

Healthy Corridor Index

A Tool for Building Healthy Corridors

El-Space

Healthy Corridor Index

Building Healthy Corridors

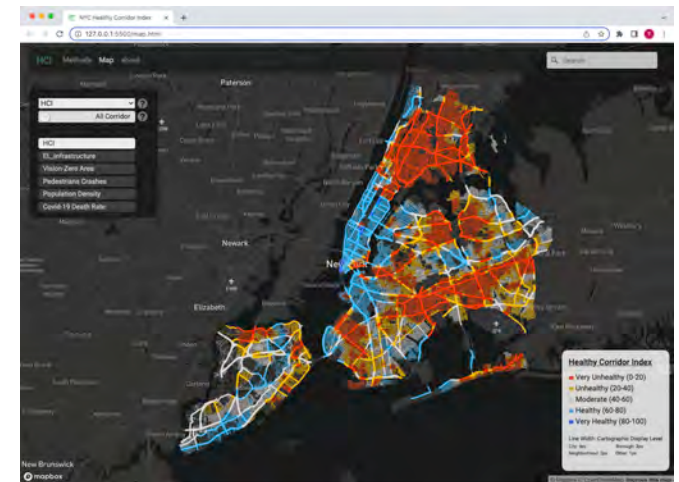
Recipient Profile

Tao Liang

- MS Transportation Planning in NYU
- Architect
- DOT Urban Fellow
 - Program: “Infrastructure is Public Space: Building Healthy, Resilient and Sustainable Corridors”. Formulating **Healthy Corridor Index**.
- Interests in urban data analysis, using data augmented approaches to identify city problems and optimize design solutions.

Agenda

- **Introduction to Healthy Corridor Index (HCI)**
 - Background
 - Methodology
- **Using HCI for Applications**
 - Key Features & Functions
 - Characterizing Disadvantaged Corridor



Background

- **EL-Space**

Space beneath or adjacent to elevated transportation infrastructure.

- **The potential of EL-Space**

El-space can reconnect neighborhoods divided by bridges, highways, subways and rail lines to serve multi-functional objectives.



Rendering of Project Underway along the Rockaway Freeway (Source: Under the Elevated)

NYC DOT Pilot Projects

Before



After



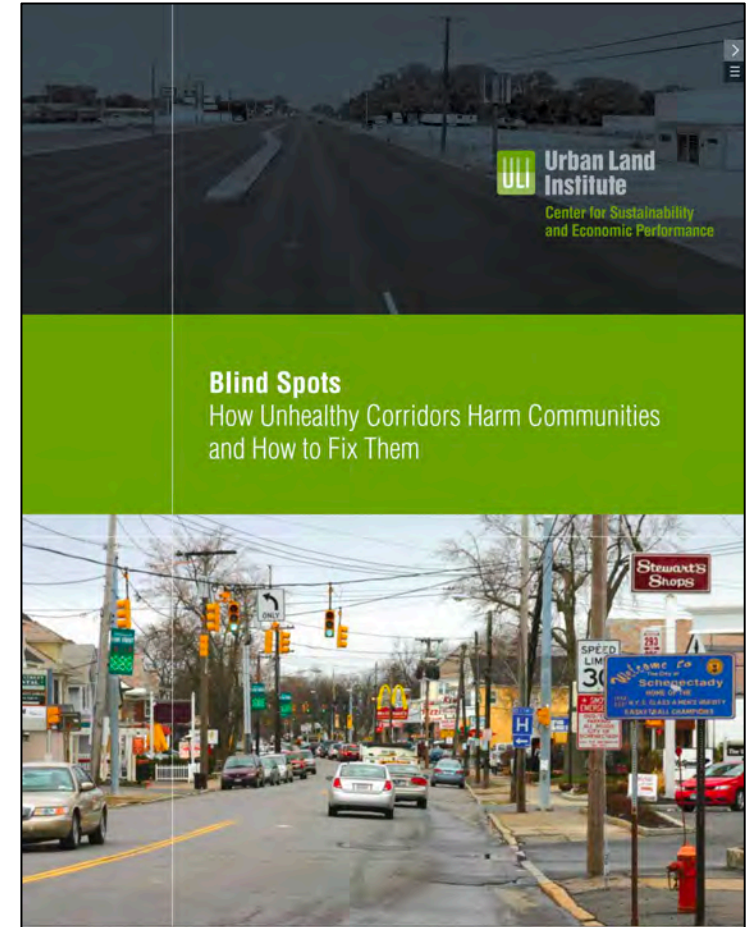
Rockaway Freeway, Queens

Sunset Park, Brooklyn

Dutch Kills Street EL-Space, Queens

Defining 'Healthfulness'

A **healthy corridor** is easily navigated and comfortable with a visually appealing, activated streetscape; it **protects** all road users, **boosts** neighborhood **vitality**, serves as a local community **amenity**, and increases **accessibility and mobility** by providing linkages to employment and services (e.g., education, health care, recreation), offering transit options, and promoting sustainable transportation modes and physical activity.



Heather Zaccaro, *Blind Spots: How Unhealthy Corridors Harm Communities and How to Fix Them*, (Washington, DC: Urban Land Institute, 2019).

CDC Social Determinants of Health



Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion.

Index Development

Vision Zero

NYC Streets Plan

Street Design Manual

OneNYC 2050

City Policies and Plans

NYC Department of Health

Index Developer

University Experts

HCI Previous Developer

Interviews

Child Opportunity Index

Healthy Streets London

NYC Well-being Index

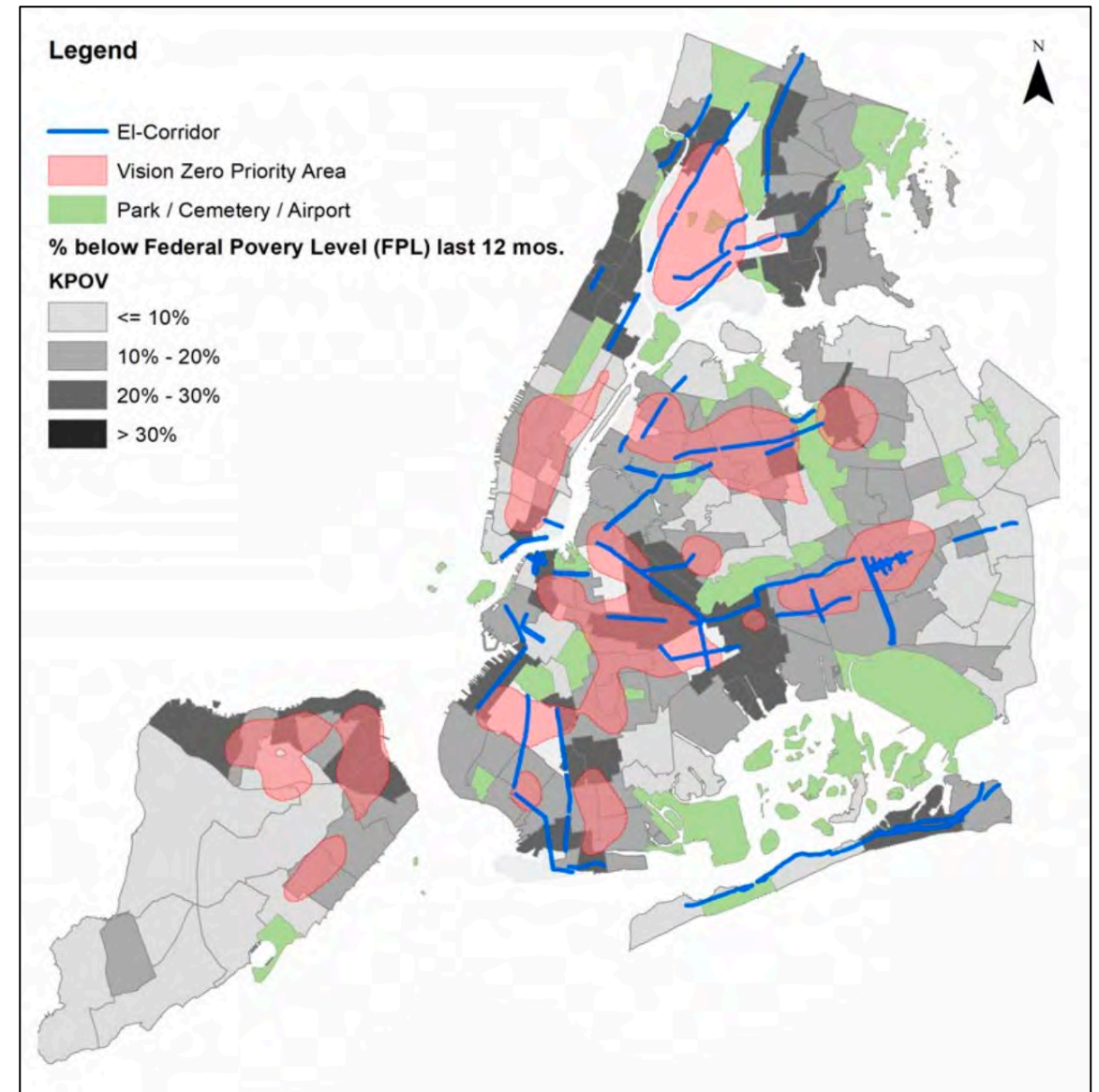
Smart Location Index

Precedent Reports

Healthy Corridor Index's Approach

- **Granular**

Finer geographic resolution.
Using data at **census tract** and
remap to corridor level.



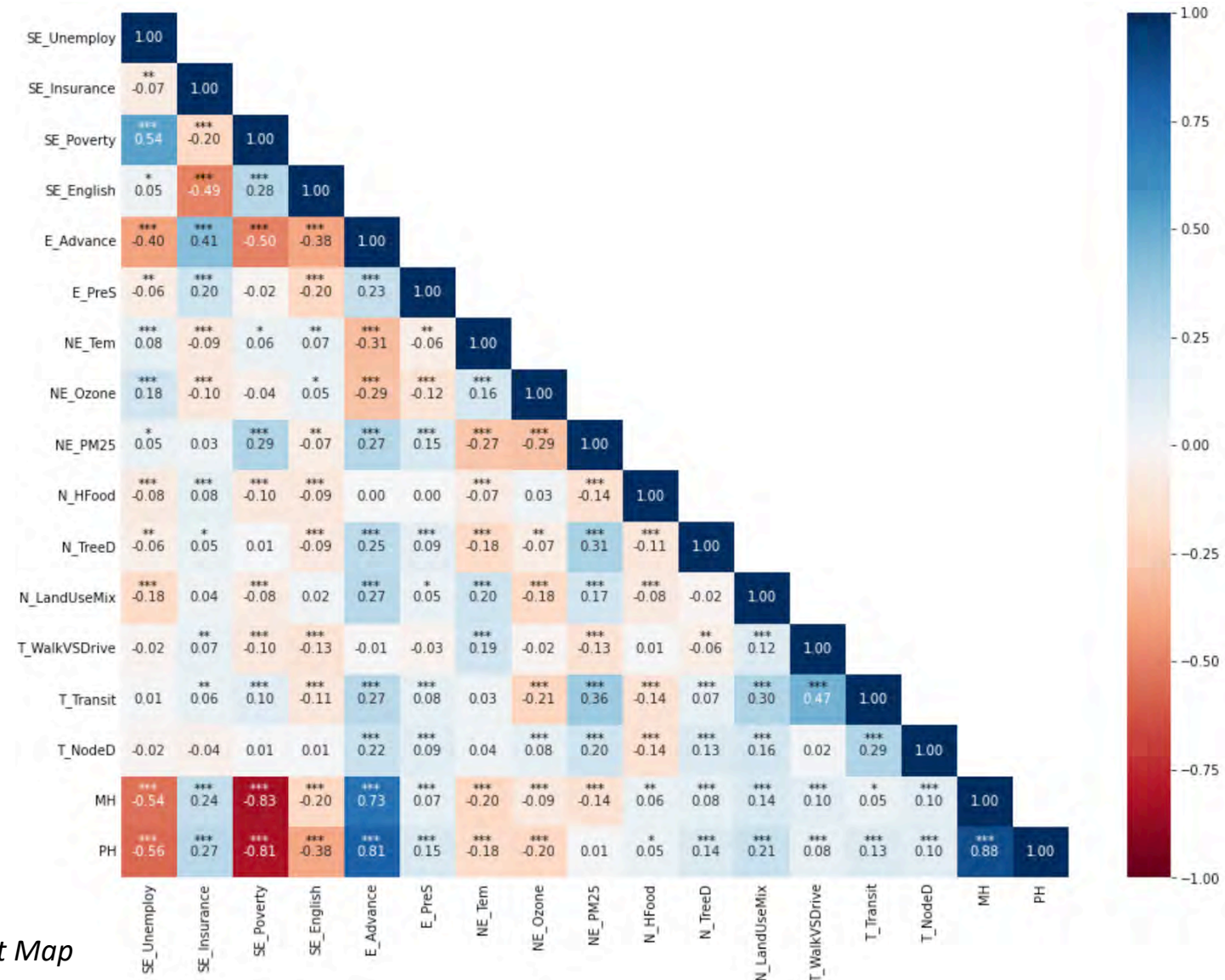
Healthy Corridor Index's Approach

- **Validated**

Each indicator is linked to
two health outcomes:

Physical Health

Mental Health



HCI Indicators Pearson Correlation Heat Map

Healthy Corridor Index Domains

- **15 indicators** that represent neighborhood conditions at the census tract level, grouped into **5 domains**.

Social & Economic 37%

- Employment 28.7%
- Insurance 13.3%
- Above Poverty. 42.8%
- English Well 15.1%

Education 35%

- Bachelor's Education or Higher 87.5%
- In Pre-School. 12.5%

Natural Environment 12%

- Ozone 36.3%
- PM 2.5 16.2%
- Surface Temp. 47.5%

Neighborhood 10%

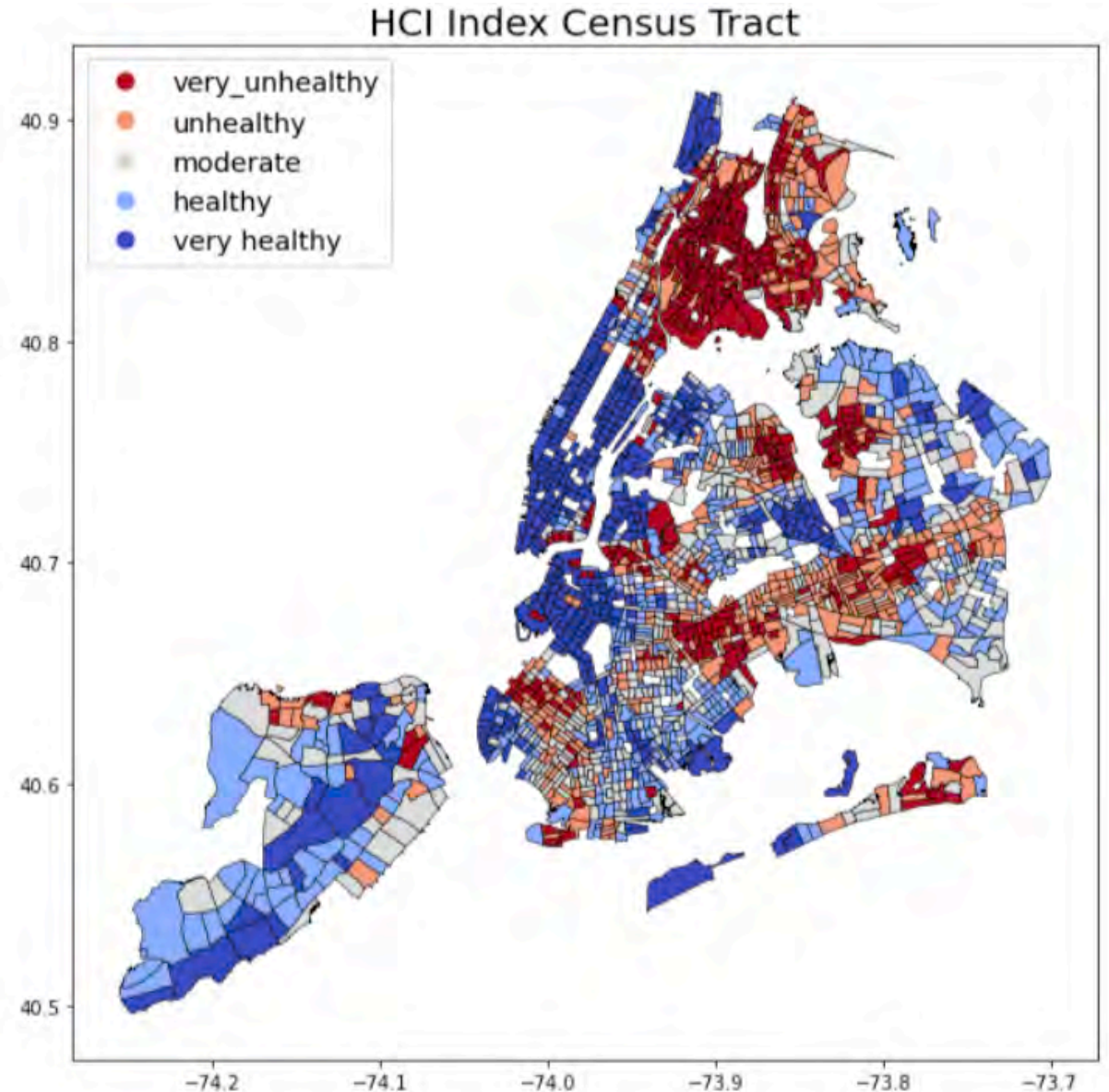
- Tree Density 32.4%
- Land Use Mix 51.5%
- Healthy Food Access 16.2%

Transportation 6%

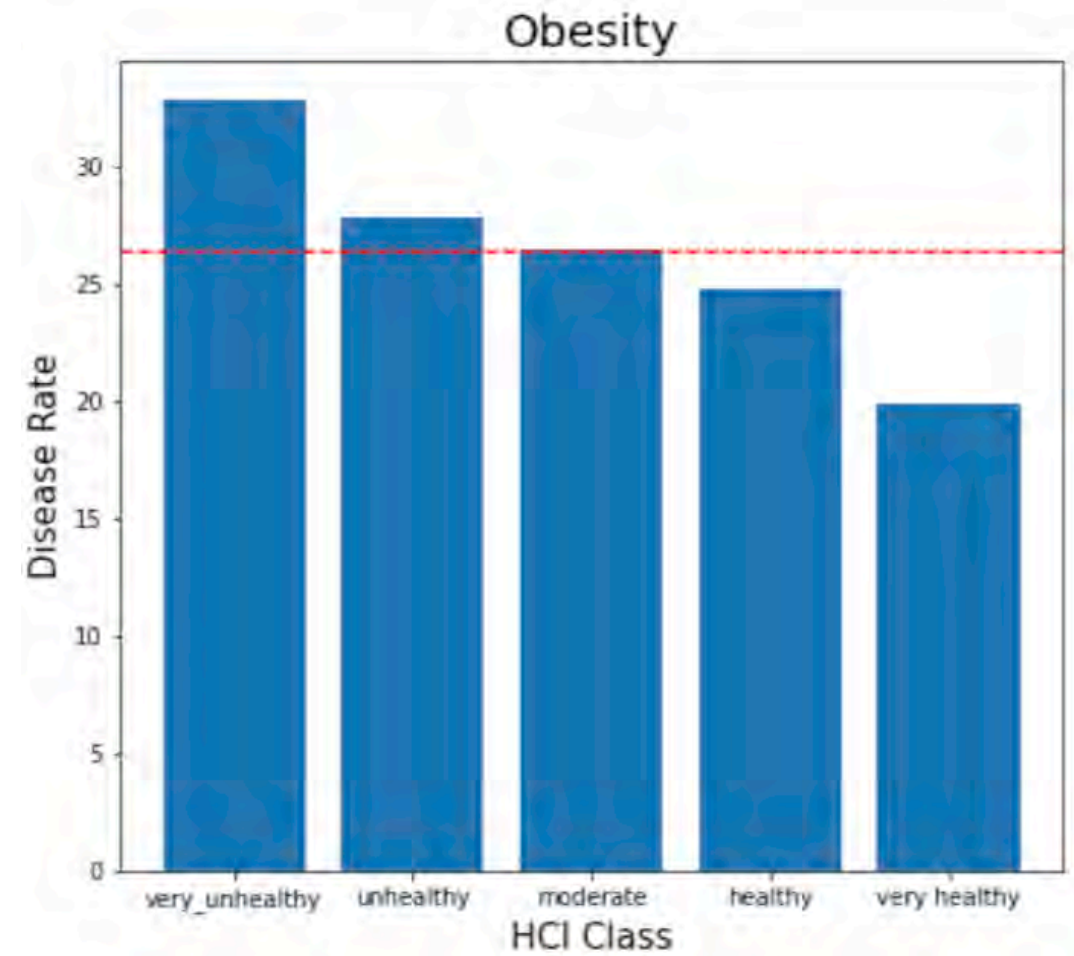
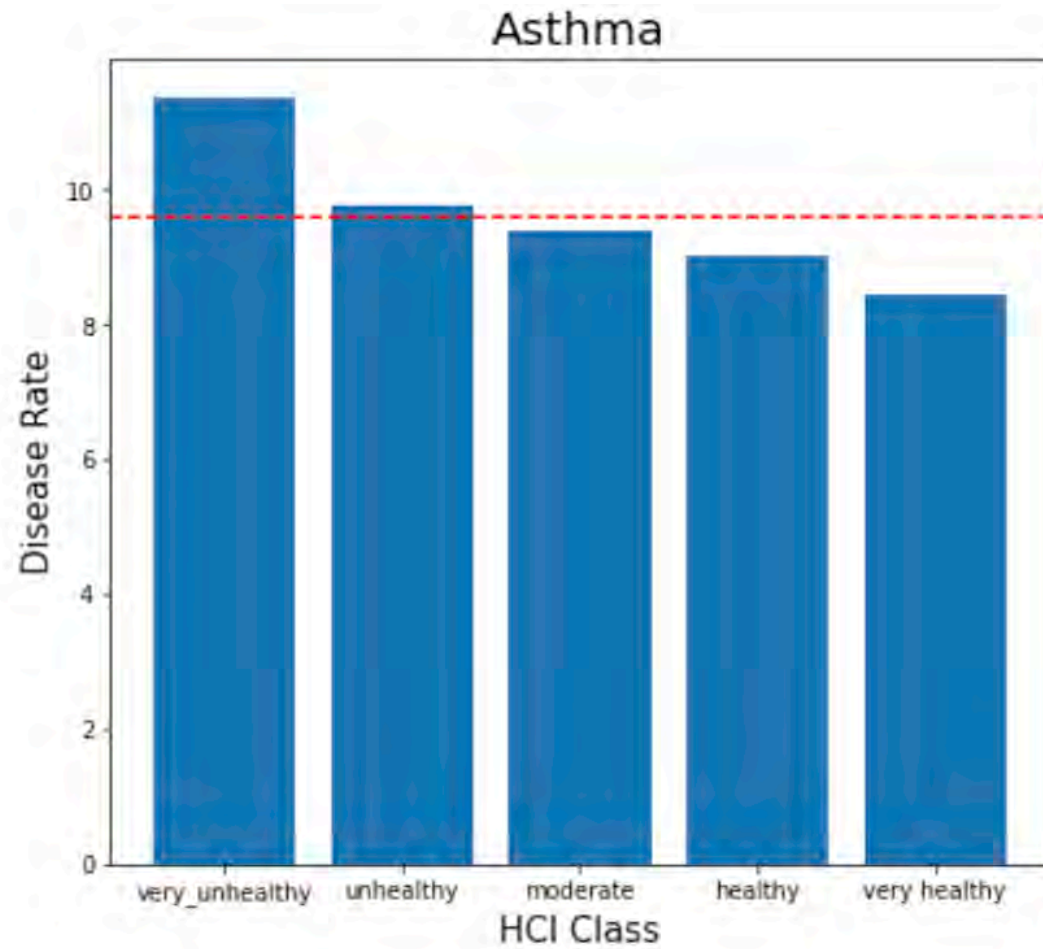
- Sidewalk Area 32.1%
- Transit Access 32.1%
- Network Density 35.7%

HCI Census Tract

- Very Unhealthy: quantile 0-20%
- Unhealthy: quantile 20%-40%
- Moderate: quantile 40%-60%
- Healthy: quantile 60%-80%
- Very Healthy: quantile 80%-100%



Validation



Data Source (PLACES: Local Data for Better Health, 2021 release, CDC)

Validation

Explain the **52.4%** variance of the obesity rate

OLS Regression Results

Dep. Variable:	OBESITY	R-squared:	0.524
Model:	OLS	Adj. R-squared:	0.524
Method:	Least Squares	F-statistic:	2205.
Date:	Tue, 10 May 2022	Prob (F-statistic):	0.00
Time:	19:29:01	Log-Likelihood:	-5751.2
No. Observations:	2003	AIC:	1.151e+04
Df Residuals:	2001	BIC:	1.152e+04
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	26.3777	0.096	276.133	0.000	26.190	26.565
HCI	-4.4859	0.096	-46.961	0.000	-4.673	-4.299

Link with Health data

Explain the **37%** variance of the obesity rate

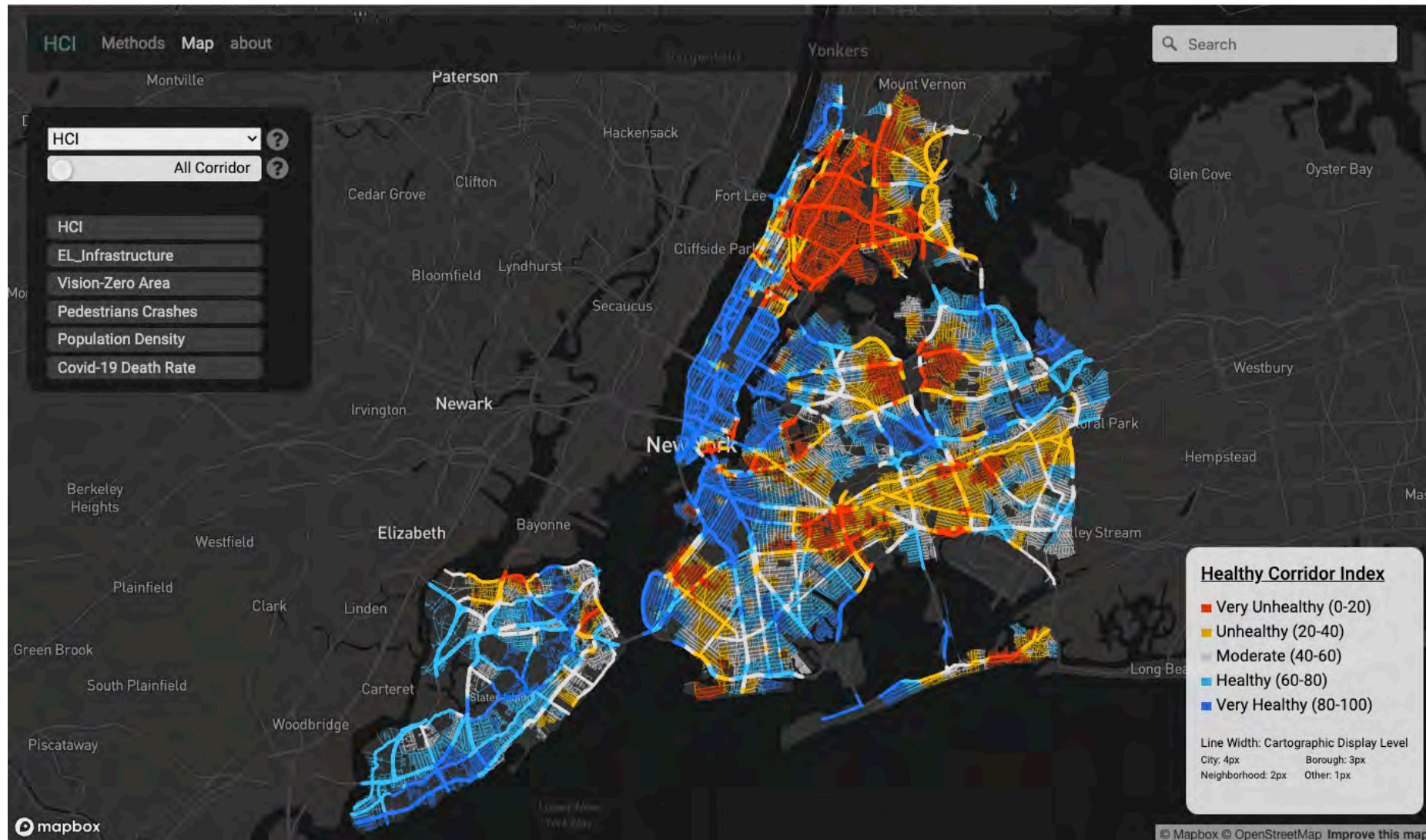
OLS Regression Results

Dep. Variable:	OBESITY	R-squared:	0.370
Model:	OLS	Adj. R-squared:	0.370
Method:	Least Squares	F-statistic:	1176.
Date:	Mon, 09 May 2022	Prob (F-statistic):	3.97e-203
Time:	11:48:50	Log-Likelihood:	-6032.2
No. Observations:	2003	AIC:	1.207e+04
Df Residuals:	2001	BIC:	1.208e+04
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	26.3777	0.110	239.980	0.000	26.162	26.593
HCI	-3.7693	0.110	-34.293	0.000	-3.985	-3.554

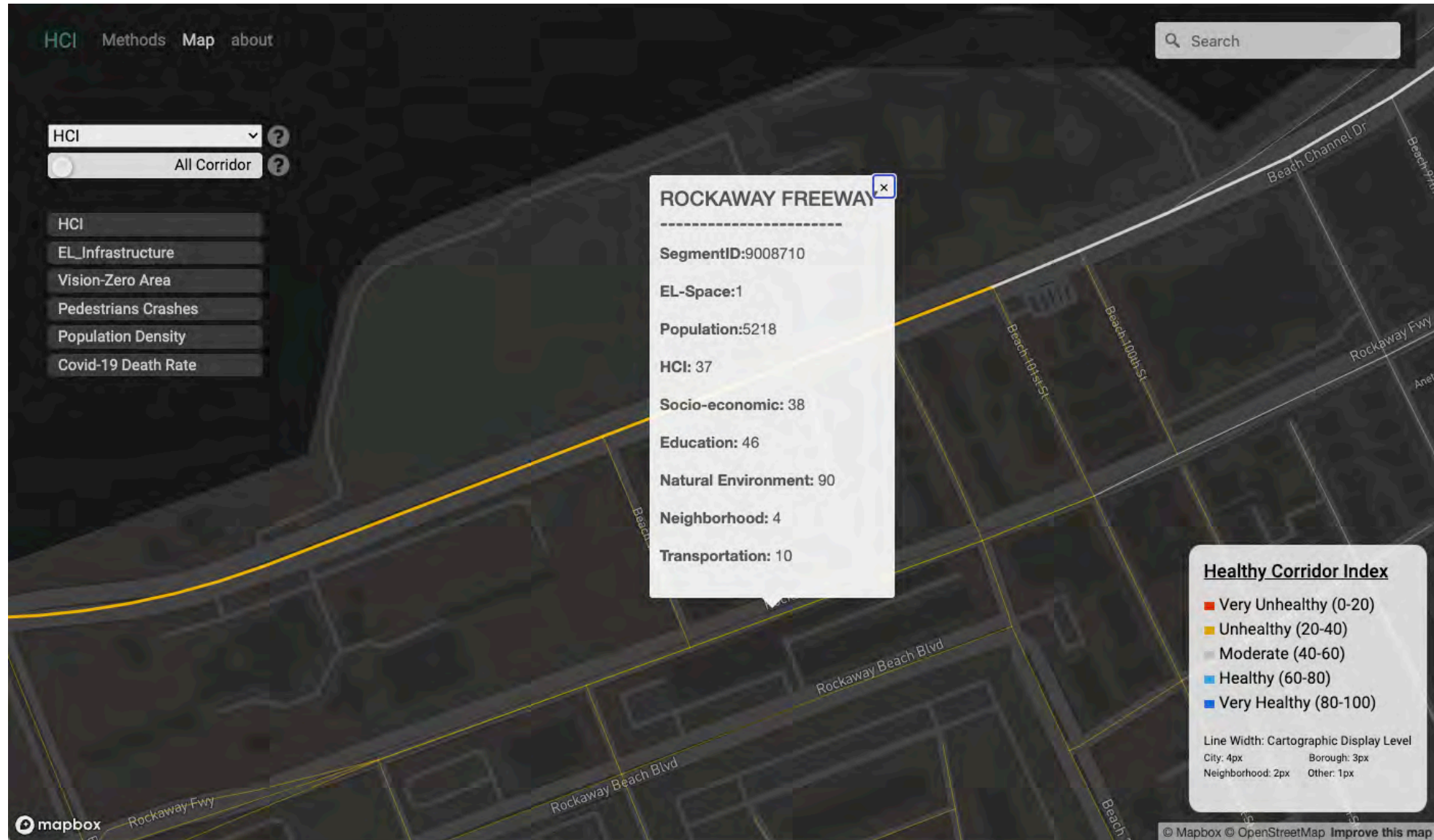
Equal Weight

HCI Corridor Index Map

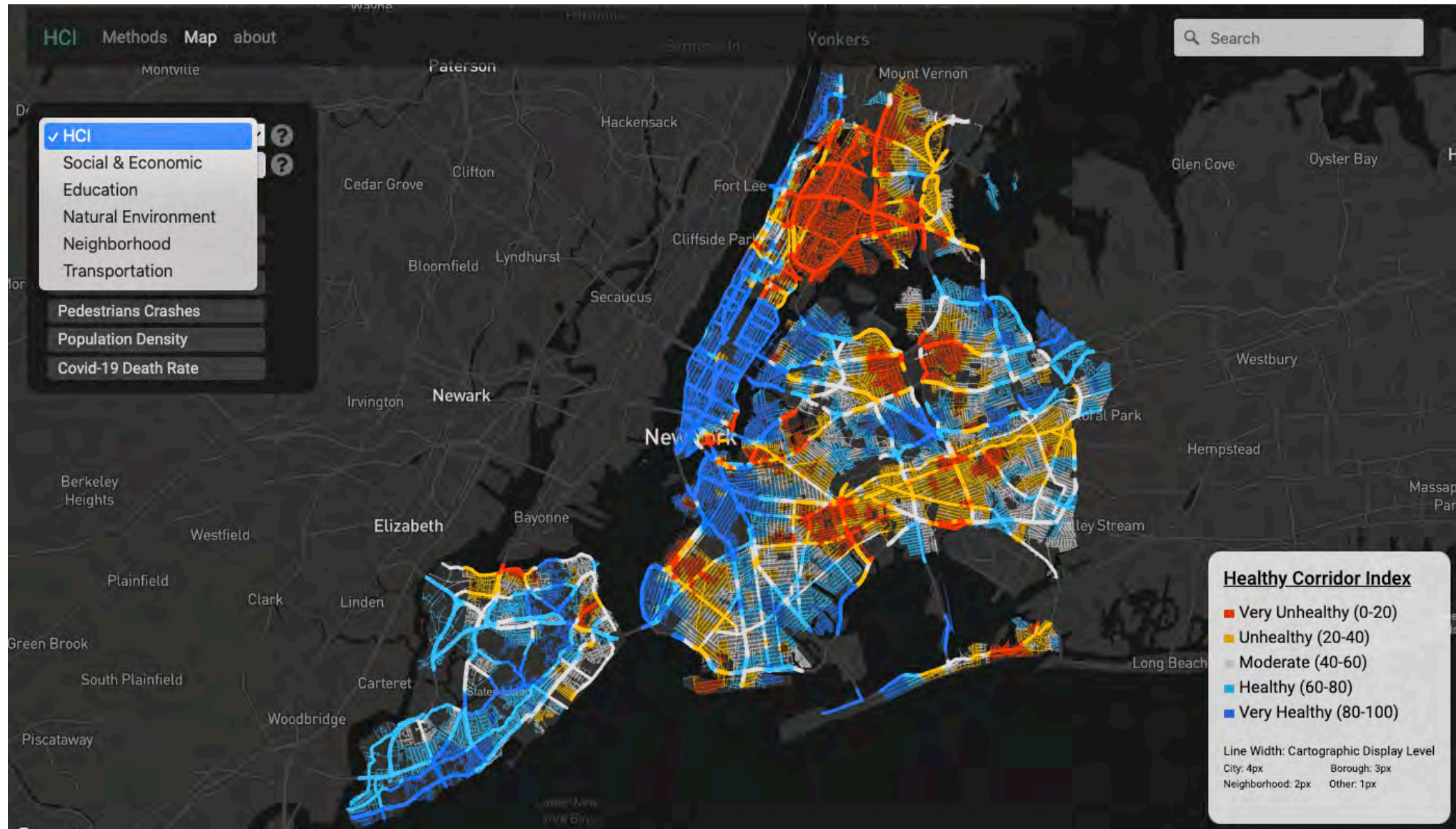


Healthy Corridor Index

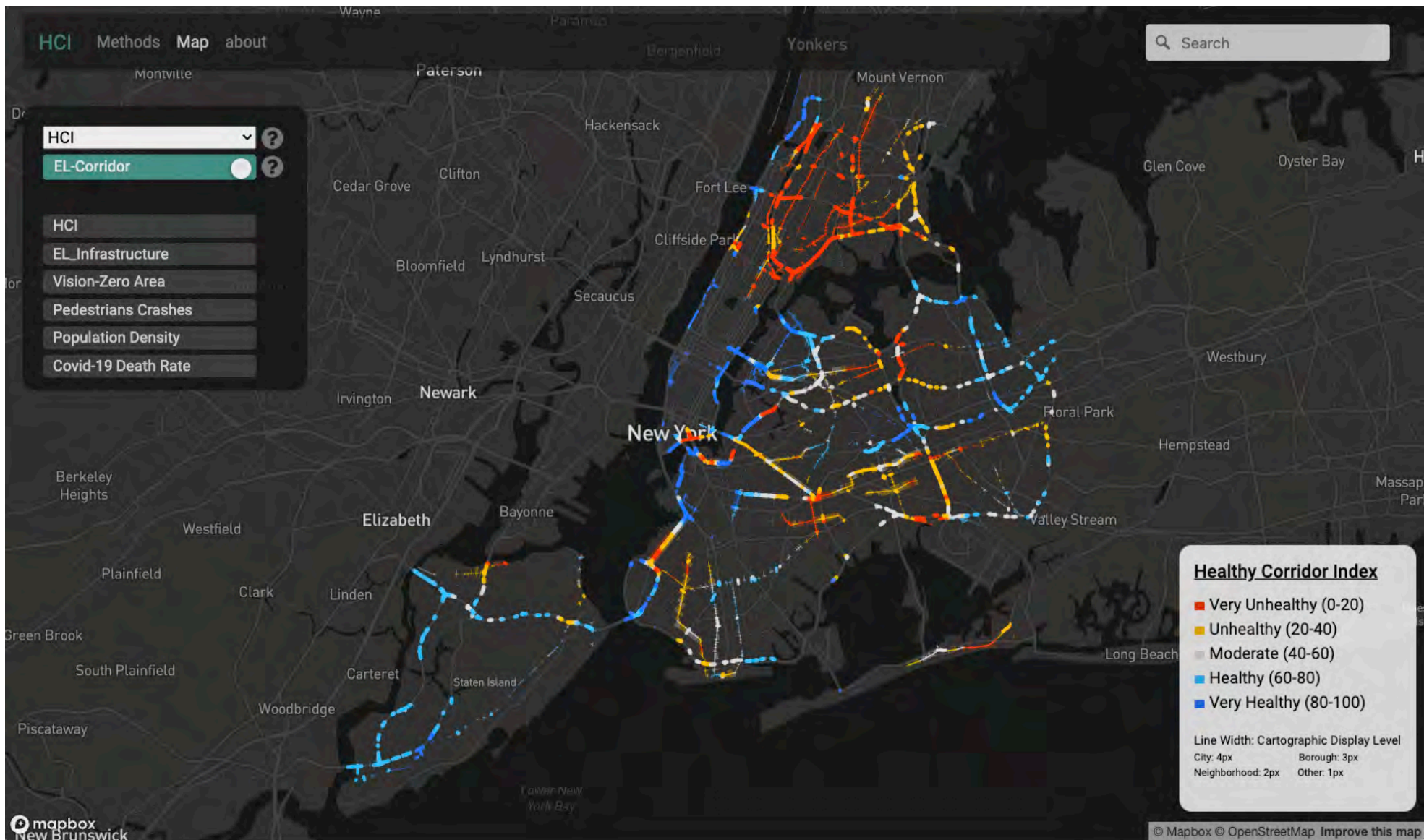
POP-UP



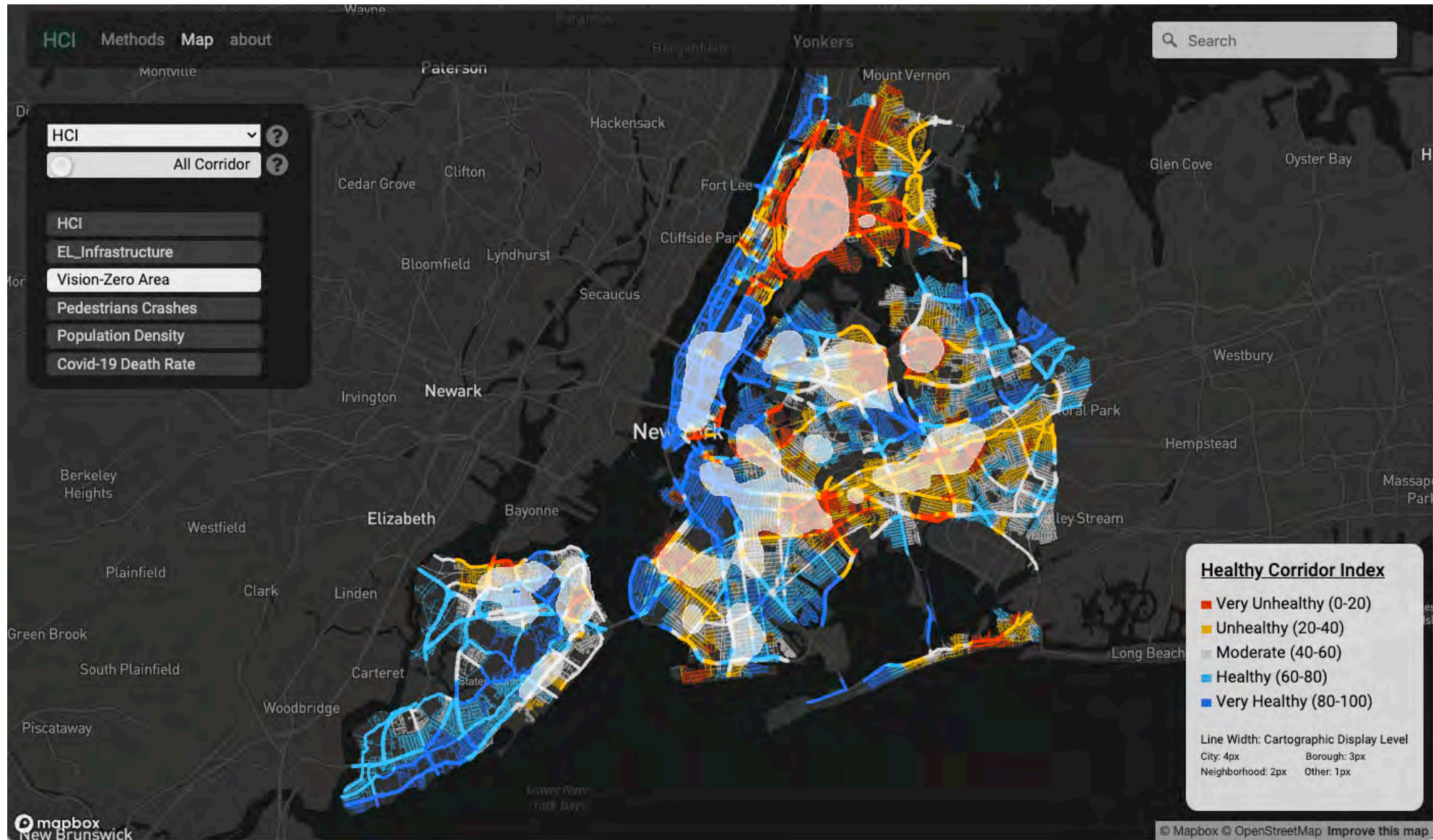
Showing Sub-Index



Showing EL-Corridor



Other layers



September 11th Memorial Program



SEE WONG
SHUM



CHARLES
LESPERANCE



IGNATIUS
ADANGA

The New York Metropolitan Transportation Council (NYMTC) established the September 11th Memorial Program for Regional Transportation Planning to honor the memory of Ignatius Adanga, Charles Lesperance, and See Wong Shum, the three employees it lost during the attack on the World Trade Center. The program was established to educate and motivate people interested in transportation technology and planning and to encourage innovations in planning activities throughout the NYMTC region.