

Visualizing Overburdened Communities in Southwest Chicago: Environmental Justice Implications or Communities vs. Industrial Polluters: The Power of Health Data

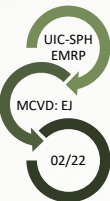
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UIC-SPH-EOHS

Work team affiliations:

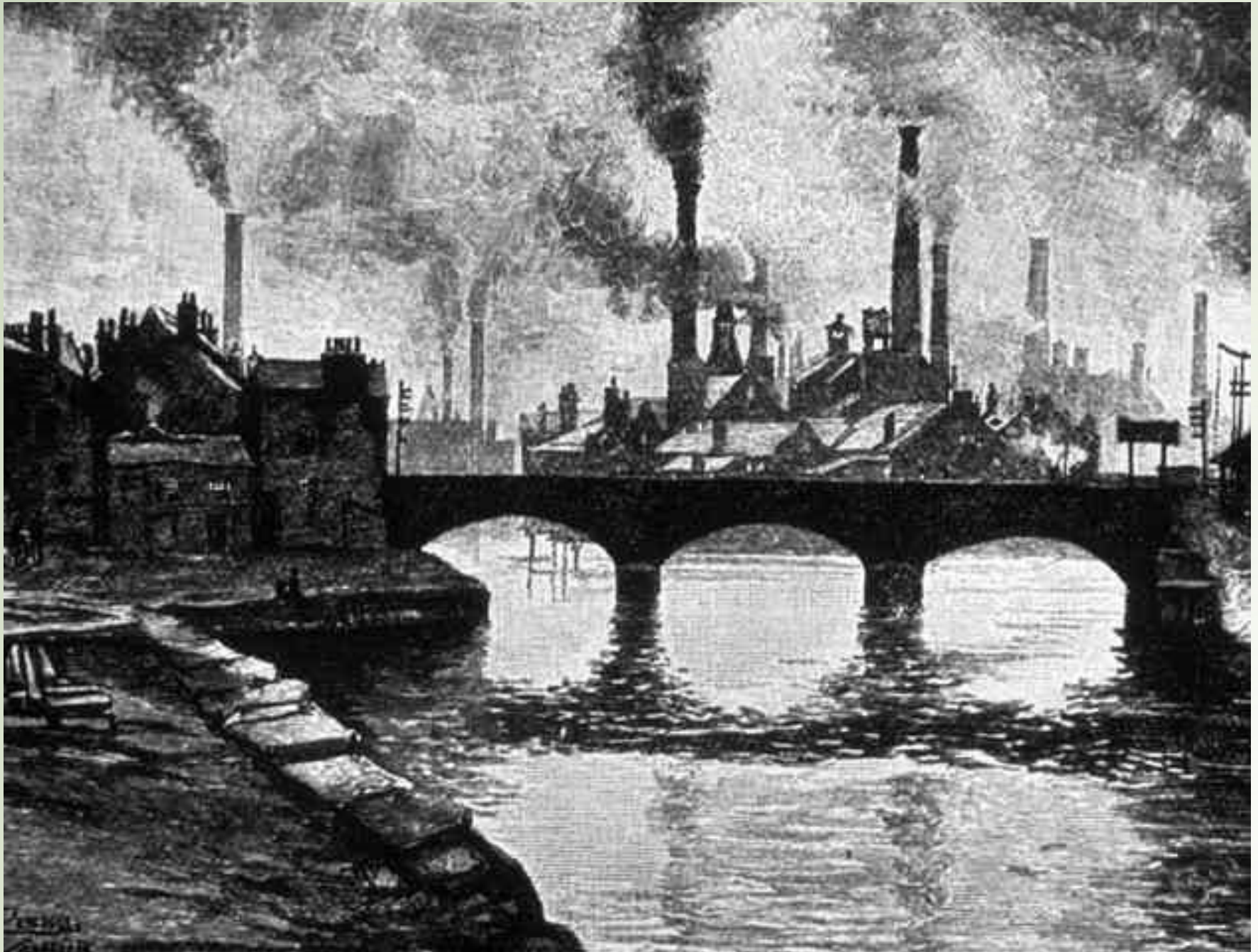
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Based on MCVD EJ.1, EJ.2, & EJ.3 (PHD) dashboard material

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Environmental Injustice Era

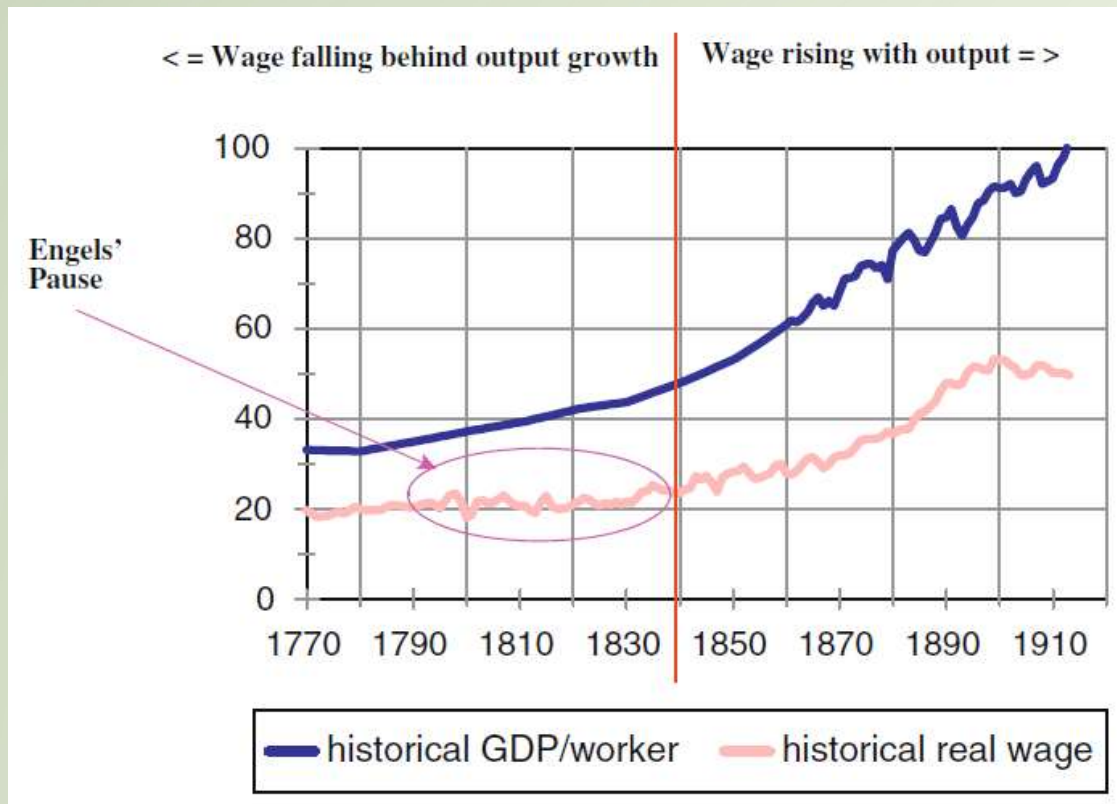


Source: <https://tellinghistories.wordpress.com/2013/11/16/children-in-victorian-factories>

Economic growth and environmental quality

“black vomit, blasting all things living or inanimate, shutting out the face of day, and closing in on all these horrors with a dense dark cloud” (i.e., description of smog; miasma)

Description of Black Country (West Midlands) by C. Dickens in the “The old curiosity shop” (1841).
See also Elizabeth Gaskell’s North and South (1854).



Industrial Manchester, drawing from Mary Evans Picture Library.

Allen, R.C. Engels' pause: Technical change, capital accumulation, and inequality in the British industrial revolution. *Explor. Econ. Hist.* (2009), doi:[10.1016/j.eeh.2009.04.004](https://doi.org/10.1016/j.eeh.2009.04.004)

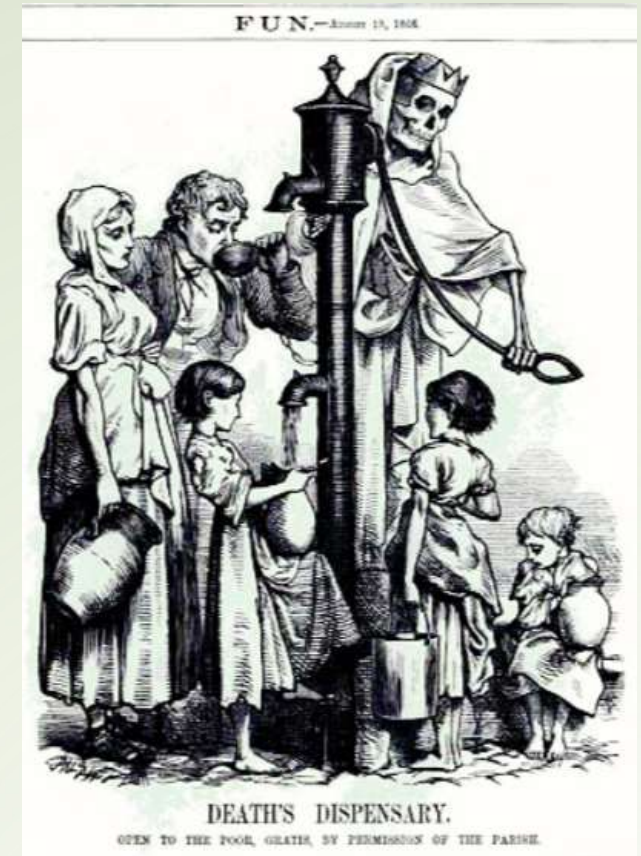
The Environmental Injustice era

Degradation of environmental quality:

- coal (e.g., the great smog of London), chemicals (e.g., deadly acid fumes); metal dust.
- Unrestricted disposal/releases from industry. No treatment.
- Overcrowding in slum areas (for work force), nonexistent public water supplies and waste-disposal systems.
- Michael Faraday's Letter to the editor of the Times -Pollution of the River Thames. July 7, 1855.
- 1858 July-August: the Great Stink (miasma theory)

Distributive injustice:

“a group of people (e.g., immigrants, poor, children) bear a disproportionate share of the negative environmental consequences in the slum areas they live”.



G.J. Pinwell: Death's Dispensary. 1866. This newspaper illustration sketch was drawn around the same time that J. Snow published his study on cholera transmission. Source: [Granger Academic](#)



FARADAY GIVING HIS CARD TO FATHER THAMES;
And we hope the Dirty Fellow will consult the learned Professor.

The Environmental Injustice era

... “the people in Lower Fore Street, Lambeth obtained their water by dipping a pail into the Thames, there being no other supply in the street.”

Source: J. Snow, 1849. On the mode of communication of cholera.

Lower Fore Street,
Lambeth, Greater
London, 1860-1865
(Photographer: William
Strudwick)

Source: Historic England Archive
BB94/20527

Solution: Embarkments

Sir J. W. Bazalgette

Procedural/policy injustice.



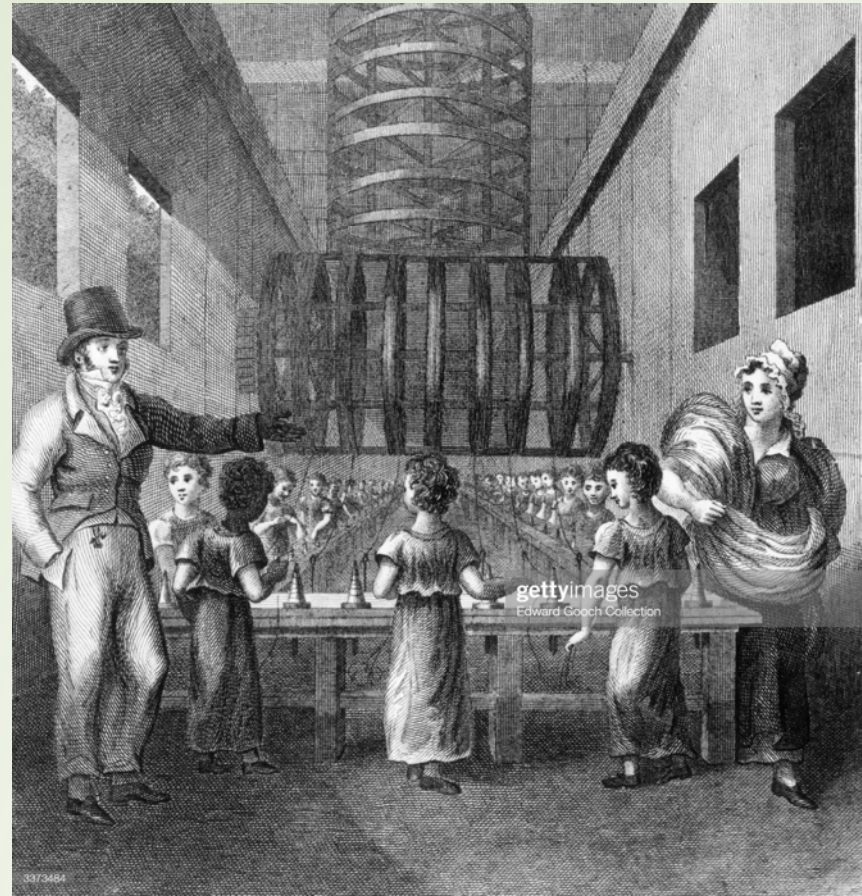
The Environmental Injustice era

Procedural (convenient non-involvement) injustice:

- Most people have **no** opportunity to **participate** in decisions about activities that may affect their environment and/or health. Property qualification for voting (UK); relaxed in 1884; eliminated in 1918 for men; 1928 for women.

Policy and recognition injustice:

- Socio-cultural and unique identities of people are not valued, respected and acknowledged (e.g., children, Irish immigrants). Policy outcomes aim to preserve production and benefit industrial production.



1820: Child labour in a mill during the industrial revolution.
Photo by Edward Gooch Collection/Getty Images

The Environmental Injustice era

First study with data (1845) identifying issues with industrial/economic growth, urban segregation and overcrowding, land use, and environmental quality degradation.

..”and if life in large cities is, in itself, injurious to health, how great must be the harmful influence of an abnormal atmosphere in the working-people's quarters, where, as we have seen, everything combines to poison the air.”

Source: F. Engels (orig. 1845) The Condition of the Working Class in England.

Wentworth Street, Whitechapel
(East London) by Gustave Doré 1872

Source:

<https://www.museumoflondonprints.com/image/245683/gustave-dore-wentworth-street-whitechapel-1872>

The Environmental Injustice era

Disadvantaged people in an overcrowded and polluted space facing cholera :

"... in the working-people's quarters, where, as we have seen, everything combines to poison the air." and water

- In Manchester there was a NE-SW urban segregation pattern. Industrial activity concentrated in the SE (working-people's quarters, i.e., slums).
- In London, a North/west (Buckingham Palace) – East/south (slums and docklands; i.e., Isle of Dogs).
- Slumming: "spend time at a lower social level than one's own through curiosity or for charitable purposes."

Table 1 Deaths from cholera in London, registered from 23 September 1848 to 25 August 1849.

Sectors of London	Population in 1841	Deaths from cholera	Death rate per 1000 inhabitants
West	300,711	533	1.77
North	375,971	415	1.10
Central	373,605	920	2.46
East	392,444	1597	4.07
South	502,548	4001	7.96
Total	1,945,279	7466	3.84

Snow J. *On the Mode of the Communication of Cholera*. London: John Churchill; 1849.

Underlying Principles of EJ

Prerequisites:

- Hazardous sources degrading environmental quality.
- Disadvantaged people near these sources.
- Unrestrained land use development (legacy issues).

EJ Components:

Distributive (fair treatment; EPA) justice.

Procedural (meaningful involvement; EPA) justice.

Policy and recognition (UK, Environmental Agency and EU) justice.

IN THE VICINITY OF MAXWELL AND HALSTED STREETS: CHICAGO 1890-1930

A Human Documentary

BURTON J. BLEDSTEIN, PROJECT DIRECTOR

<https://maxwellhalsted.uic.edu/>

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University of Illinois at Chicago
University Library Department of Special Collections
Jane Addams Memorial Collection, JAMC neg. 1054

Photo by Lewis W. Hine

BREATHING SPACES AND PLAYGROUNDS ARE NEEDED FOR CHICAGO'S CROWDED ...

Chicago Daily Tribune (1872-1922); Dec 26, 1897;
ProQuest Historical Newspapers: Chicago Tribune (1849-1989)

pg. 25

BREATHING SPACES AND PLAYGROUNDS ARE NEEDED FOR CHICAGO'S CROWDED CHILDREN.

**Frightful Condition of Streets and Alleys
Where Little Ones Find
Recreation.**

FILTHY VACANT LOTS SERVE AS PARKS.

W HILE the West Park commissioners are considering the advisability of going to the Legislature for permission to purchase 2,000 or 3,000 acres of land along the Desplaines River, it might be well for them and for the municipal authorities and for the people to ponder the proposition that ten or a dozen open park streets along the Chicago River would be of infinitely greater value to the community. It is a simple proposition, but it helps Chicago face to face with the fact that the city is hampered by woefully inadequate powers of self-government which are liable to disastrous consequences.



...except, a business system with three parks to be strung along the way. Excessive powers were conferred upon the commissioners in the matter of road building. I don't know but they might build a road all the way to Quincy or Cairo, but they were limited as to the acquisition of park lands, and limited until such time as the Legislature should see fit to take further action. This is true of territory within the city limits as well as of territory without. Judged from the standpoint of today the lands were purchased at a ridiculously low figure, and it is a pity that a much greater outlay was not secured. That, of course, at that time no one

Here Is a Chance for the Rich to Do Immeasurable Good and Win Lasting Honors.

COMPLEX MACHINERY MAKES CITY HELPLESS.

the ancient towns and cities of Europe were endeavoring to clear away a mass of inherited debris in the way of centuries and centuries so as to live up to the best thought of the modern world, one of the most distinctive products of the modern world, a mere 10-year-old infant among municipalities, was hammering itself up with a lot of legal and governmental impediments that would puzzle the mind of Disraeli if he could catch the germ. From First Street and the Northwestern tracks to Forty-seventh Street, one Ashland

Environmental Justice (beginnings, USA)

The beginnings of the EJ concepts and principles:

- EJ concepts can be traced back to the American Civil Rights movement of the 1960s (U.S. Civil Rights Act of 1964).
- Many organizations were formed to address “environmental issues inflicted upon communities of color” (e.g., Citizens Committee to End Lead Poisoning (CCELP); Chicago, 1965).
- 1965: [Solid Waste Disposal Act](#).
- 1969: [National Environmental Policy Act](#) (banning of the pesticide DDT).
- 1971: [Lead Poisoning Prevention Act](#).
- 1971: President’s Council on Environmental Quality (CEQ) acknowledged **racial discrimination** which adversely affected urban poor and the quality of their environment.

Focus on distributive justice.

Environmental Justice (challenges & realizations)

- **1976:** Resource Conservation and Recovery Act (RCRA) a legal framework for the disposal of solid and hazardous waste.
- 1978-9: "Bean v. Southwestern Waste Management Inc". The first civil rights suit challenging the siting of a waste facility close to a community of color in the suburbs of Houston (more than 80% black). Unable to establish intentional discrimination with data showing a pattern or practice of placing waste facilities in communities of color,, the residents were not granted relief and the plant was built.
- **1980:** Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Establishing the superfund program for cleaning up abandoned or uncontrolled hazardous waste sites.

Realizations:

- Love Canal landfill (located in Niagara Falls, New York).
- Valley of the Drums (Brooks, Kentucky) waste disposal and drum recycling.



Environmental Justice (challenges era)

The beginning of the environmental justice movement

- 1982: Afton in Warren County, North Carolina. Major protests for a dumping site approval of 40,000 cubic yards of PCB-contaminated soil in a local landfill next to communities of color. The term “environmental racism” came to prominence (Ben Chavis).



Photo source: <http://www.citylab.com/politics/2015/11/how-the-collapse-of-soul-city-fired-up-the-environmental-justice-movement/415530/>

The landfill was built. Plaintiffs were unable to establish intentional discrimination with data

Environmental Justice (recognition of issues)

- **1983:** The General Accounting Office (**GAO**) **Study**. From the four (4) hazardous waste landfills (EPA Region IV: GA, KY, NC, SC, AL, MS, and FL), three (3) were in predominantly poor and black communities.
- **1986:** [Superfund Amendments and Reauthorization Act \(SARA\)](#).
- **1987:** Landmark EJ manuscript: "*Toxic Waste and Race in the United States*" by the United Church of Christ Commission for Racial Justice; Ben Chavis and Charles Lee. This report found that "approximately 60% of the nation's Latino and Black residents live in communities that contain uncontrolled toxic waste sites."

Visualization of EJ disparities.



Environmental Justice (recognition of underlying issues)

- 1990: **Clean Air Act.**
- 1990: Robert Bullard's book, "*Dumping in Dixie: Race, Class, and Environmental Quality*". Discussion of LULUs "Locally Unwanted Land Uses" (e.g., toxic waste landfills) being located close to poor neighborhoods of color since affluent NIMBYs "not in my back yard" were more influential in the decision –siting/land use– making process.
Introduction of the term PIBBY (Put In Blacks' Back Yard).

Emerging characteristics of the pre 1990 era; recognition of:

- **Unjust distribution** of hazardous (& toxic) sources. (distributive injustice)
- Delayed regulatory (official) response and challenges. (procedural injustice)
- **Race** and class issues emerging at a decision-making level for LULUs. (NIMBY influence; procedural/recognition injustice; structural racism)
- Lack of supporting evidence and legal framework issues (two major sitting cases were lost; institutional racism).
- Scale of EJ issues is **local** –communities of color- not national (pesticides) or global (acid rain).

Environmental Justice (recognition of underlying issues)

- **1991:** 1st National People of Color Environmental Leadership Summit held in Washington, DC. Issued the 17 Principles of EJ that are still in use today:



- *EJ demands that public policy be based on **mutual respect** and **justice for all peoples**, free from any form of **discrimination** or bias.*
- *EJ demands the right to **participate as equal partners** at every level of decision-making including needs assessment, planning, implementation, enforcement and evaluation.*
- *EJ mandates the right to ethical, balanced and responsible **uses of land** and renewable resources in the interest of a sustainable planet for humans and other living things.*
- *EJ calls for the **education** of present and future generations which emphasizes social and environmental issues, based on our experience and an appreciation of our diverse cultural perspectives.*
- **1992. Environmental Justice Act 102nd Congress.**

PHOTO: Opening Ceremony: Rose Auger, [Benjamin Chavis, Jr.](#), Gail Small, Toney Anaya, Syngman Rhee.

[30th Anniversary: The First National People of Color Environmental Leadership Summit - United Church of Christ \(ucc.org\)](#)

Environmental Justice after 1991 summit

- **1994: Executive Order 12898**, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
- **1994: EPA's Office of Environmental Equity is named Office of Environmental Justice.**
- Environmental equity/racism becomes a main trend in academic publications:
 - 1997: Equity and the Distribution of Environmental Risk: The Case of TRI Facilities. E. Ringquist.
 - 1997: Is There Environmental Racism? The Demographics of Hazardous Waste in Los Angeles County. T. Boer, et al.
- 1999, ..., **2019 (cumulative impacts; did not pass): A series of Environmental Justice Acts** guiding federal agencies to address EJ issues and practices. Implementation issues.

Environmental Justice these days

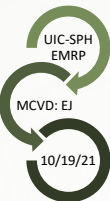
- **2021: EO 14008:** Tackling the Climate Crisis at Home and Abroad (2021). Sec. 219 has a focus of EJ: ...turning disadvantaged communities — historically marginalized and overburdened — into healthy, thriving communities,...

What is an Overburdened community?

Minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially **experience disproportionate environmental harms and risks.** This disproportionality can be as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors.

Increased vulnerability may be attributable to an **accumulation of negative** or lack of positive **environmental,** health, economic, or social **conditions** within these populations or places. The term describes situations where **multiple factors,** including both environmental and socio-economic stressors, **may act cumulatively** to affect health and the environment **and contribute to persistent environmental health disparities.**

Source: EPA EJ2020





Underlying Principles of EJ

Prerequisite: EJ presupposes degradation of environmental quality and disadvantaged people living near hazardous sources.

Distributive (fair treatment; EPA) component of EJ:

“no group of people should bear a **disproportionate** share of negative environmental consequences”.

Procedural (meaningful involvement; EPA) justice component :

- People have an opportunity to **participate** in decisions about activities that may affect their environment and/or health.
- The public's contribution can **influence** the regulatory agency's **decision**; and **community concerns** will be considered in the decision-making process.

Policy and recognition (UK, Environmental Agency/ EU) justice component:

- What are the **outcomes** of environmental policy decisions and how these affect **different** social groups. Unique socio-cultural identities of people must be valued, respected and acknowledged.

EJ and visualization tools: resolution?

A Game Changer in the Making?

Lessons From States Advancing Environmental Justice **Through Mapping**
and **Cumulative Impact** Strategies.

(Charles Lee, 2020; Lee is the co-author of the 1987 report).

- Smart mapping with GIS proves an imperative tool across environmental justice initiatives. GIS can help shape the conversation in ways that engage people, helping them to **identify solutions**.
- Leaders share maps showing where **environmental risks unfairly impact communities of color**.
- Activists use GIS to **engage stakeholders on regulations, policy, and other equity solutions**.

C. Lee. June 2021. ESRI Equity & Social Justice.

EJ and visualization tools

Major tools to conduct EJ assessments (substantiate that the status of a community is overburdened):

California EPA: CalEnviroScreen (index based, ranking; not proximity)

“A mapping tool that helps identify California communities that are most affected by many sources of pollution, where people are often especially vulnerable to pollution's effects..... ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors and the prevalence of certain health conditions.”

US EPA EJSCREEN (percentile comparison with indicator; proximity)

“mapping and screening tool. It is based on nationally consistent data and an approach that combines environmental and demographic indicators in maps and reports.”

Many more created by state agencies.

EJ and visualization tools

The UIC Midwest Comprehensive Visualization dashboard (MCVD) approach and interface.

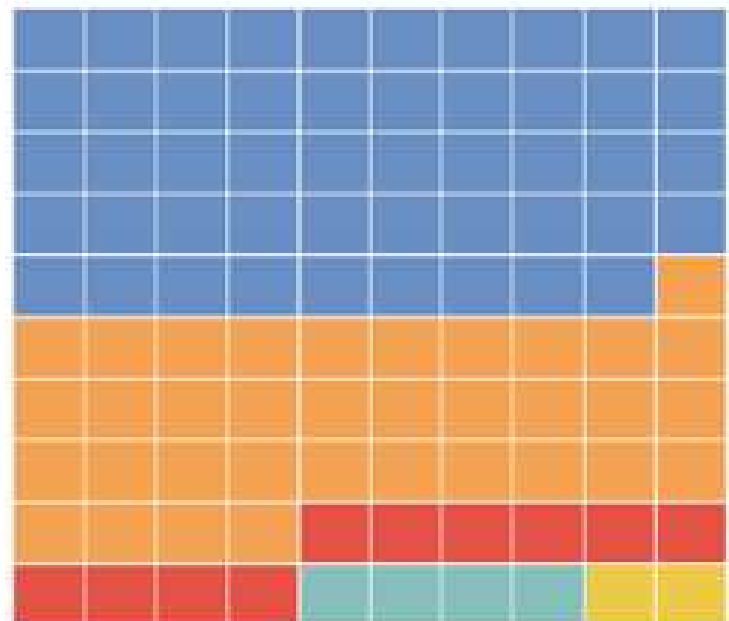
- Designed to visualize overburdened communities in Chicago with a simple proximity zone around a place (i.e., address) of interest. This zone can have a radius of 0.2 km to 2.0 km.

Sources of burden within Chicago City limits:

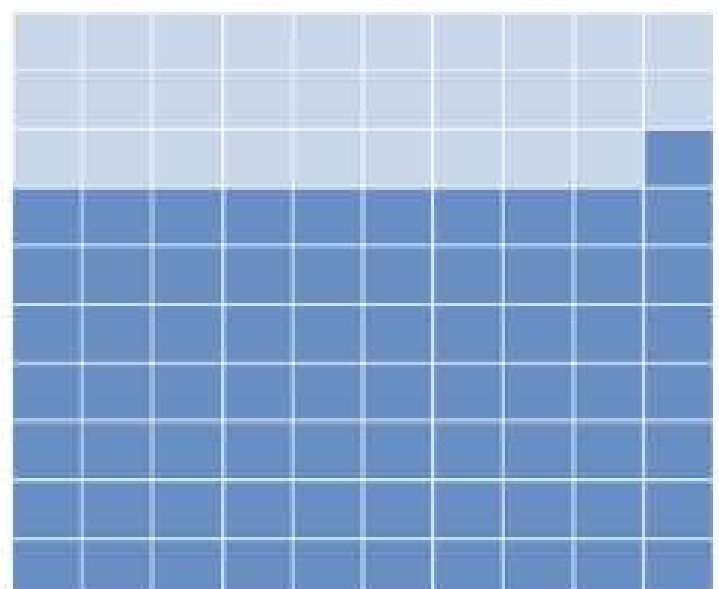
- TRI facilities (number and hazards scores)
- Asphalt plants (SW Chicago only; community information)
- Brownfields
- Rail yards
- Industrial roads (not included).
- Landscape burden
- New > CLOI: Community Locations of interest; community information).

Focus on sensitive population centers (i.e., K-8 Schools; Public schools) as a surrogate for the minority populations withstanding the burden.

Population size = 178,131

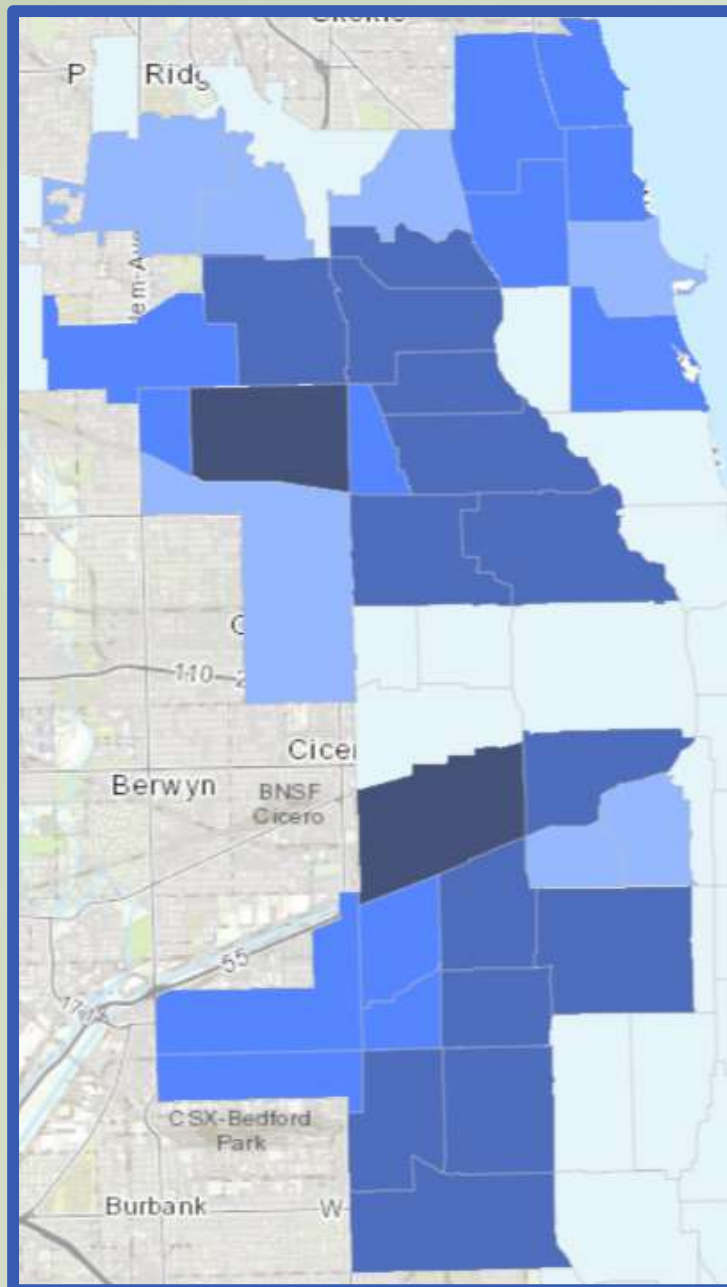


- Hispanic (49.2%)
- Black (35.16%)
- White (9.5%)
- Asian (4.4%)
- Other (1.8%)

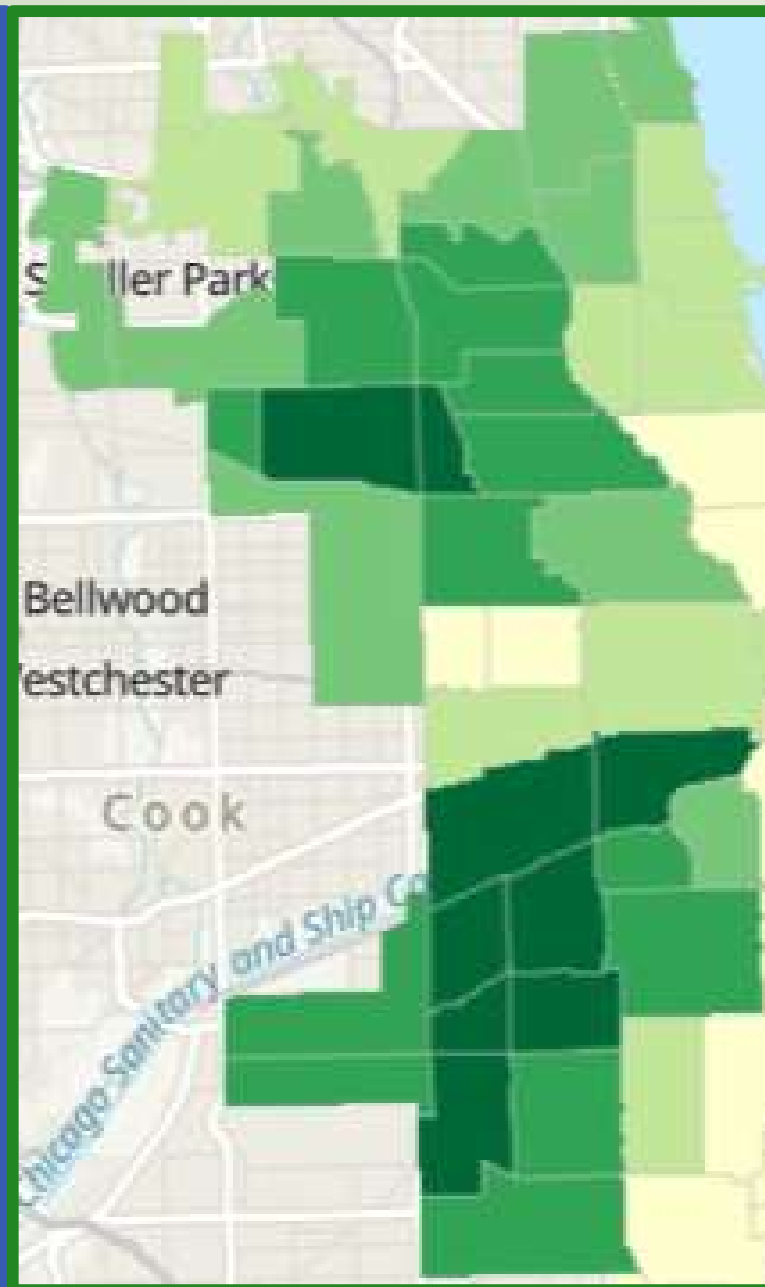


- Low Income (79.1%)

Sensitive and overall population



Latinx K-8 students

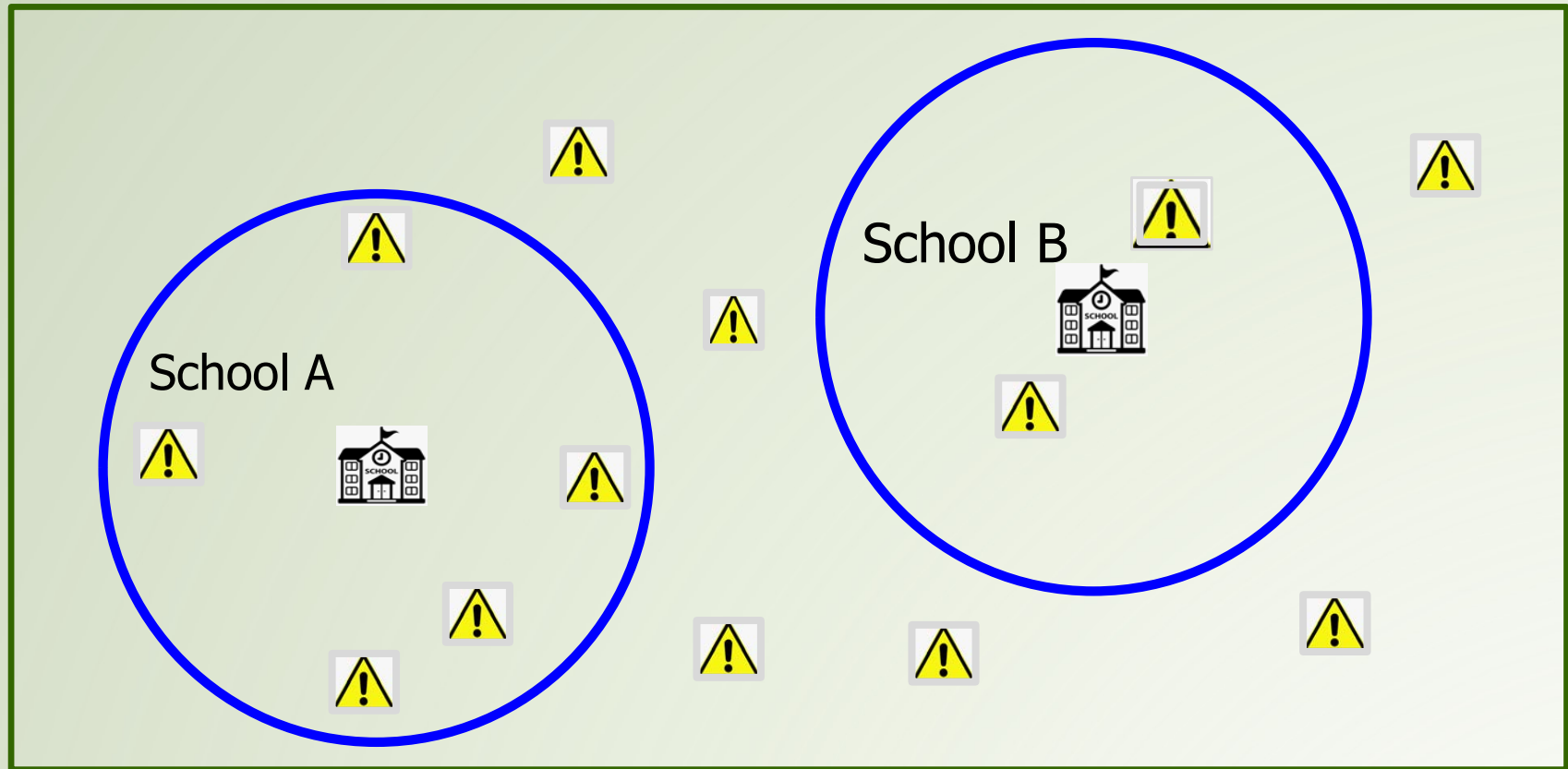


Latinx population

The distribution of the Latinx student population in Chicago approximates the distribution of the Latinx overall population in Chicago.

Methodology used by UIC team

Hazard (source) -> Proximity -> Burden (on children)



Burden example with (sensitive) population:

- School A has 300 students => burden = $300 \times 5 = 1,500$.
- School B has 200 students => burden = $200 \times 2 = 400$.



Hazard source (e.g., TRI, railyard, asphalt plants, etc.)

Proximity Burden

Hazard (source) -> Proximity -> Proximity Burden

The simplified proximity burden for each school is:

Proximity to HAZARDS	X	Sensitive population	=	Proximity burden
Number of sources (e.g., TRIs, Rail yards, etc.)		School, <i>i</i> , children		To school, <i>i</i> , children

$$(proximity\ burden)_i = (TRI\ school\ proximity\ burden)_i = (PSS \times TRIs)_i$$

where:

PSS = the percent of neighborhood school students (from the total student population) in each school, *i*.

TRIs = the number of TRI reporting facilities near school *i*, within (for this case) a 1-mile radius.

We are using the percent of students in each school to have a relative scale across Chicago.

Proximity Burden

Hazard (source) -> Proximity -> Proximity Burden

To have a comparable and understandable scale we calculate the burden at a community area (z) geographic scale.

$$CPB_z = \text{Collective Proximity Burden} = \sum_{i=1}^{n_z} (\text{proximity burden})_i = \sum_{i=1}^{n_z} (PSS \times TRIs)_i$$

where:

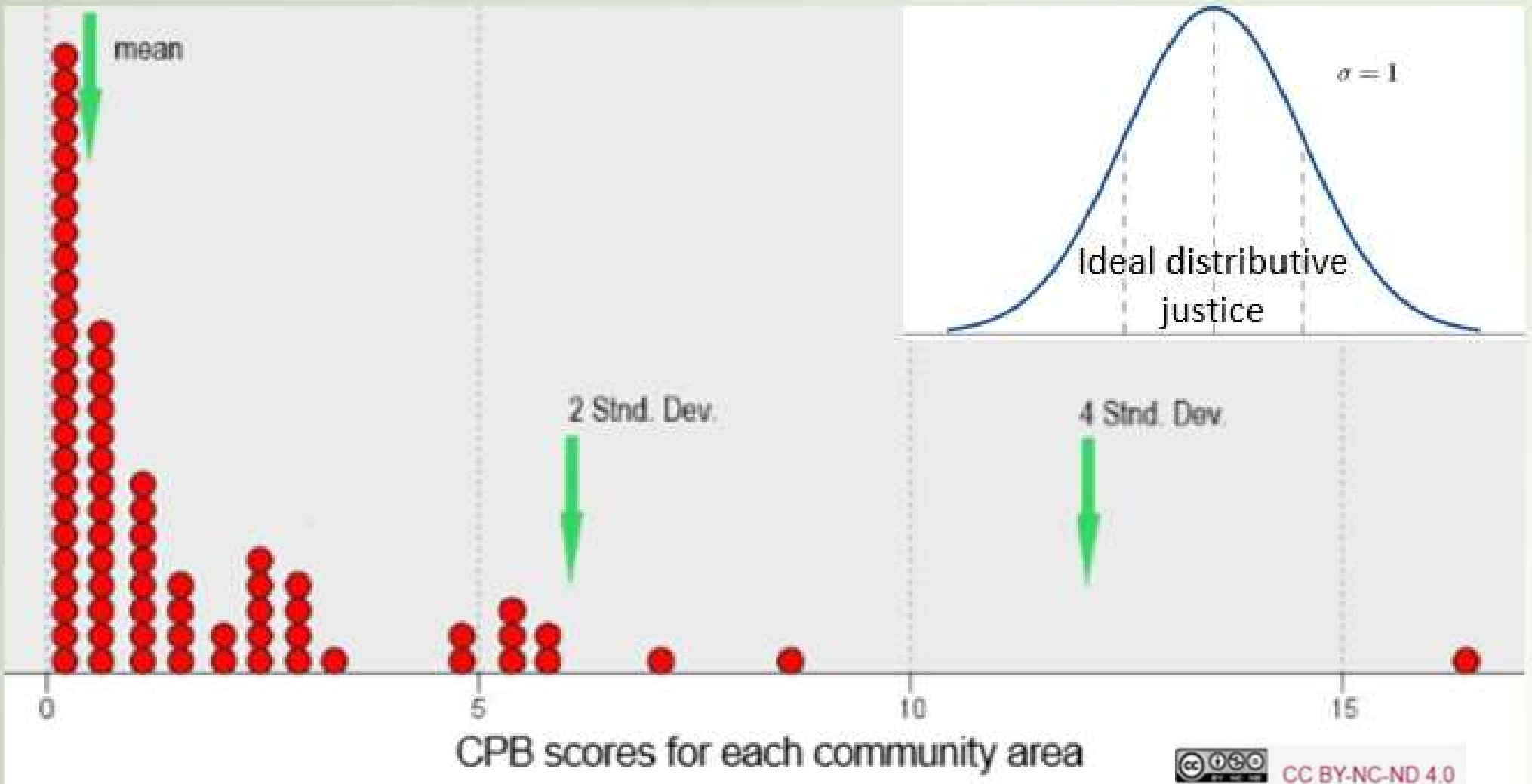
n_z = the number of schools in the community area z.

PSS = the percent of neighborhood school students (from the total student population) in each school, i .

$TRIs$ = the number of TRI reporting facilities near school i , within (for this case) a 1-mile radius.

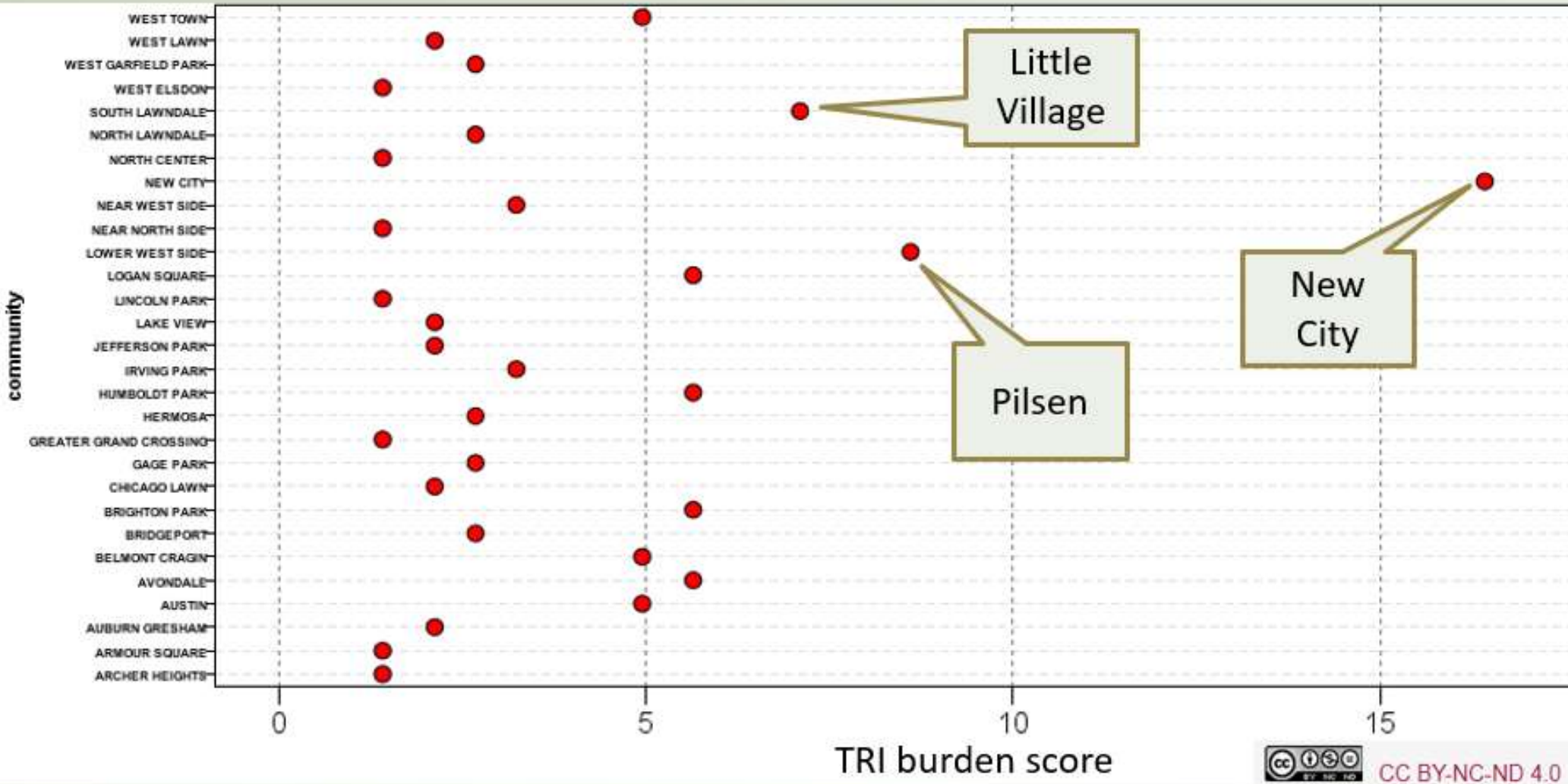
The collective proximity burden is **NOT** a risk metric. It quantifies the relative burden (on schools) distribution of hazards within Chicago.

TRI proximity burden for Chicago communities



The distributive justice principle of EJ is clearly violated

Visualizing TRI overburdened communities



Three communities have the largest score of TRI proximity burden to their schools.

Note: In the above figure zeros have been removed

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Overburden communities

By paraphrasing the EPA definition, we define overburden as:

The term that describes places where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities for minority, low-income communities.

Objectives of UIC-MCVD interfaces:

1. Focus on the most sensitive population within these communities, which in this case are K-8 children at their school locations.
2. Visualize the multiple factors that render these communities overburdened (PHD interface).
3. Quantify on a relative scale the burden disparity.

Demographic Characteristics of Southwest Chicago

(ZIP code level)

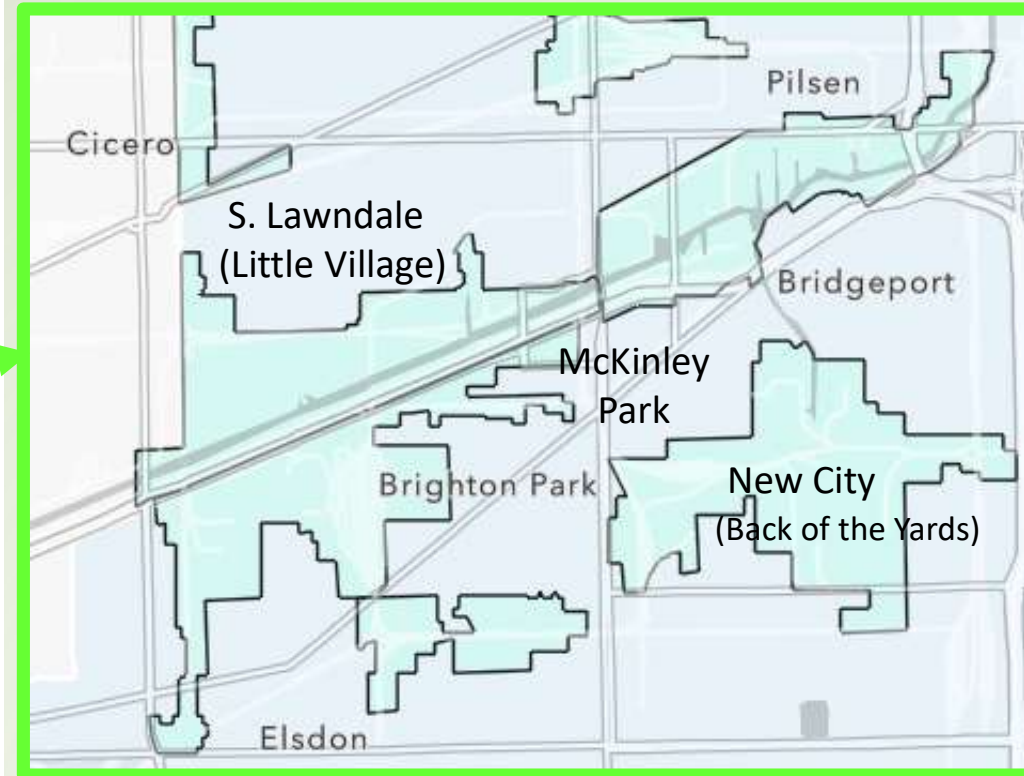
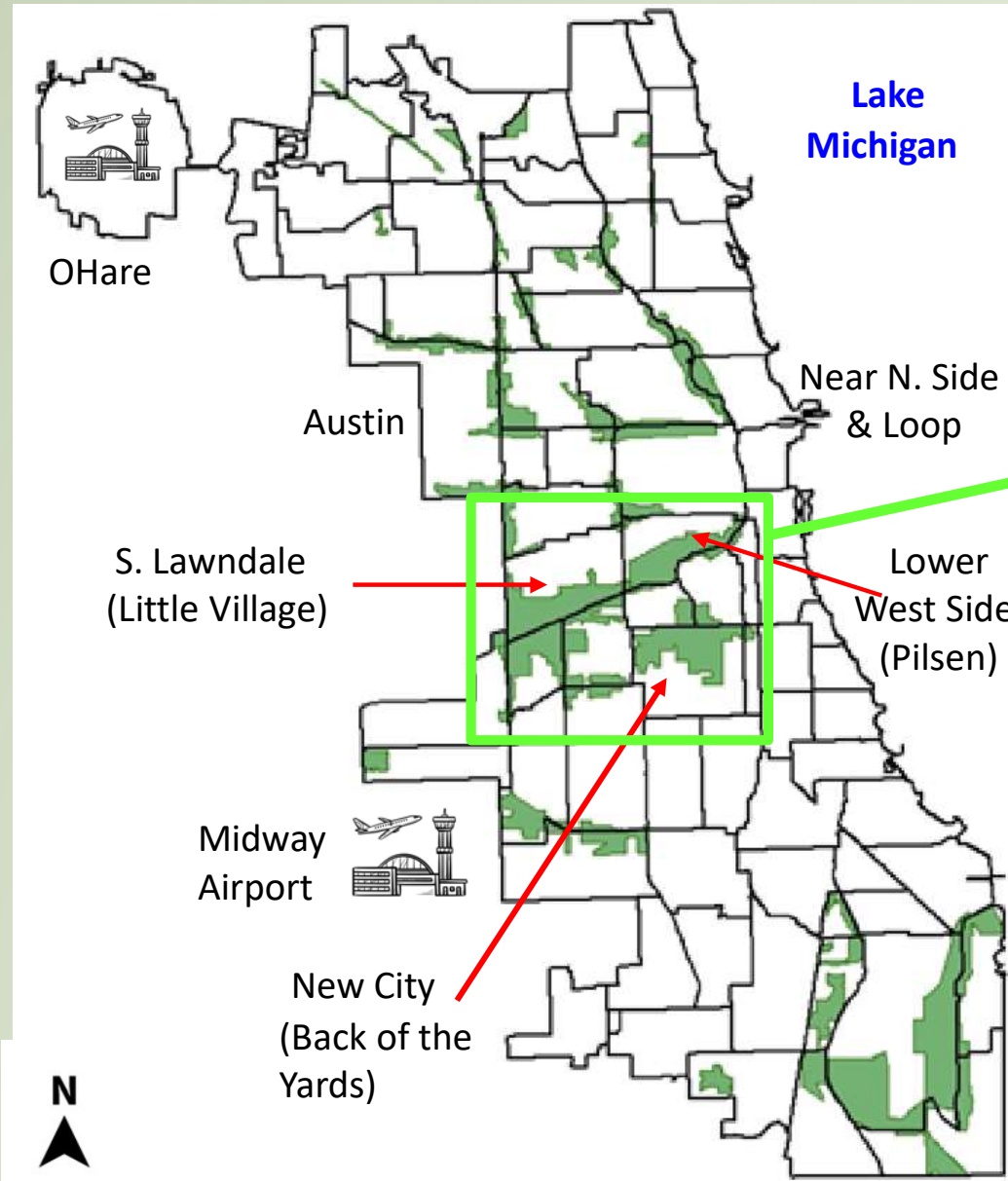


Industrial corridors

ZIP CODE	Population Density (Sq. Mile)	Total Pop	Less than 10	Less than 10 (%)	More than 60 Years	More than 60 Years (%)	Hispanic or Latino	Hispanic or Latino (%)	Per Capita Income
60608	12,568	79,205	8,358	10.6%	11,411	14.4%	40,146	50.7%	21,447
60609	7,944	61,495	9,610	15.6%	9,609	15.6%	32,860	53.4%	17,436
60623	16,007	85,979	14,428	16.8%	11,671	13.6%	56,864	66.1%	13,678
60632	12,249	91,039	14,750	16.2%	12,635	13.9%	76,434	84.0%	16,648
Total or average	na	317,718	47,146	14.8%	45,326	14.3%	206,304	64.9%	17,302
Chicago Metro	11,943	2,718,555	333,581	12.3%	465,426	17.1%	788,140	29.0%	46,573


Chicago, its community areas, and industrial corridors

People and land use:
Landscape burden

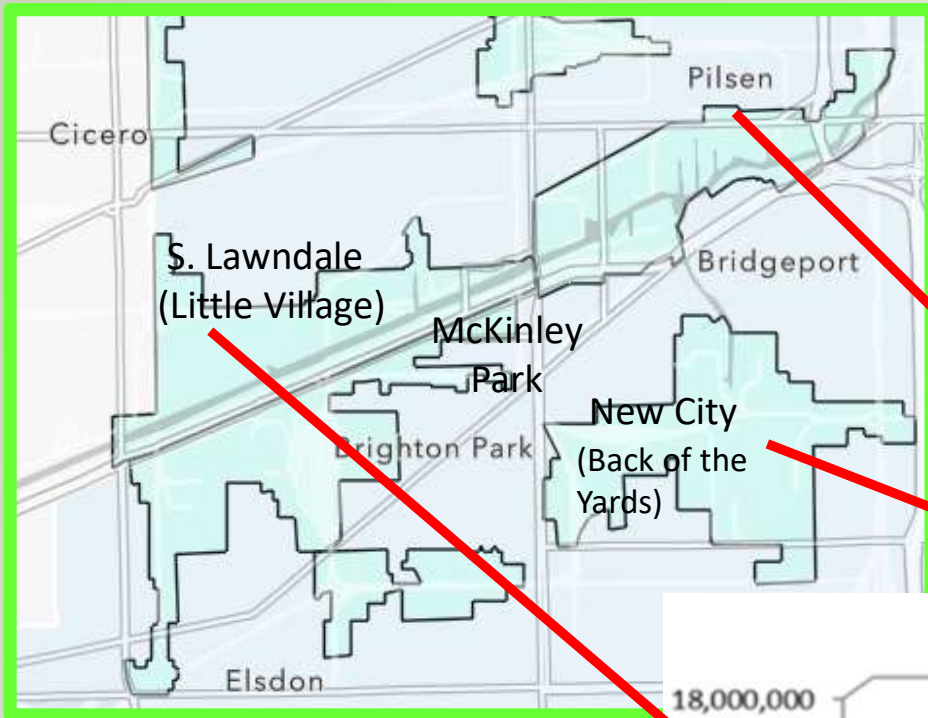


Southwest Chicago communities

 Industrial corridors

 Industrial corridors

Chicago, its community areas, and industrial corridors



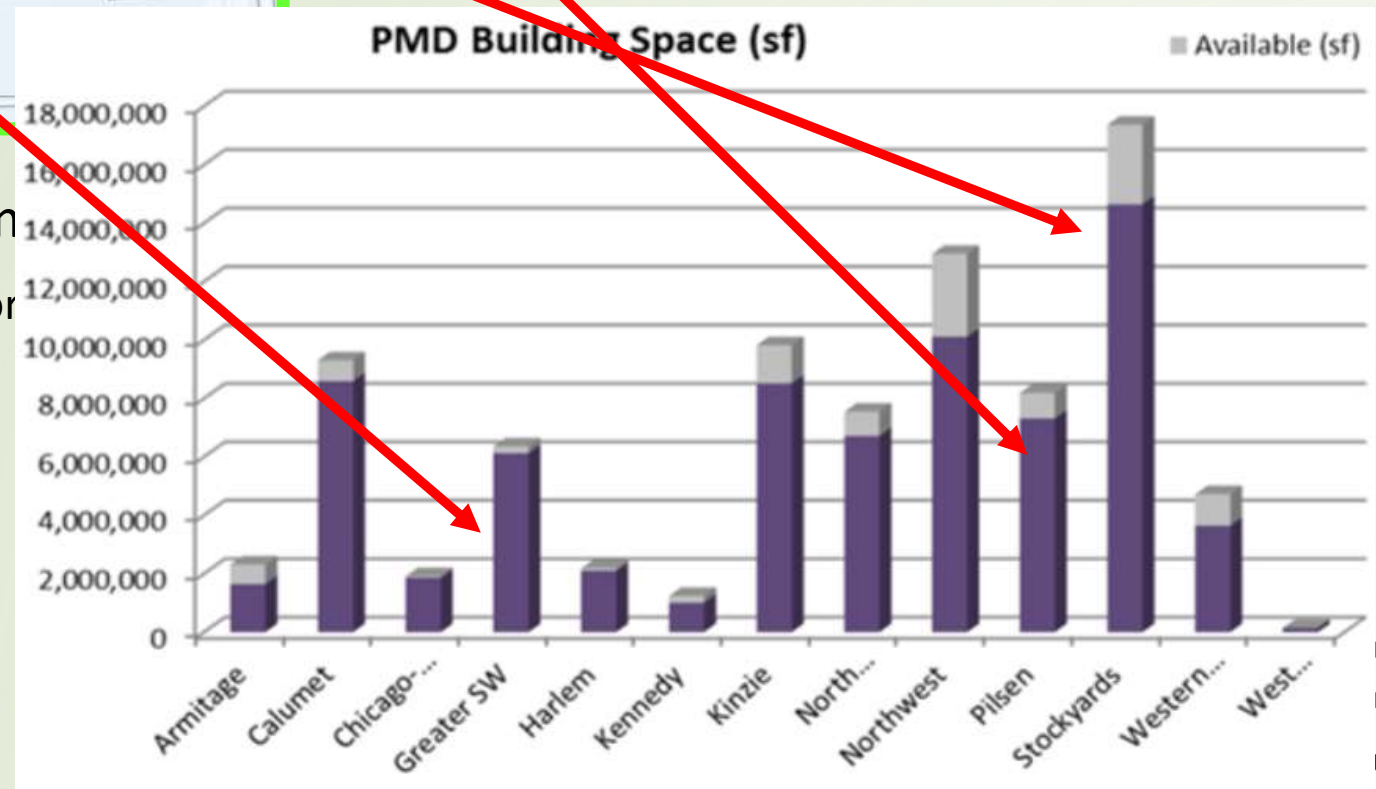
People and land use

Planned Manufacturing Districts and building space
(2017 PMD modernization plan)

Landscape burden

Southwest Chicago community areas

Industrial corridors



Visualizing issues in overburdened communities with a case study

Background document of the tool

Emergency Management and Resiliency Planning Program (EMRP) and the

Electronic Visualization Laboratory (EVL)



UNIVERSITY OF
ILLINOIS CHICAGO

School of Public Health and Colleges of
Engineering and Urban Planning and Public
Affairs

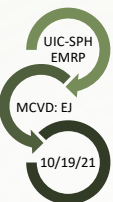
Midwest Comprehensive Visualization Dashboards: A New Environmental Justice Tool for Chicago Communities

Created by Joel Flax-Hatch, Fabio Miranda, Apostolis Sambanis, and Michael D. Cailas, with the participation of Michael Siciliano, Sybil Derrible, Yuan Shao, and Greg Arling

An interactive map to visualize the overburdened conditions in Chicago communities.

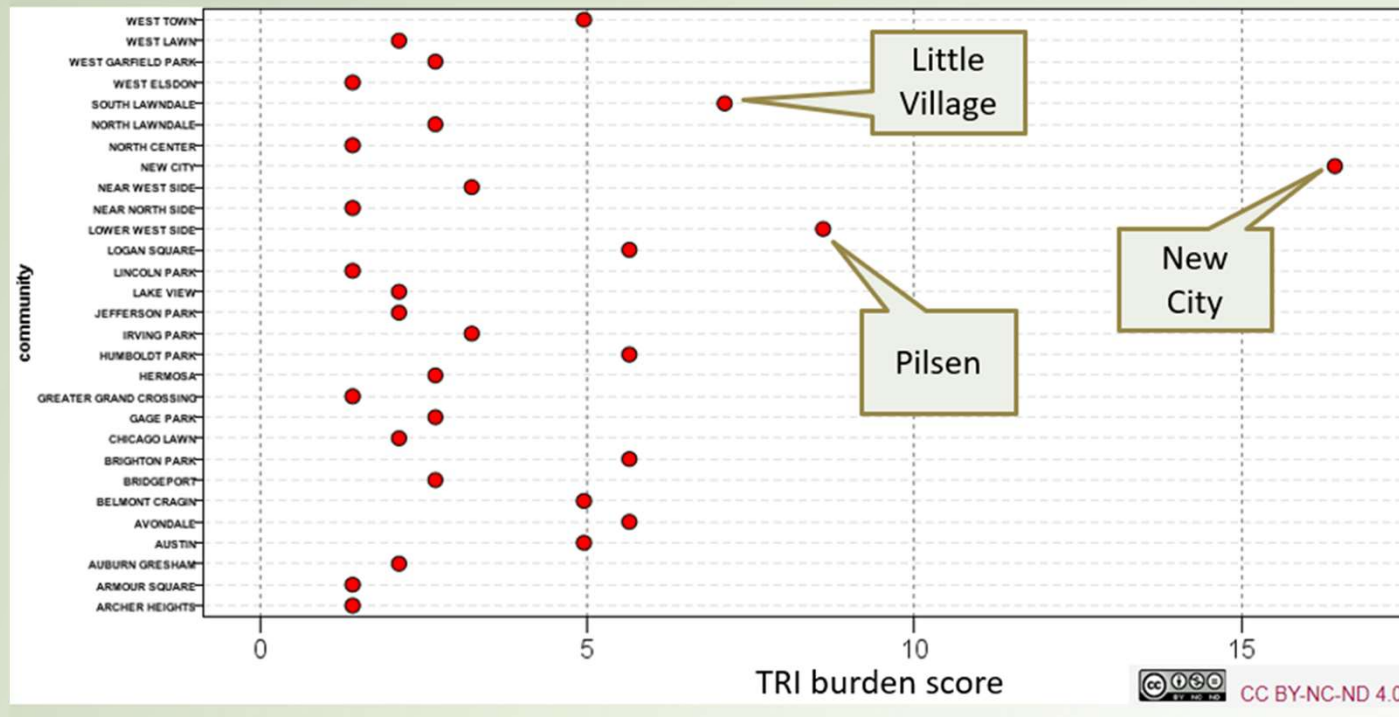
<https://doi.org/10.25417/uic.18634961.v1>

Detailed background, comparisons (e.g., EJSCREEN) and analysis will be available in a forthcoming peer reviewed publication.



Visualizing issues in overburdened communities

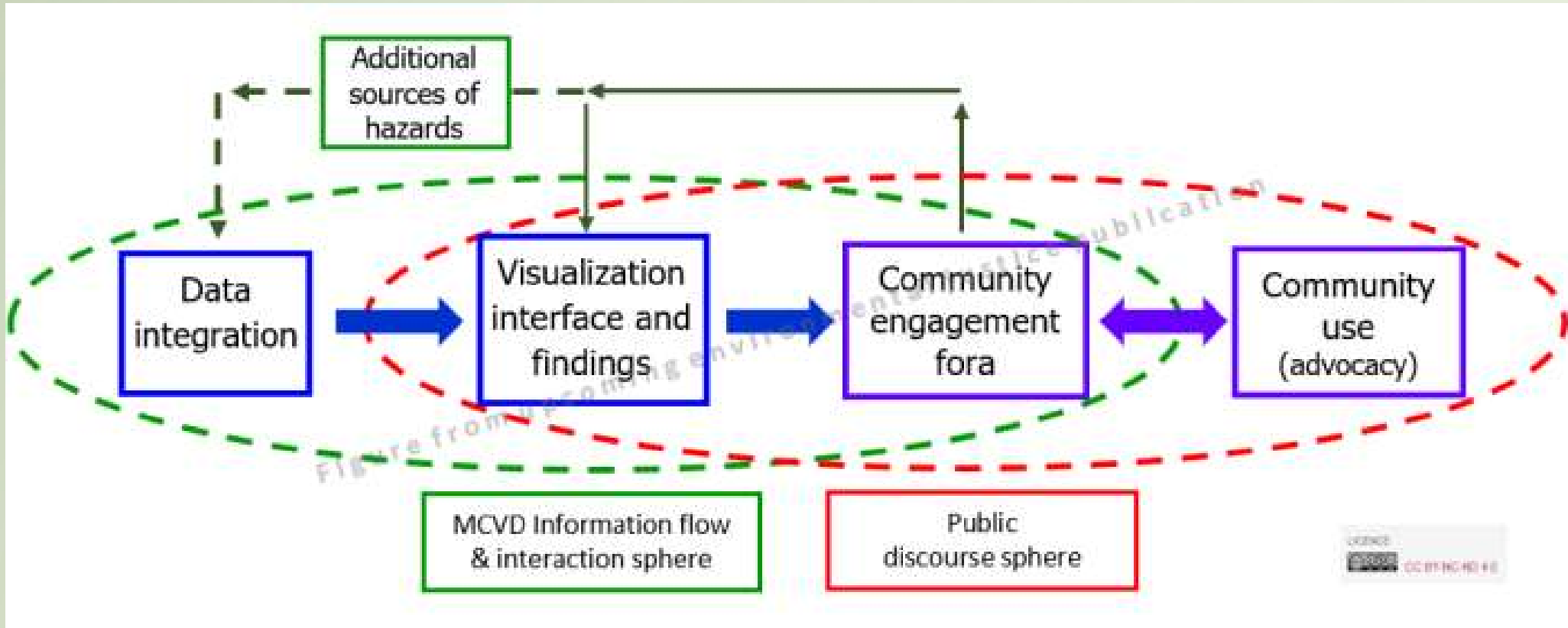
The issue that many communities face:



“Permitting and rulemaking have typically not reflected the reality of overburdened communities, which means that it is often **easier to site an eighth facility in a community that already has seven** than in a community that has none.”

Source: Draft FY 2022-2026 EPA Strategic Plan, 2021

MCVD objective: Visualize the multiple factors impacting communities



Schematic of the UIC community-based participatory design (CBPD) approach for developing environmental justice dashboards (figure from forthcoming publication).

MCVD interface

Midwest Comprehensive Visualization Dashboards: A New Environmental Justice Tool for Chicago Communities

School of Public Health and Colleges of Engineering
and Urban Planning and Public Affairs

Created by

Joel Flax Hatch, Fabio Miranda, Apostolis Sambanis, and Michael D. Cailas;
with the participation of Michael Siciliano, Sybil Derrible, Yuan Shao, and
Greg Arling

Explore

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MCVD EJ.3: Original, 7/10/21; rev. 12/10/21

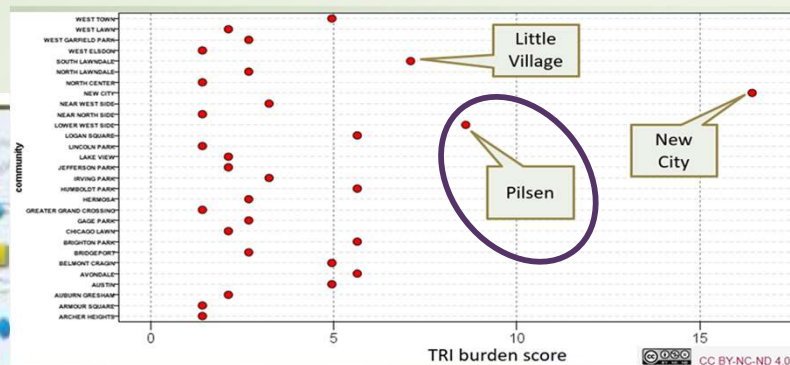
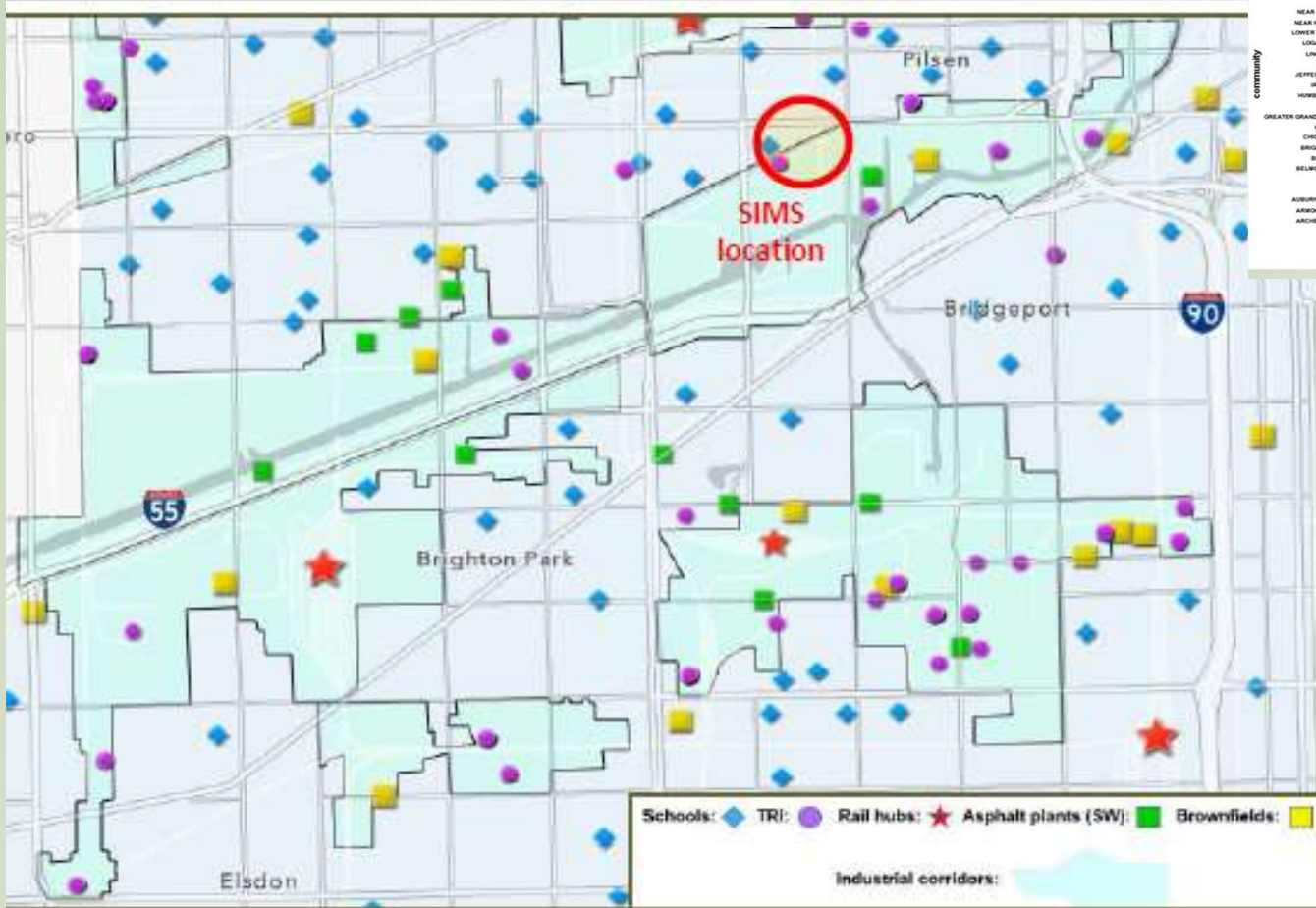


Visualizing issues in overburdened communities with a case study: the issue of one more facility

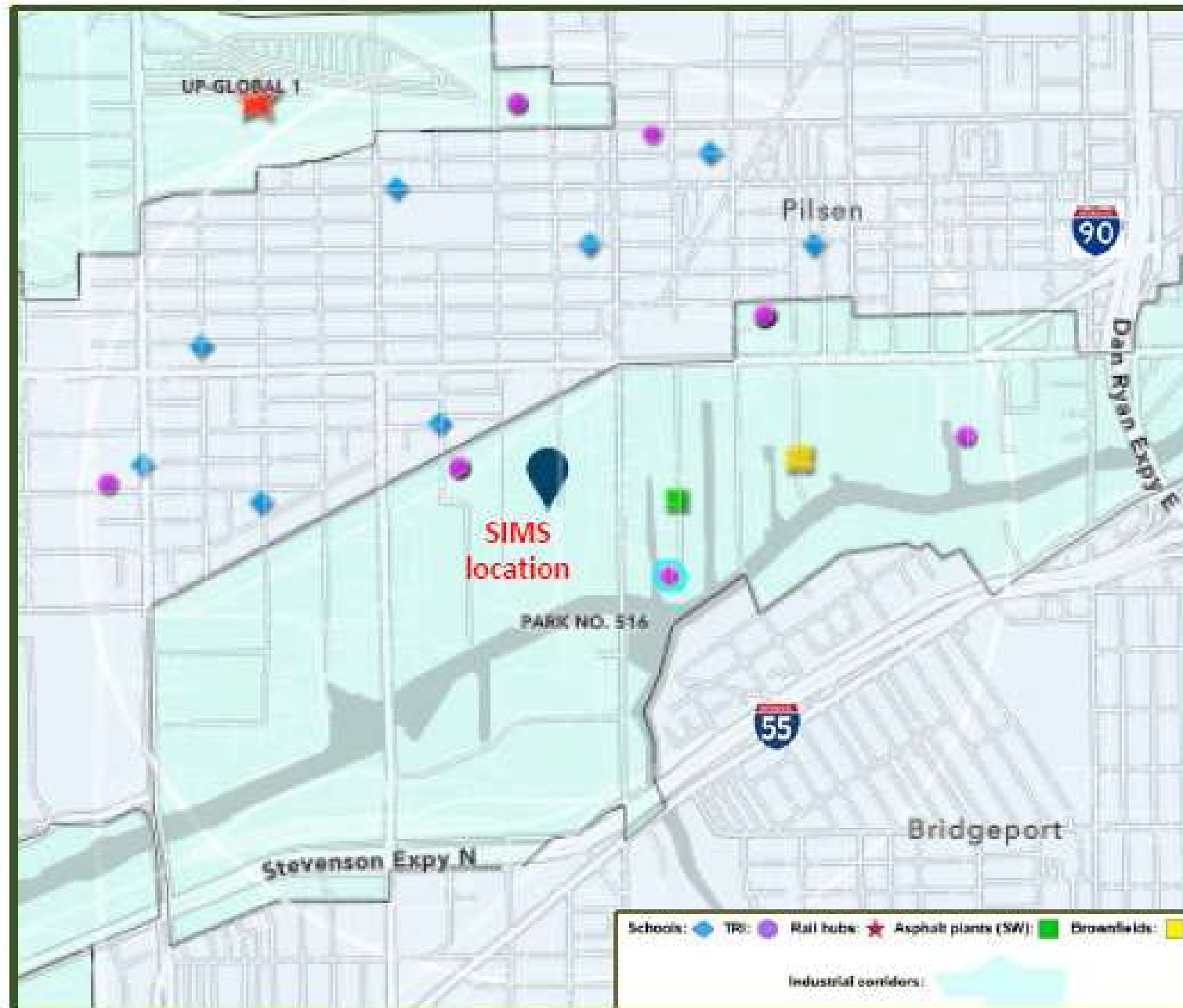
Environmental Justice Conditions of Communities Adjacent to a Proposed Facility in Southwest Chicago

Summary report prepared by
 Michael D. Cailas, Michael Siciliano, Apostolis Sambanis, Fabio Miranda, and Sybil Derrible
 2/8/22

Proximity to Hazards Dashboard (PHD):



Visualizing issues in overburdened communities with a case study: the issue of one more facility



Proximity to Hazards Dashboard (PHD) findings at a 1-mile radius from proposed facility

Environmental Justice Conditions of Communities Adjacent to a Proposed Facility in Southwest Chicago

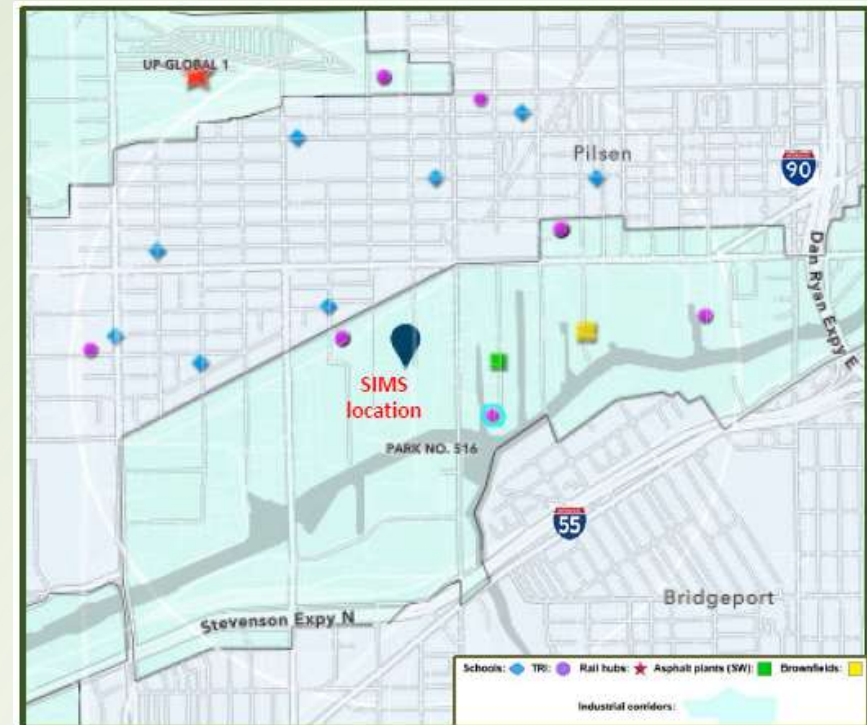
Summary report prepared by
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Visualizing issues in overburdened communities with a case study: the issue of one more facility

The new facility would be situated in a 3.14 square mile area that now contains:

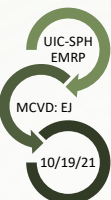
- Eight (8) Chicago public schools with 3,359 children.
- One (1) asphalt plant (Reliable Ogden LLC).
- One (1) brownfield.
- Seven (7) TRI facilities (e.g., H KRAMER & CO) that emit 18 toxic chemicals, including the carcinogens trichloroethylene, tetrachloroethylene, methyl isobutyl ketone, nickel, lead, and di(2-ethylhexyl) phthalate.
- Landscape burden?

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Visualizing issues in overburdened communities with a case study: focus on schools

Table 1. Four K-8 schools closest to the facility

School	Students	Low Income	Hispanic	Distance (ft)
John Greenleaf Whittier	299	92.1%	99.1%	1,575
Peter Cooper Elementary Dual Language Academy	459	88.7%	96.9%	3,051
Irma C Ruiz	699	89%	96.3%	3,215
Orozco Fine Arts & Sciences	541	89.6%	96.1%	4,035

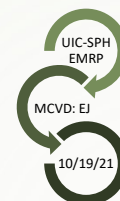
Source: 2016-17 Chicago Public Schools database - School Profile Information SY1617
Distances are derived from the MCVD EJ.3 interface.

The John Greenleaf Whittier Elementary School is approximately 1,575 feet from the proposed facility – a distance that would take the average person about five (5) minutes to walk - if they could walk in a straight line.

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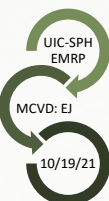
Visualizing issues in overburdened communities with a case study: focus on schools



The UIC approach is to study the proximity of hazardous sources to the nearby schools from the proposed facility.

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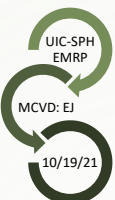
Within a 1-mile radius of the Whittier school the following hazmat sources are found:

- Five (5) TRI reporting facilities emitting 16 toxic chemicals, including the carcinogens trichloroethylene, tetrachloroethylene, methyl isobutyl ketone, nickel, lead, and di(2-ethylhexyl) phthalate.
- One (1) railyard (Union Pacific Railroad - Global I terminal).
- One (1) asphalt plant (Reliable Ogden LLC).
- One (1) brownfield.
- The landscape burden of being close to the industrial corridors to the north and south.

The UIC approach for overburdened communities: focus on the hazardous sources nearby schools from the proposed facility.

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Proximity to Hazards Dashboard (PHD) findings at a 1-mile radius from schools:

Same City two different worlds

Five (5) TRIs, One (1) railyard,
One (1) brownfield, ..



Zero (0) TRIs, Zero (0)
railyards, Zero (0) brownfields,

Zero (0) TRIs, Zero (0)
railyards, Zero (0) brownfields,

..





Many thanks as well to the community groups of the southwest Chicago side that started us on this project and together *“embarked on a long discovery journey full of challenges”*

Paraphrased from Ithaca by C. Cavafi