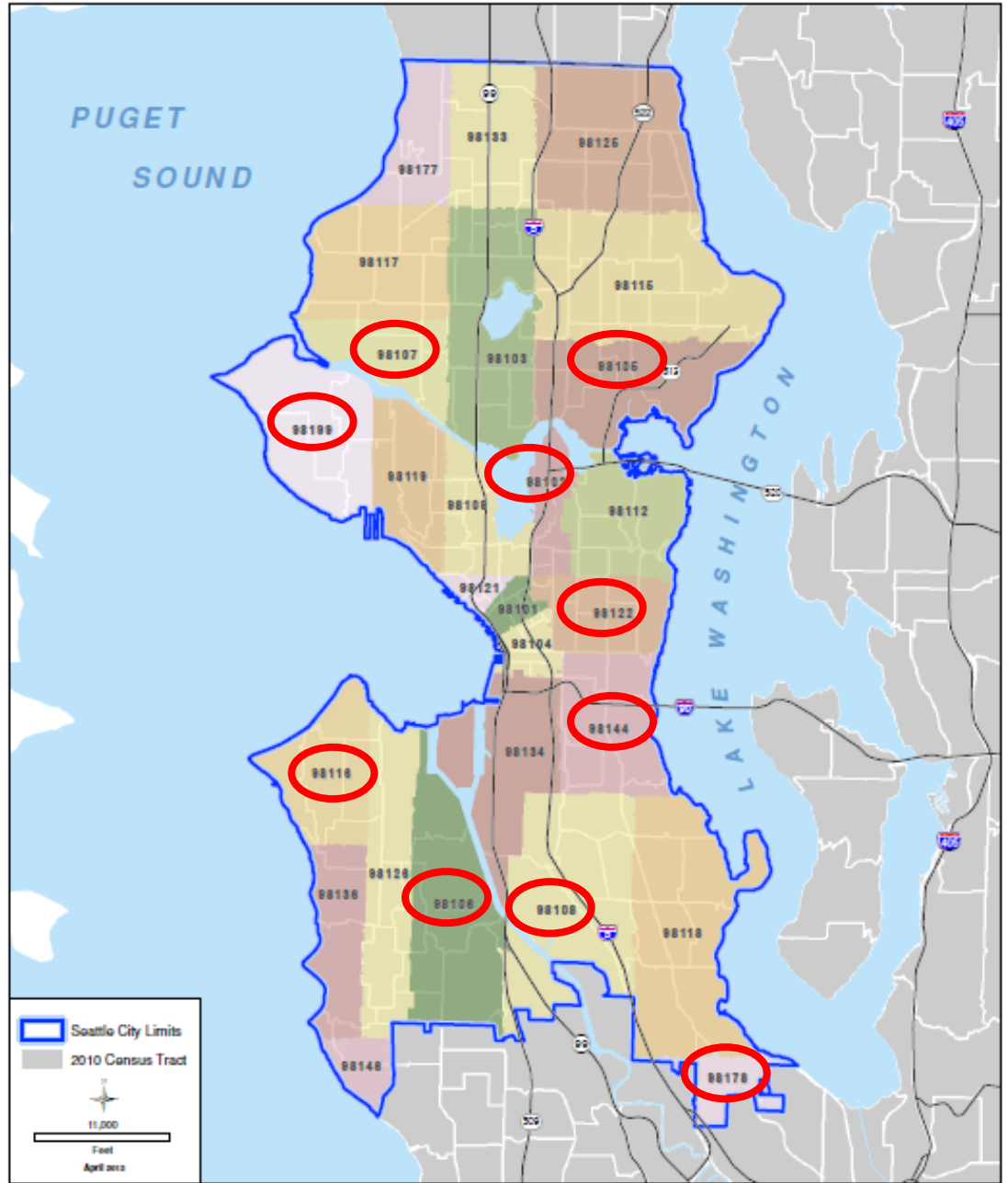
Seattle CHIA

Geographic unit of analysis – 10 ZIPs

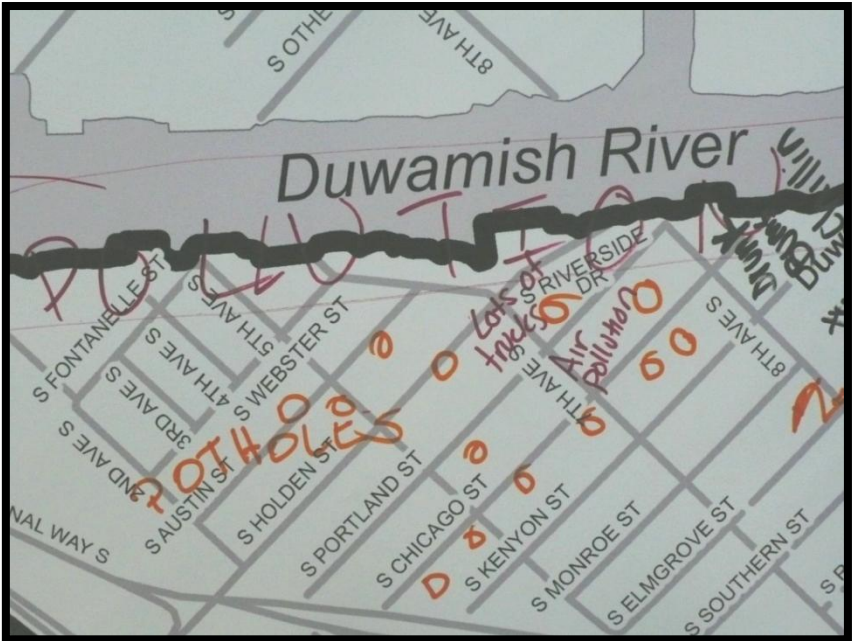
Ranges of:

- Income
- Minority
- Pollution

- CBPR



Community Based Participatory Research



CBPR: Health Mapping

Where is our
neighborhood
healthy?

Where is our
neighborhood
unhealthy?

What makes Georgetown *healthy* and *unhealthy*?



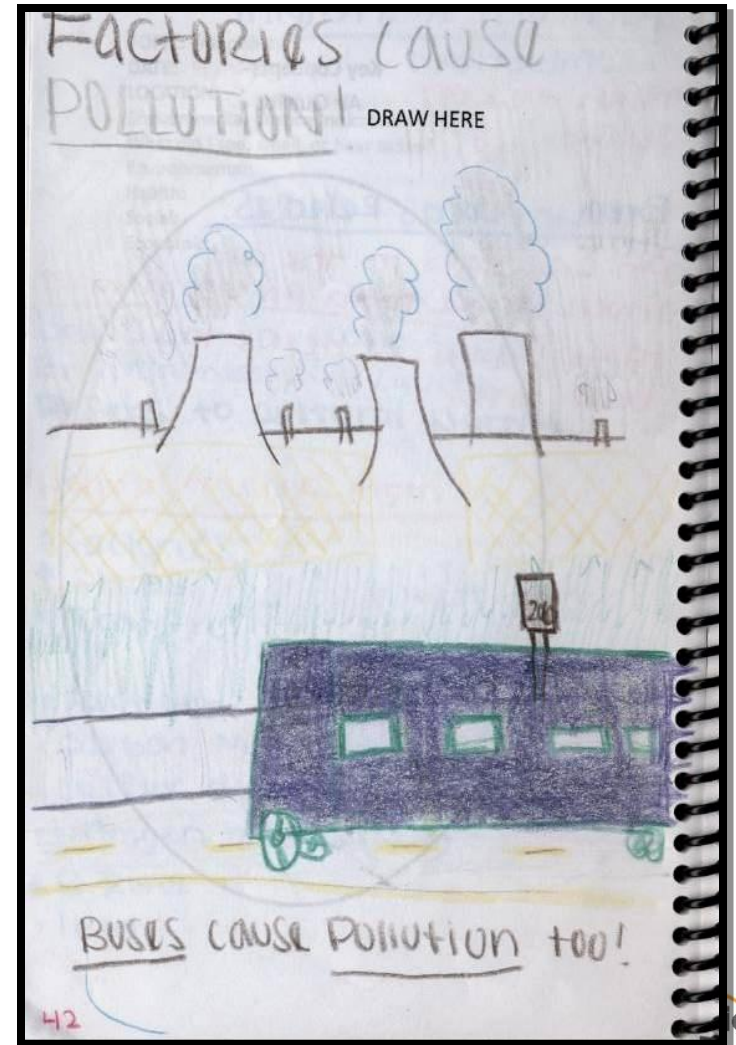
Research on 24 Indicators in 5 categories

Component	Definition
Socioeconomic factors	Community characteristics that result in increased vulnerability to pollutants
Sensitive populations	Populations with traits that may magnify the effects of pollutant exposures
Environmental exposures	Contact with pollution
Environmental effects	Adverse built environment conditions
Public health effects	Disease and other health conditions

Information sources



- The community!
- U.S. Census
- Public Health Seattle King County
- King County Department of Natural Resources
- Environmental Protection Agency TRI and C-FERST
- WA State Department of Ecology data base



CHIA: Range of scores for each component

Component	Range of Possible Scores	Map Color
Socioeconomic factors	1-3	BROWN
Sensitive populations factors	1-3	GREEN
Environmental exposures factors	1-10	BLUE
Environmental effects factors	1-5	PURPLE
Public Health effects factors	1-5	PINK
Cumulative Impact Score	6-120	ORANGE

Source: Cal/ EPA Cumulative Impacts: Building a Scientific Foundation

Figure 3. Percent Below 200% Poverty Level, by ZIP Code
Seattle, Washington, 5-year Average 2006-2010

**Socioeconomic factor
component (rank 1-3):
Percent Below 200%
Poverty Level by
ZIP code**

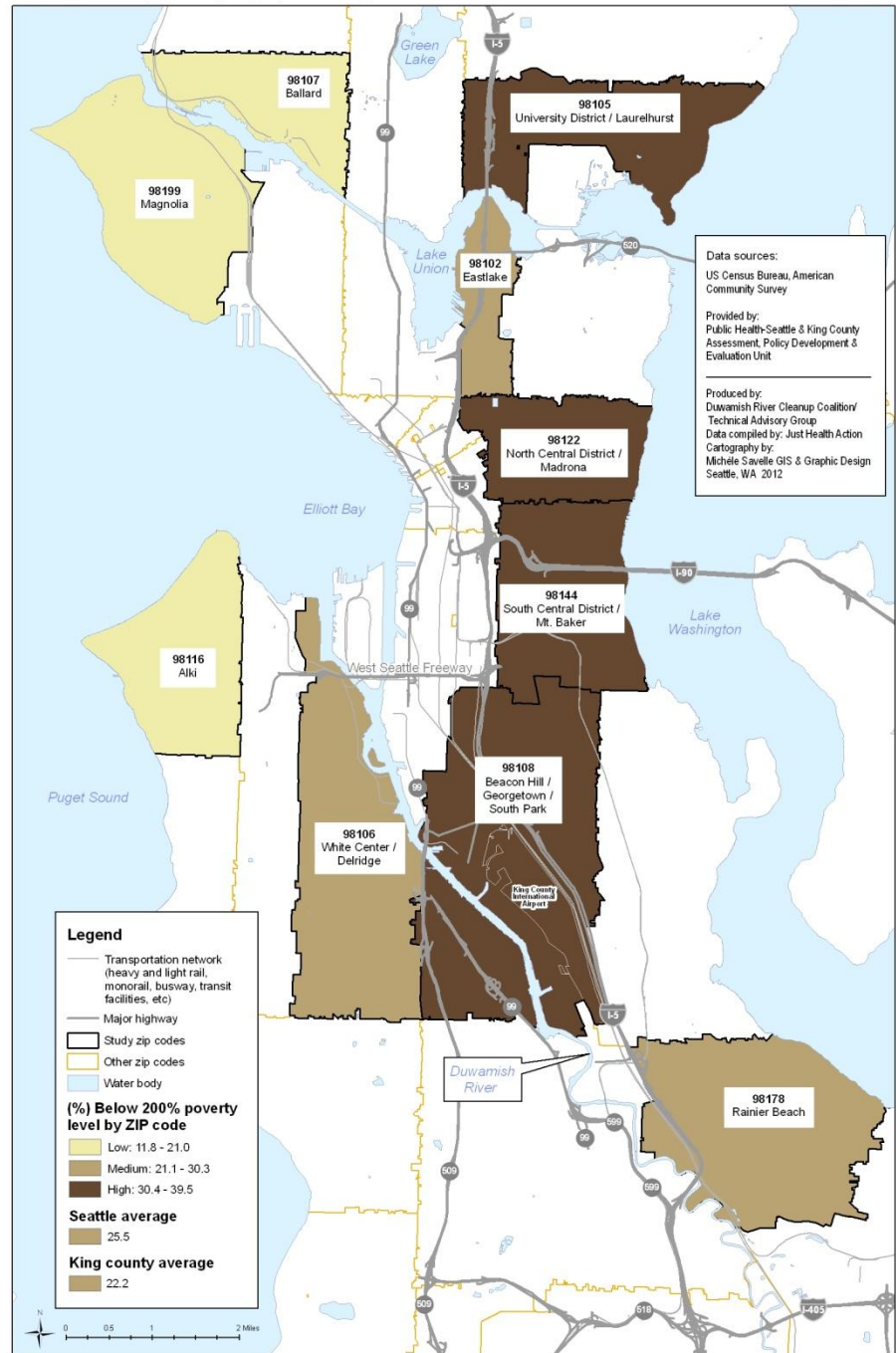


Figure 7. Percent Foreign-Born by ZIP Code
Seattle, Washington, 5-year Average 2006-2010

**Sensitive populations
component (rank 1-3):
Percent Foreign Born
by
ZIP code**

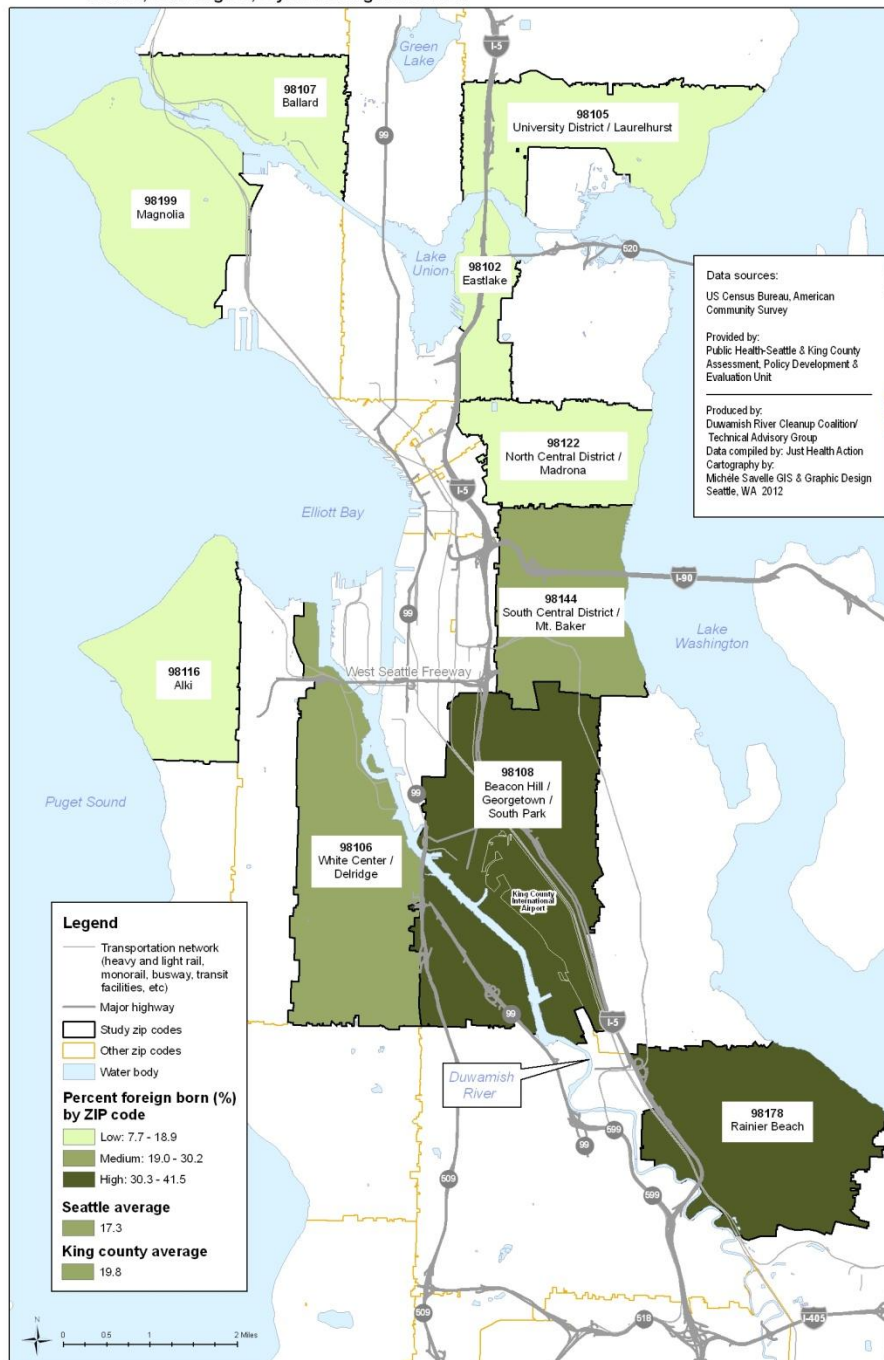
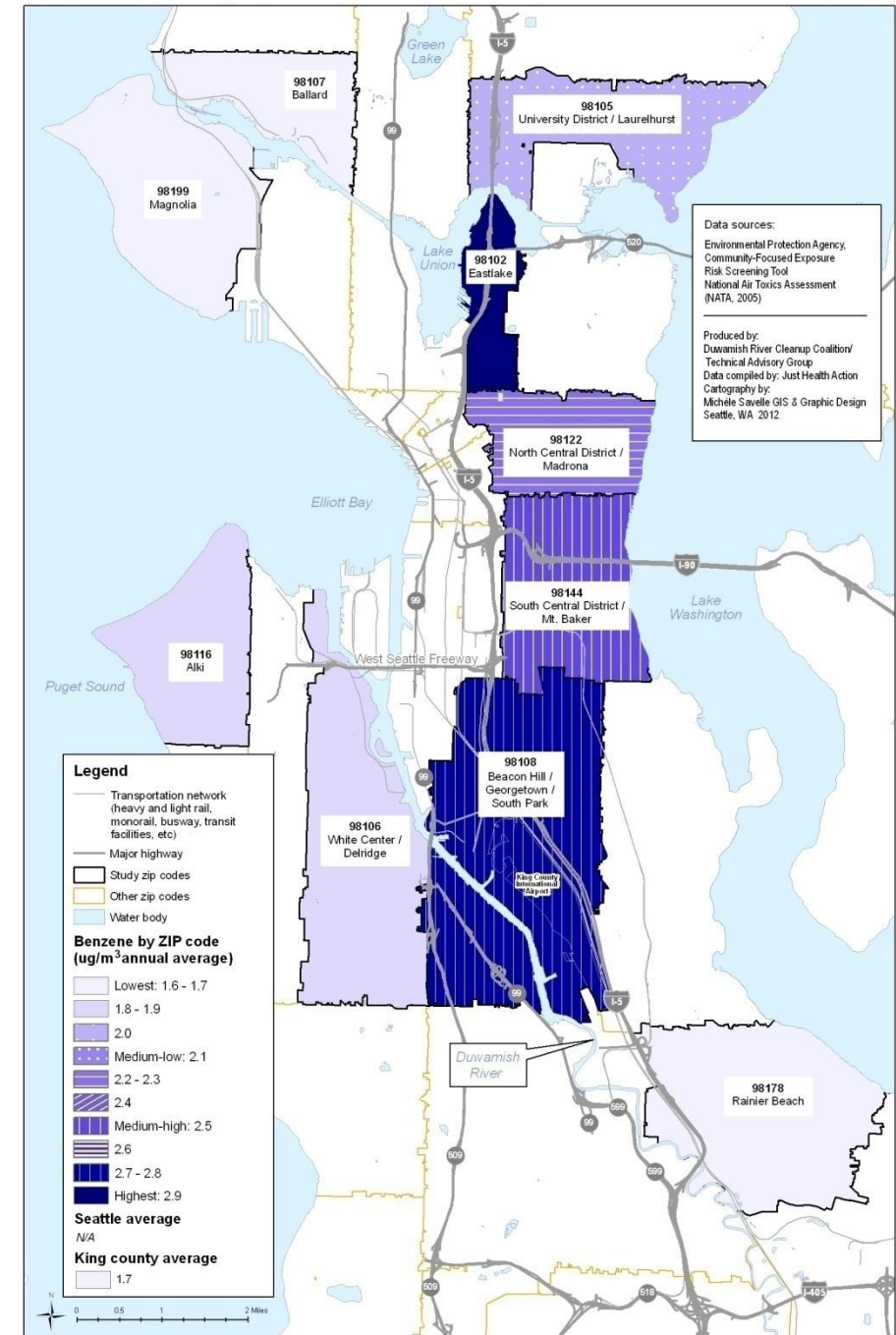


Figure 9. Annual Average Benzene in Human Breathing Zone (ug/m³), by ZIP Code Seattle, Washington, 2005



EPA C-FERST
Environmental
exposures
component
(Rank 1-10):
Annual Average
Benzene in human
breathing zone
(ug/m³), by ZIP
code

**EPA C-FERST
Environmental
exposures
component
(Rank 1-10):
Annual Average
Diesel Particulate
Matter in human
breathing zone
($\mu\text{g}/\text{m}^3$), by ZIP
code**

Figure 8. Annual Average Diesel Particulate Matter in Human Breathing Zone ($\mu\text{g}/\text{m}^3$), by ZIP Code Seattle, Washington, 2005

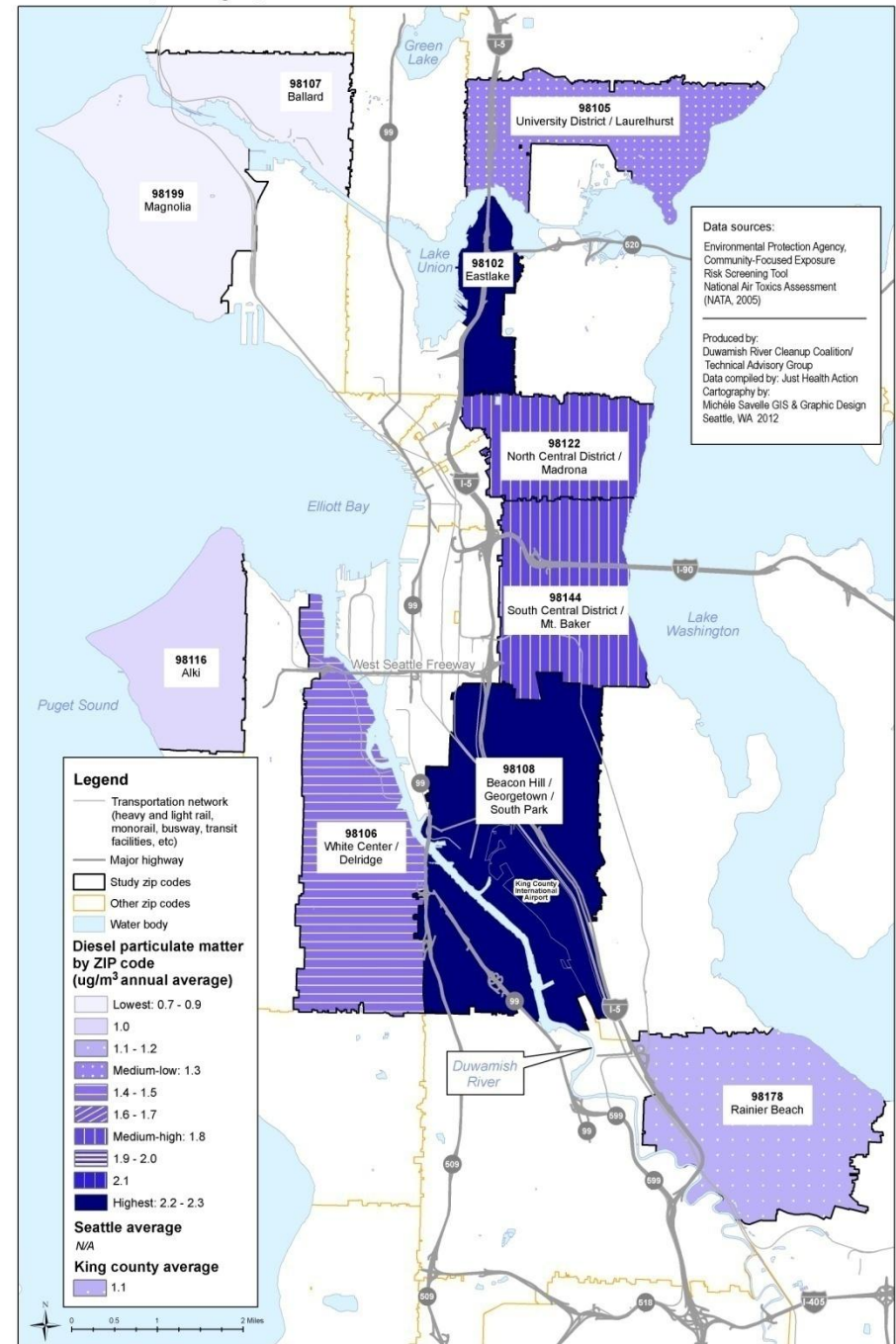


Figure 13. Number of Toxic Release Inventory Sites, by ZIP Code
Seattle, Washington

**EPA TRI Data
Environmental
effects
component
(Rank 1-5):
Number of Toxic
Release Inventory
Sites, by ZIP code**

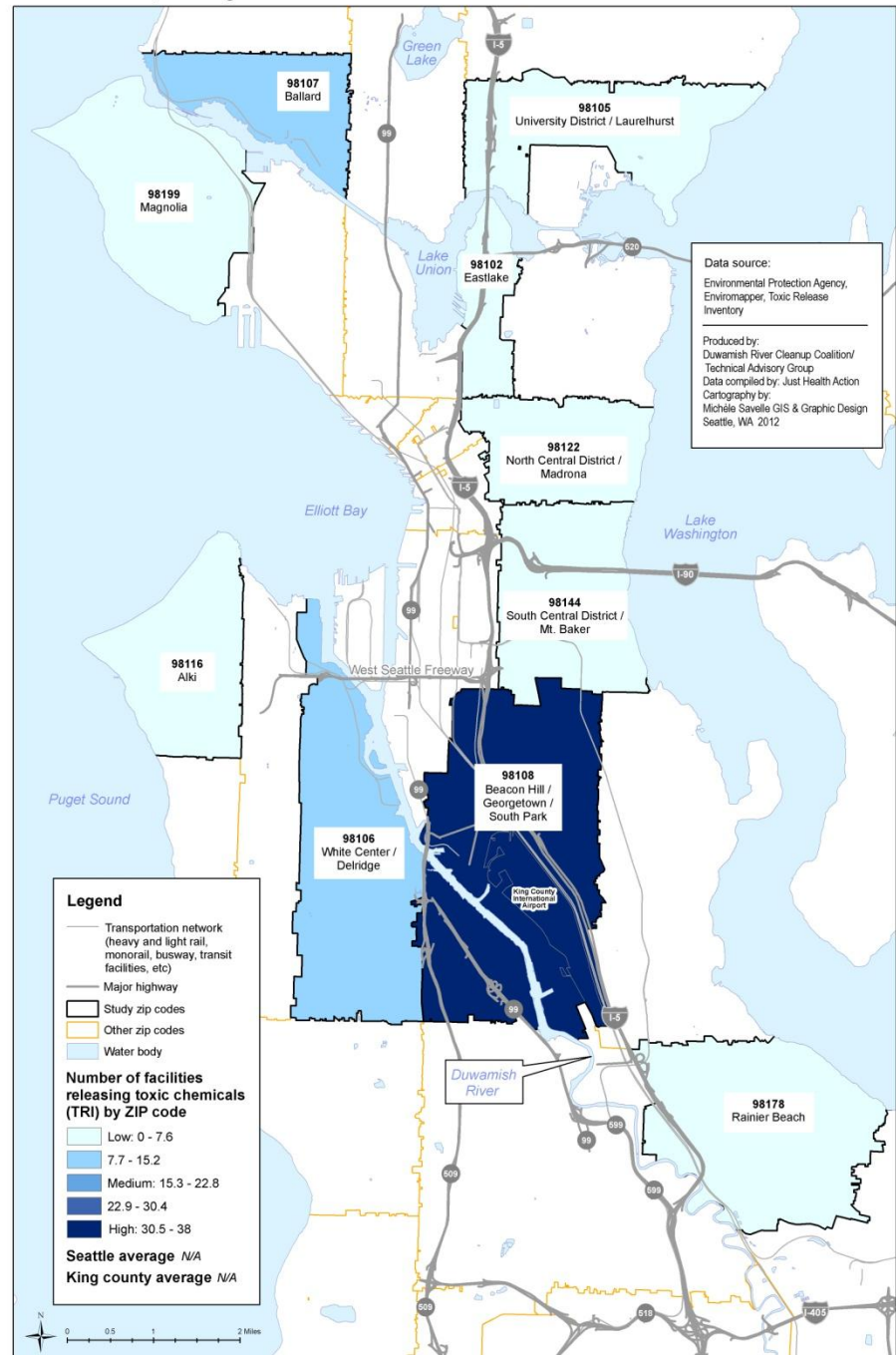
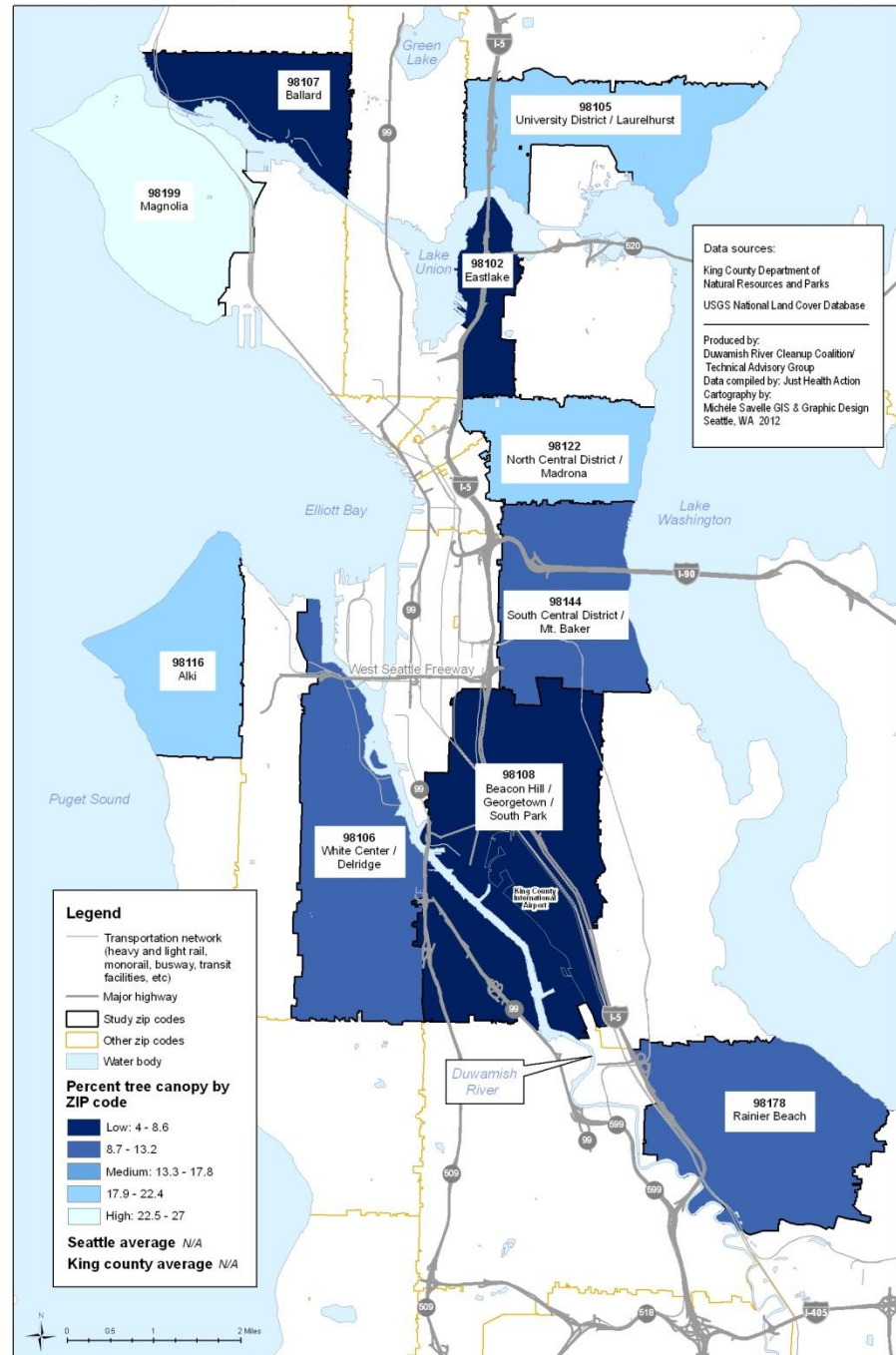


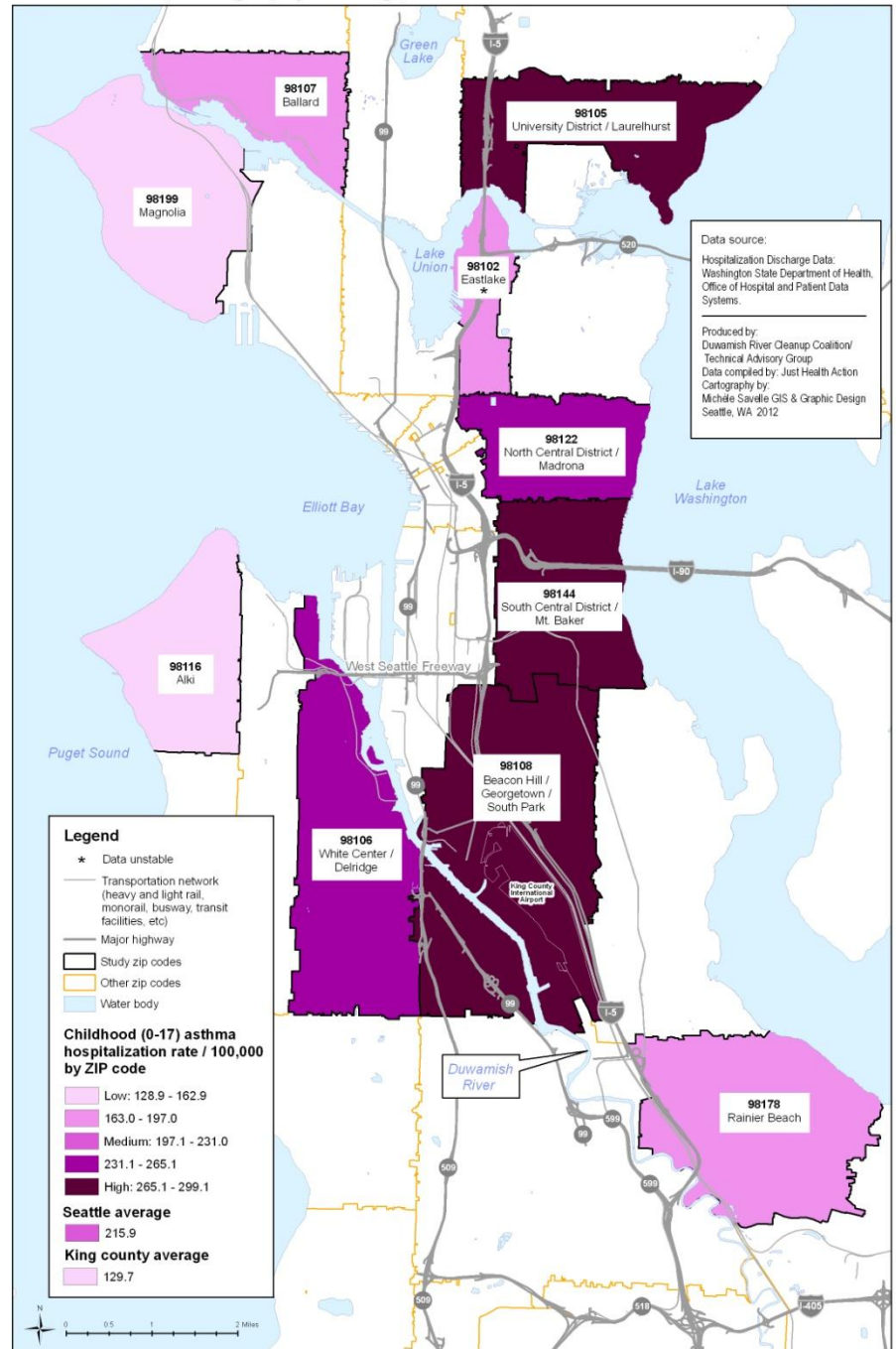
Figure 11. Percent Tree Canopy, by ZIP Code
Seattle, Washington

Environment factors component (Rank 1-5): Percent Tree Canopy by ZIP code



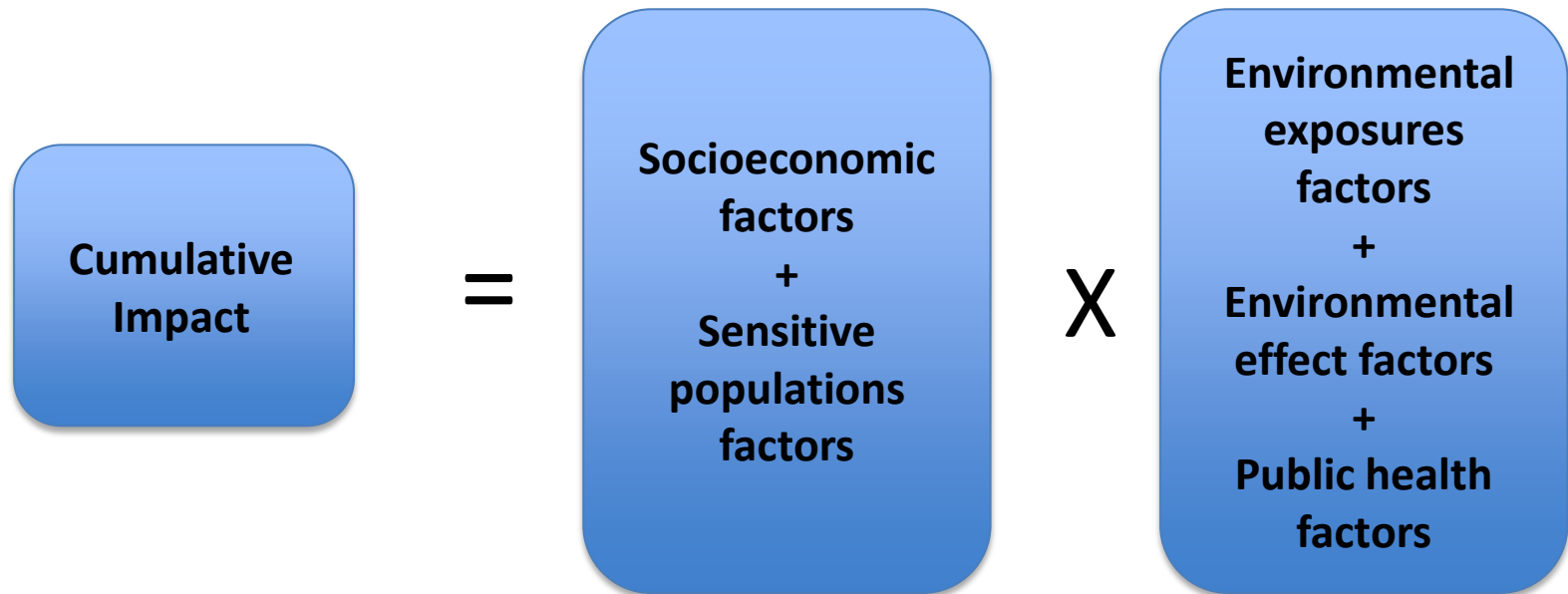
Public health factors component (Rank 1-5): Childhood asthma hospitalization rate per 100,000 by ZIP code

Figure A8. Childhood (0-17) Asthma Hospitalization Rate per 100,000, by ZIP Code Seattle, Washington, 5-year average, 2006-2010



Cumulative Health Impacts Formula:

Input 3 indicators from each component

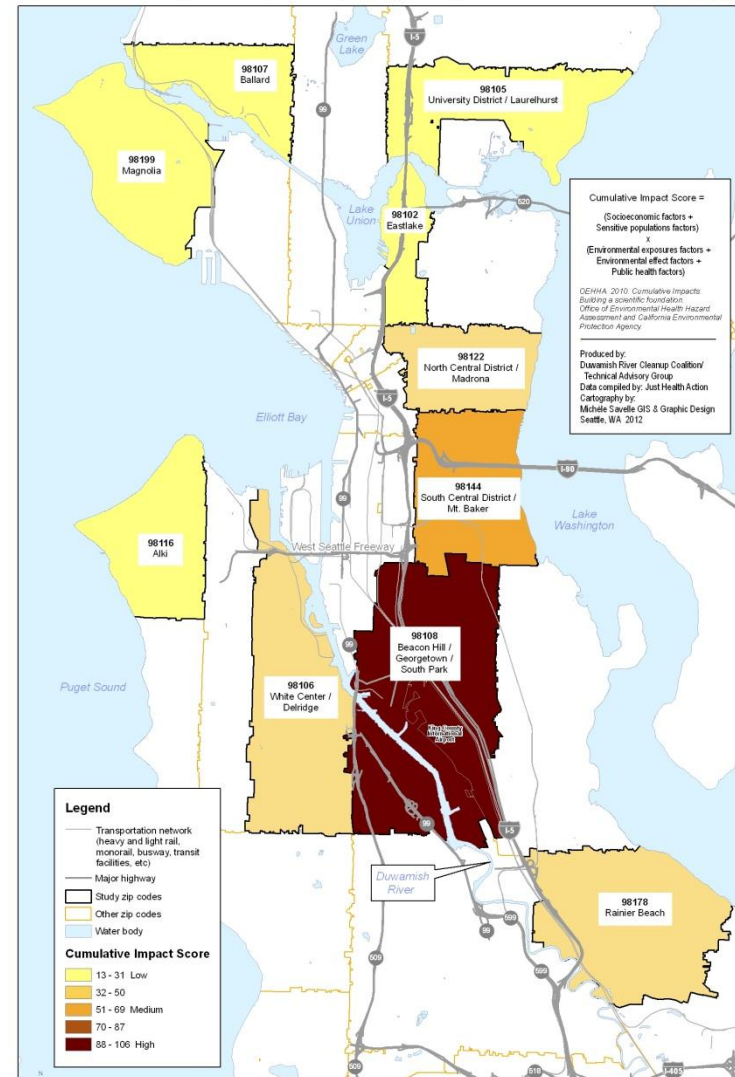


Source: Cal/ EPA Cumulative Impacts: Building a Scientific Foundation, 2010

Seattle Cumulative Impact Analysis Results

Figure 17. Cumulative Impact Score by ZIP Code, Seattle, Washington

DRAFT FINAL V2
10/24/12



Component	98108 Beacon Hill Georgetown South Park	98144 South Central District Mt Baker	98178 Rainier Beach	98106 White Center Delridge	98122 North Central District Madrona	98102 Eastlake	98107 Ballard	98105 University District Laurelhurst	98116 Alki	98199 Magnolia
CUMULATIVE IMPACT SCORE	106	66	50	46	43	30	28	21	19	13

Georgetown/South Park disparities

Indicator	Georgetown /South Park Census tracts 109 and 112	Laurelhurst Census tracts 4100 and 4200	Seattle	King County
Life expectancy at birth (years)	73.3*	86.4*	81.5	81.5
Heart disease death rate per 100,000	202.9#	89.6*	138.4	137.8

Source: Public Health Seattle & King County

*p=0.05 from both KC and Seattle average

#p= 0.05 for KC average only

Community Prioritization Workshops

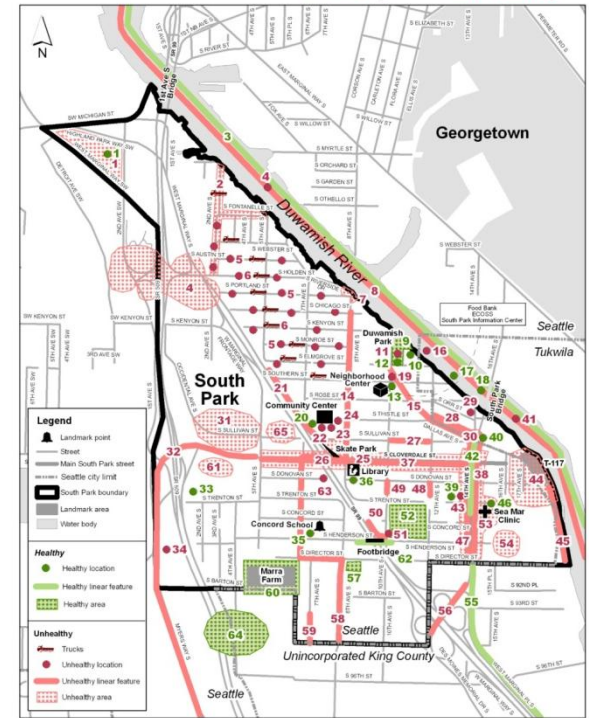


**WE GLADLY ACCEPT
DUWAMISH DOLLARS**



Find out more about Duwamish Dollars and the Duwamish Valley Healthy Communities Project at: duwamishcleanup.org/programs.html

What makes South Park **healthy** and **unhealthy**?



Community Action Grants

action! →



4th grade COOKS!

Tonight's menu:

- ~ Pupusas with kale, onions & black beans
- ~ Repollo (cabbage) with lime and salt
- ~ Spanish Rice
- ~ Banana Splits with pineapple, pear, tropical fruits, almonds and Full Tilt vanilla ice cream!

El menú de esta noche:

- ~ Pupusas con col verde, cebollas, y frijoles negros
- ~ Repollo con limón y sal
- ~ Arroz española
- ~ Banara Splt con piña, pera, frutas tropicales, almendras, y helado de sabor vanilla de Full Tilt (en White Castle)

4th Grade COOKS! 4th Grade COOKS! 4th Grade COOKS! 4th Grade COOKS!



Pollution control: Duwamish Valley Cisterns and Rain Gardens



Influencing Decision-Making



- Evidence base when giving neighborhood “toxic tours”
- Advocating for more resources to improve neighborhood conditions
- Citation when requesting funding for grants
- Informs community outreach efforts
- Helps identify mitigation measures for site cleanups and construction activities
- Information dissemination
- King County and Seattle Equity and Social Initiatives
- Seattle Mayor sets aside \$250,000 *Duwamish River Opportunity Fund* to develop health interventions and mitigation for local residents



QUESTIONS?

Where to get Duwamish Valley Cumulative Health Impacts Analysis (CHIA)?

- The full appendices, and poster can be found at: www.justhealthaction.org/resources/jha-publications
- Our CHIA and associated Environmental Justice curriculum should be available for free online by early 2015.

Thank You!

Contact:

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Technical Advisory
Group



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UNIVERSITY of WASHINGTON

