

Improving Population Health Outcomes Through Information Exchange

Phillip D. Levy, MD, MPH, FACEP, FAHA, FACC

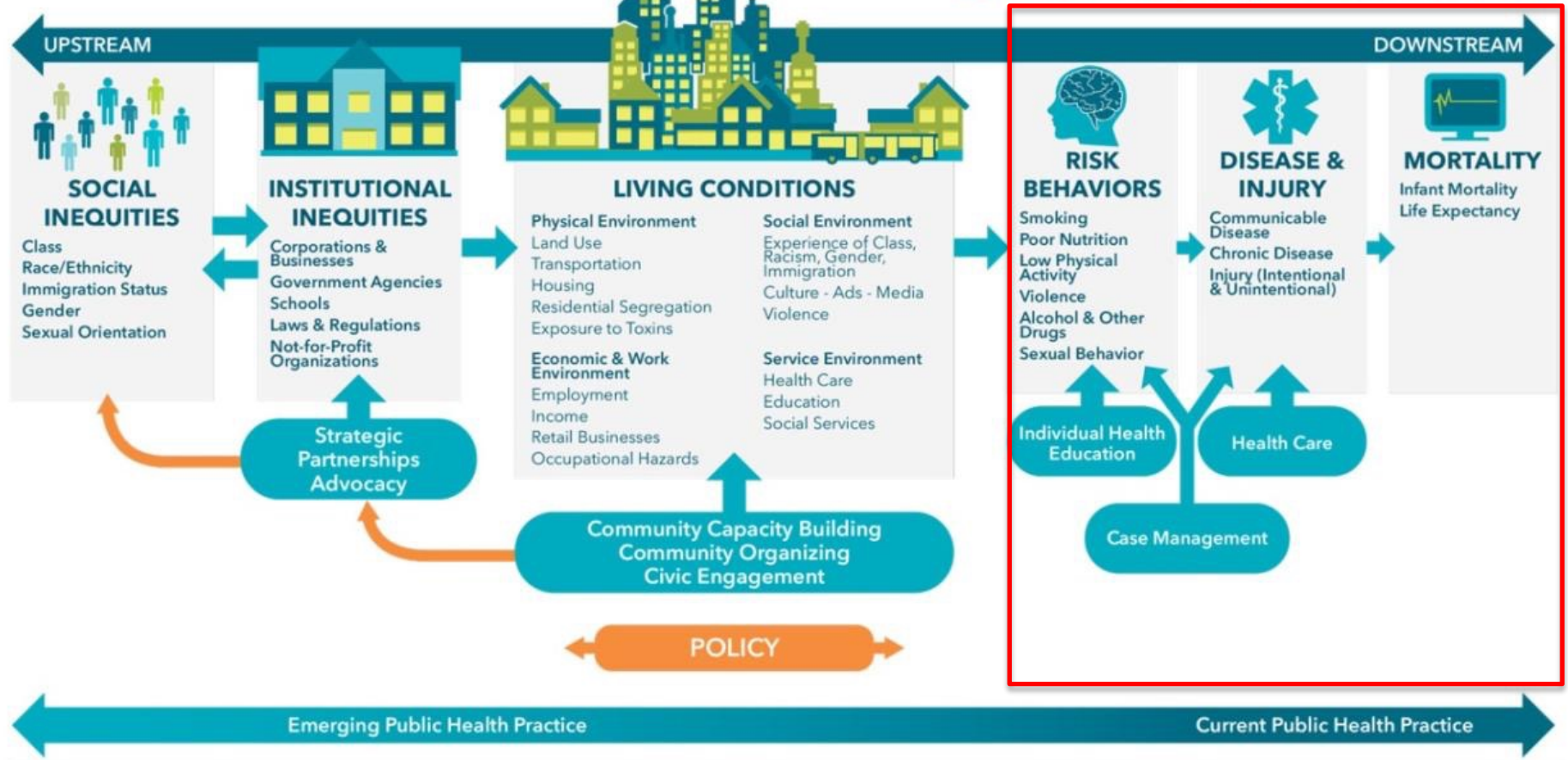
Professor and Associate Chair for Research

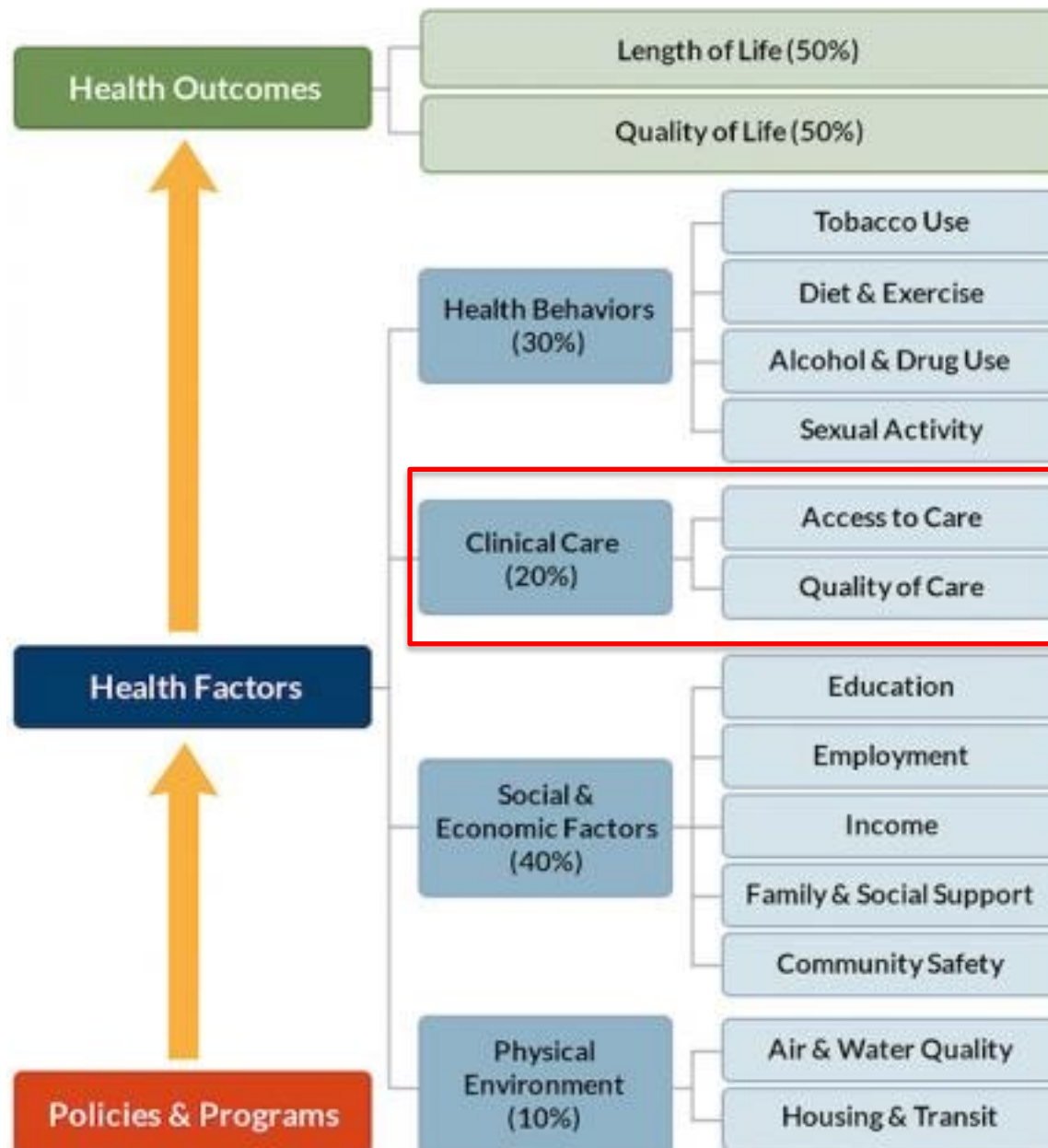
Department of Emergency Medicine

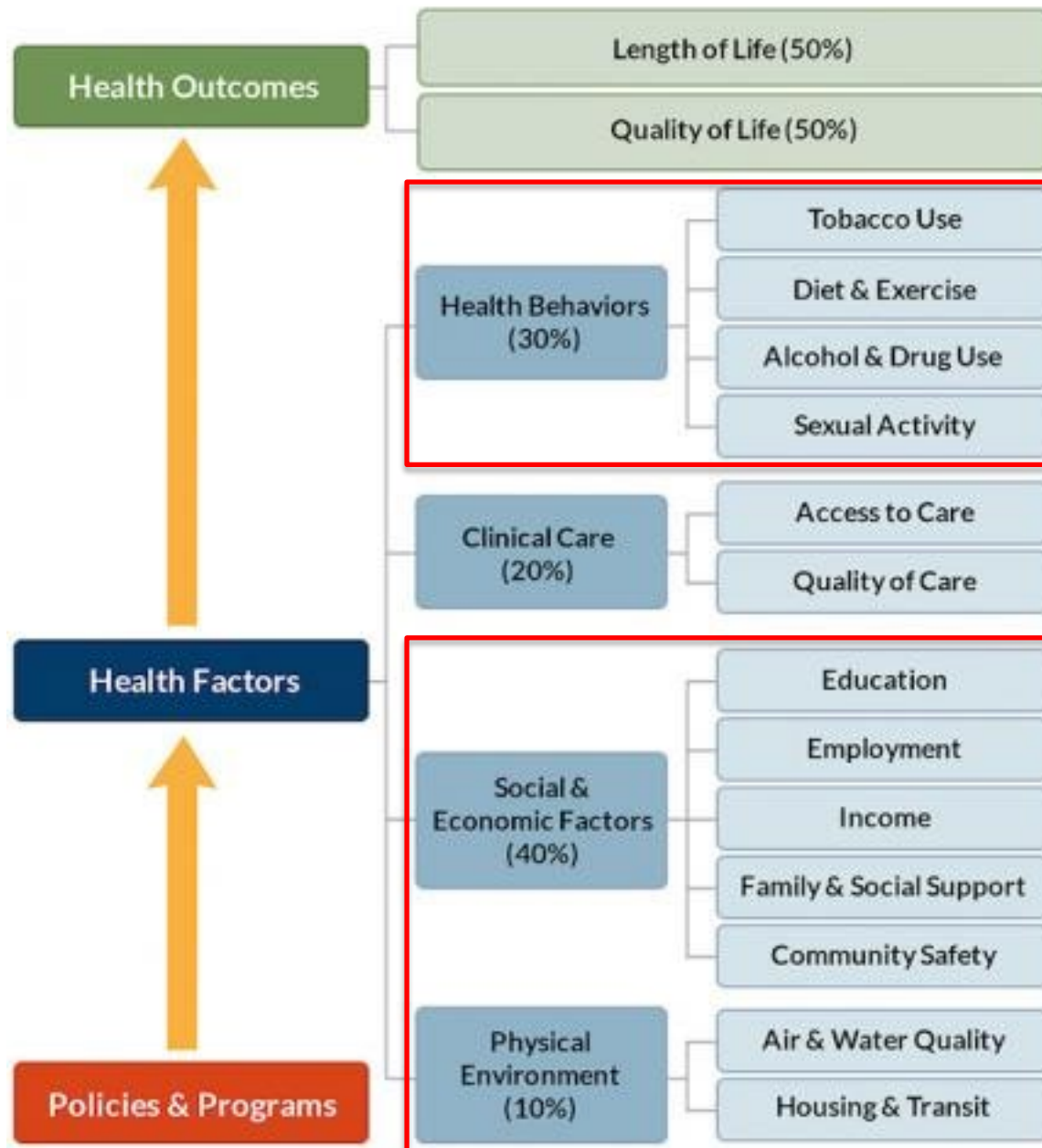
Assistant Vice President for Translational Science and Clinical Research Innovation

Wayne State University

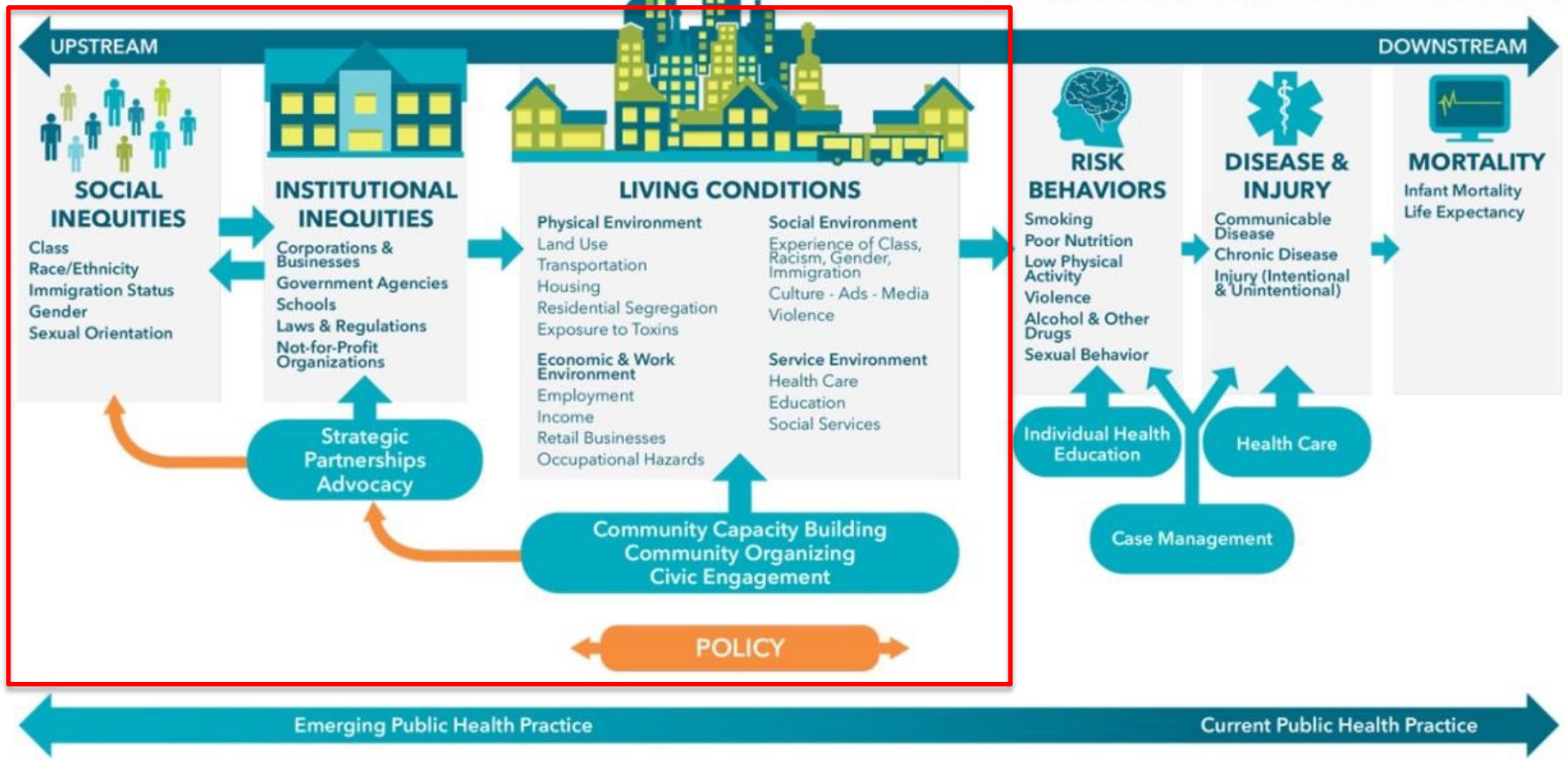
A PUBLIC HEALTH FRAMEWORK FOR REDUCING HEALTH INEQUITIES
BAY AREA REGIONAL HEALTH INEQUITIES INITIATIVE







A PUBLIC HEALTH FRAMEWORK FOR REDUCING HEALTH INEQUITIES
BAY AREA REGIONAL HEALTH INEQUITIES INITIATIVE



Bottom Line Records

PHOENIX

Suslik Publishing BMI /
Nancy Goltsman ASCAP

BLR-9052
SIDE A
STEREO
33 1/3 RPM

"THE ANSWER"

(DAVID A. TOBIN, EDWARD GOLTSMAN)

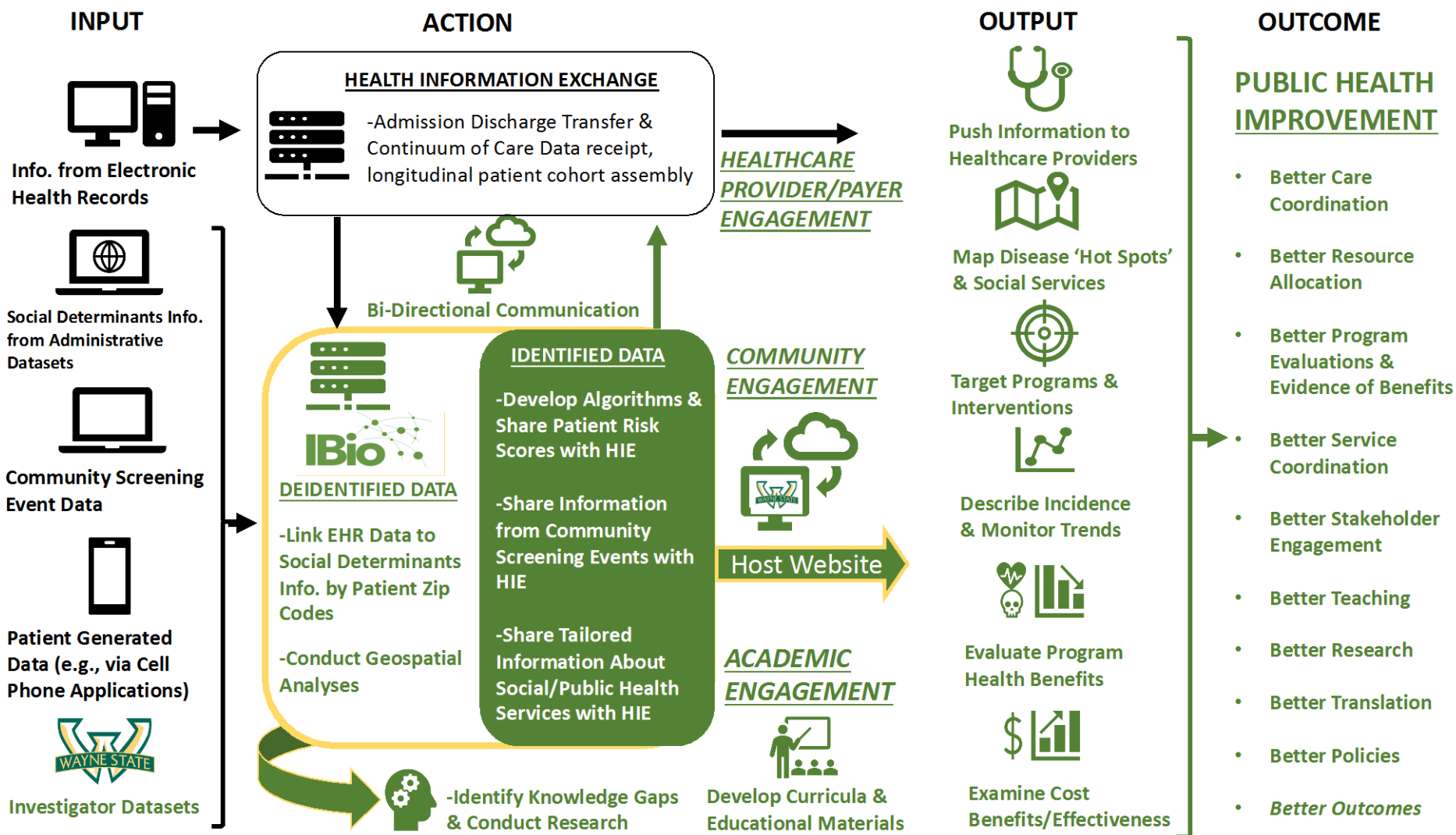
1. MESSAGE MIX

Produced, Arranged & Mixed By
"ED THE RED" GOLTSMAN & NELSON "PARADISE" ROMAN.
Engineered by "NANCY KAY" GOLTSMAN & ED THE RED.
Keyboards by ED THE RED.

© © 1993 BOTTOM LINE RECORDS

Manufactured and Distributed by Bottom Line Records • 10202 284th St. E., Myakka City, FL 34251 • (813) 322-2834

Population Health Outcomes aNd Information EXchange



Reducing the Blood Pressure–Related Burden of Cardiovascular Disease: Impact of Achievable Improvements in Blood Pressure Prevention and Control

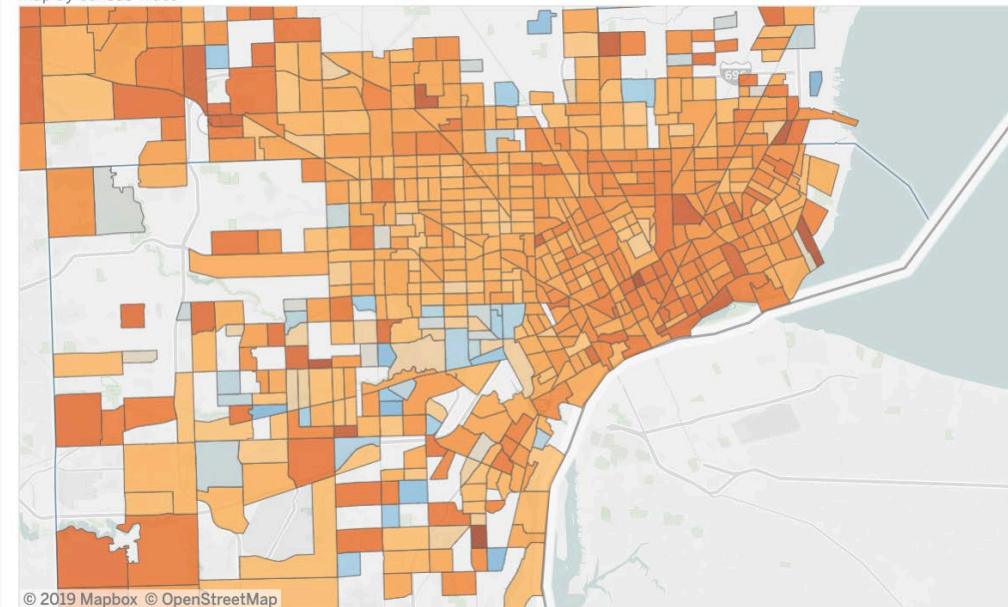
Shakia T. Hardy, MPH; Laura R. Loehr, MD, PhD; Kenneth R. Butler, PhD; Sujatro Chakladar, MS; Patricia P. Chang, MD, MHS; Aaron R. Folsom, MD, MPH; Gerardo Heiss, MD, PhD; Richard F. MacLehose, PhD; Kunihiro Matsushita, MD, PhD; Christy L. Avery, PhD



Hypertension Dashboard Metro-Detroit (Wayne, Oakland, Macomb, and Livingston Counties)

Select a Vital Category to Explore: Systolic Blood Pressure (Mean)

Map by Census Tract

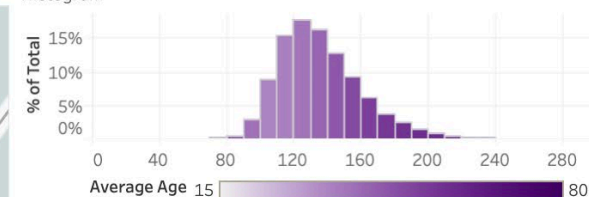


Set map legend midpoint as: AHA Guideline (Midpoint: 130)

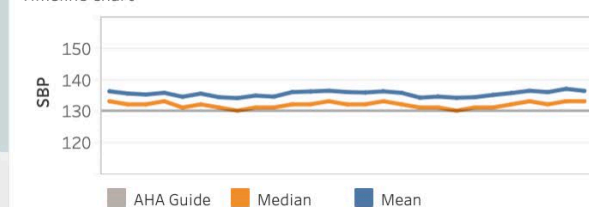
123 147

Race/Ethnicity	Number of Records	Mean SBP	Mean DBP	Mean HR	Mean Age	Mean Temp	% of Total
Black/African American	422,654	135.20	81.98	89.00	42	36.76	76.61%
White	82,775	135.72	80.33	90.02	46	36.72	15.00%
Other Race or More than On..	31,395	136.51	81.22	87.79	48	36.73	5.69%
Unknown	8,950	134.57	80.85	90.05	42	36.77	1.62%
Spanish/Hispanic	5,916	134.17	81.47	89.49	42	36.72	1.07%
Grand Total	551,690	135.33	81.67	89.11	43	36.75	100.00%

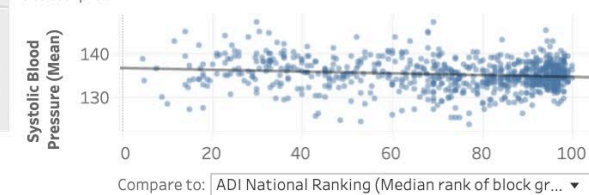
Histogram



Timeline Chart



Scatterplot



Filter Data:

Select County

ALL COUNTIES

Select City

ALL CITIES

Date of Arrival

Dec 2016-Feb 2019

(All)

Gender

(All)

Age at Time of Visit

0 118

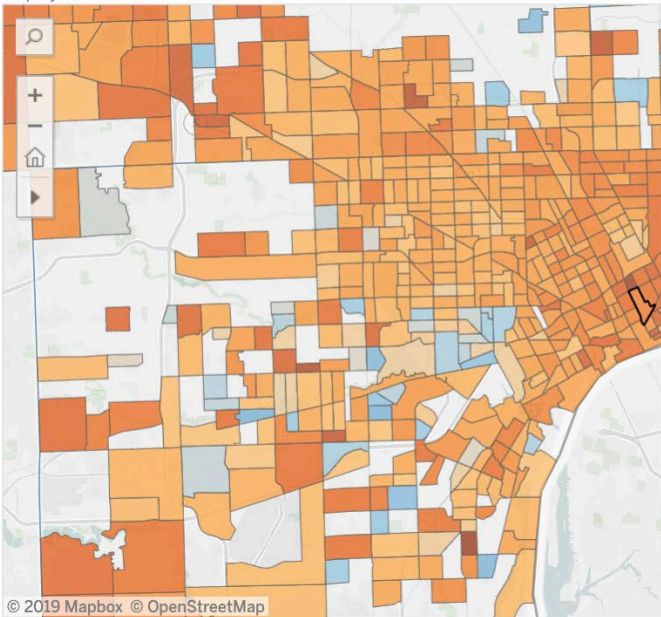
Race/Ethnicity

- ☒ (All)
- ☒ Black/African American
- ☒ Other Race or More than one
- ☒ Spanish/Hispanic
- ☒ Unknown
- ☒ White

Hypertension Dashboard Metro-Detroit (Way

Select a Vital Category to Explore: Systolic Blood Pressure (Mean)

Map by Census Tract



Set map legend midpoint as: AHA Guideline (Midpoint: 130)



Race/Ethnicity	Number of Records	Mean SBP	Mean DBP	Mean HR	Mean Age	Mean Temp	% of Total
Black/African American	422,654	135.20	81.98	89.00	42	36.76	76.61%
White	82,775	135.72	80.33	90.02	46	36.72	15.00%
Other Race or More than On..	31,395	136.51	81.22	87.79	48	36.73	5.69%
Unknown	8,950	134.57	80.85	90.05	42	36.77	1.62%
Spanish/Hispanic	5,916	134.17	81.47	89.49	42	36.72	1.07%
Grand Total	551,690	135.33	81.67	89.11	43	36.75	100.00%

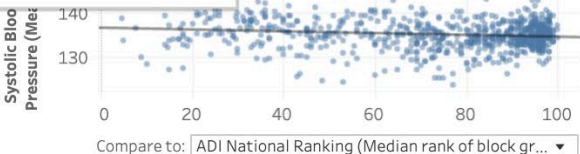
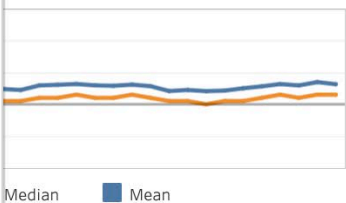
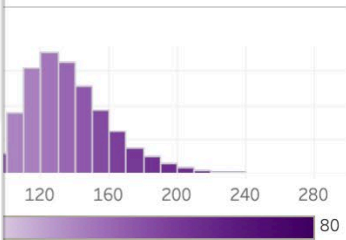
Tract ID: 26163518900

Number of Patient Records: 4,493

Mean SBP: 137.22
Mean DBP: 83.01
Mean HR: 88.64
Median SBP: 133.00
Median DBP: 81.00
Median HR: 88.00

Census Tract Information

Population: 2,122
Housing Units: 953
Occupied Housing Units (Households): 843
Median Age: 29.30
Population Age 65+: 15.08%
Median Household Income: \$13,764
Families Below Poverty Level: 60.9%
Unemployment Rate: 35.30%
Uninsured Population: 12.40%
Life Expectancy at Birth: 72.10 years
Non-White Population: 96.09%
Renter-Occupied Housing Units: 99.29%
Unoccupied Housing Units: 11.54%
ADI National Ranking (median of block groups within tract): 100.00
ADI State Ranking (median of block groups within tract): 10.000



Filter Data:

Select County

ALL COUNTIES

Select City

ALL CITIES

Date of Arrival

Dec 2016-Feb 2019

(All)

Gender

(All)

Age at Time of Visit



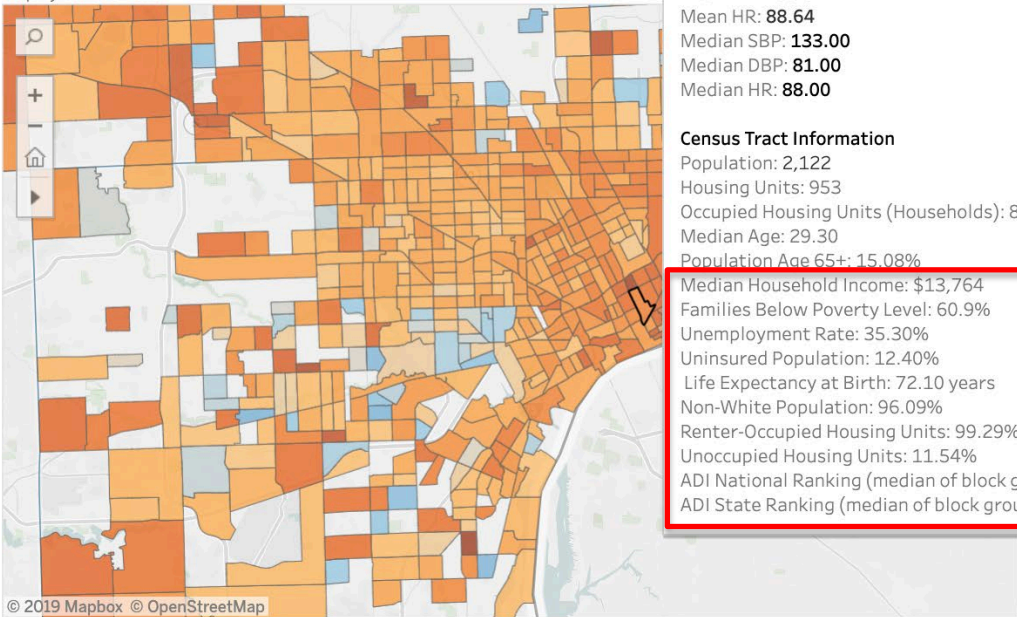
Race/Ethnicity

- ☒ (All)
- ☒ Black/African American
- ☒ Other Race or More tha...
- ☒ Spanish/Hispanic
- ☒ Unknown
- ☒ White

Hypertension Dashboard Metro-Detroit (Way

Select a Vital Category to Explore: Systolic Blood Pressure (Mean)

Map by Census Tract



Set map legend midpoint at: AHA Guideline (Midpoint: 130)



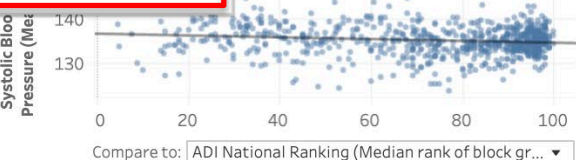
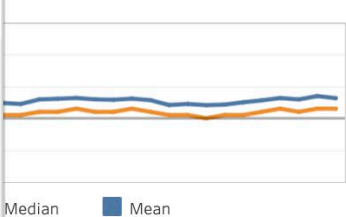
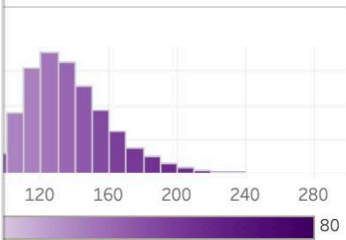
Race/Ethnicity	Number of Records	Mean SBP	Mean DBP	Mean HR	Mean Age	Mean Temp	% of Total
Black/African American	422,654	135.20	81.98	89.00	42	36.76	76.61%
White	82,775	135.72	80.33	90.02	46	36.72	15.00%
Other Race or More than On..	31,395	136.51	81.22	87.79	48	36.73	5.69%
Unknown	8,950	134.57	80.85	90.05	42	36.77	1.62%
Spanish/Hispanic	5,916	134.17	81.47	89.49	42	36.72	1.07%
Grand Total	551,690	135.33	81.67	89.11	43	36.75	100.00%

Tract ID: 26163518900

Number of Patient Records: 4,493
Mean SBP: 137.22
Mean DBP: 83.01
Mean HR: 88.64
Median SBP: 133.00
Median DBP: 81.00
Median HR: 88.00

Census Tract Information

Population: 2,122
Housing Units: 953
Occupied Housing Units (Households): 843
Median Age: 29.30
Population Age 65+: 15.08%
Median Household Income: \$13,764
Families Below Poverty Level: 60.9%
Unemployment Rate: 35.30%
Uninsured Population: 12.40%
Life Expectancy at Birth: 72.10 years
Non-White Population: 96.09%
Renter-Occupied Housing Units: 99.29%
Unoccupied Housing Units: 11.54%
ADI National Ranking (median of block groups within tract): 100.00
ADI State Ranking (median of block groups within tract): 10.000



Filter Data:

Select County
ALL COUNTIES

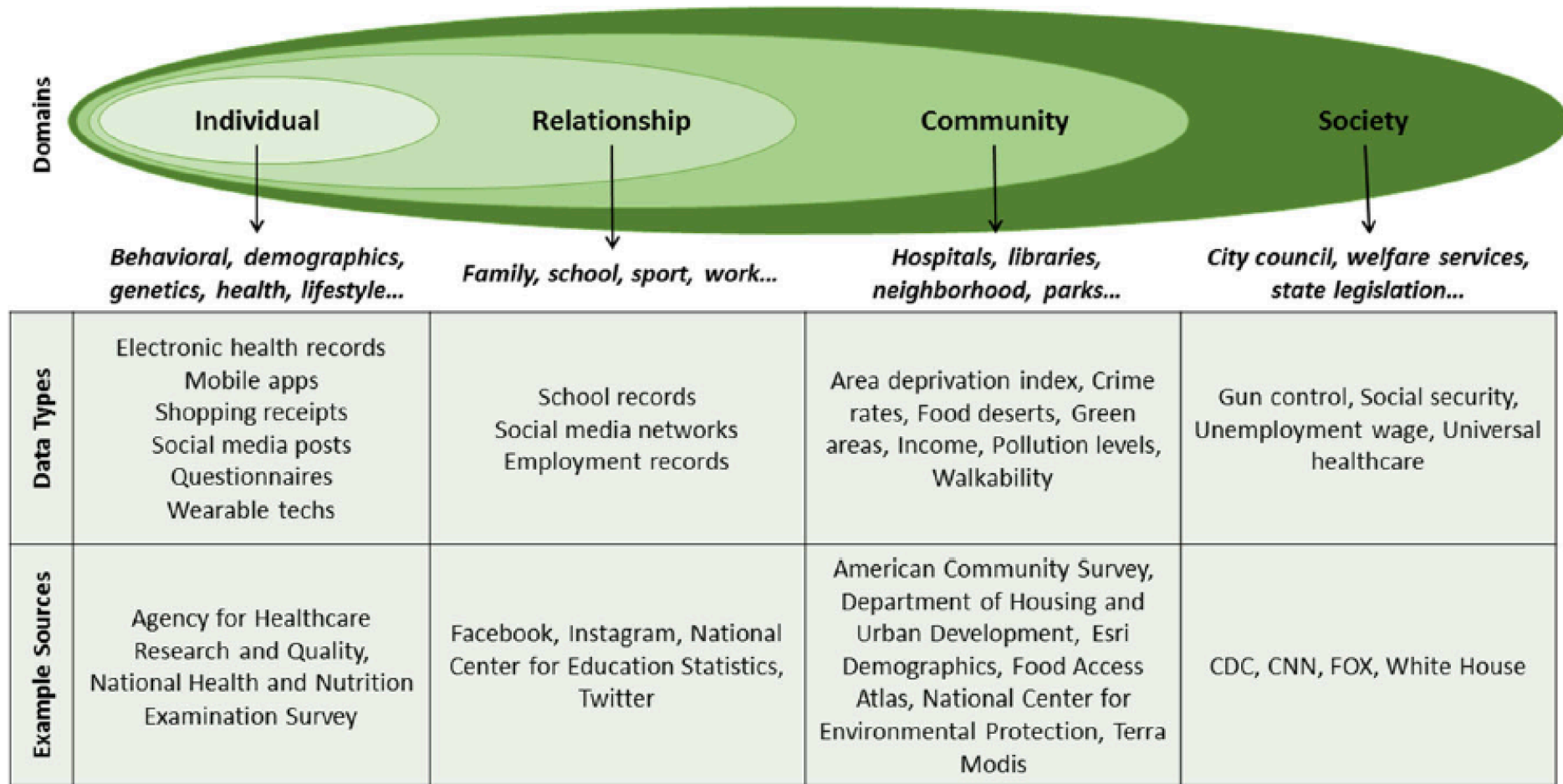
Select City
ALL CITIES

Date of Arrival
Dec 2016-Feb 2019
(All)

Gender
(All)

Age at Time of Visit
0 118

Race/Ethnicity
☒ (All)
☒ Black/African American
☒ Other Race or More tha...
☒ Spanish/Hispanic
☒ Unknown
☒ White



Welcome to



[Scroll Down To Learn More About MiHIN](#)



1. Collect

2. Ingest

Big Data Software



3. Blend



4. Transform

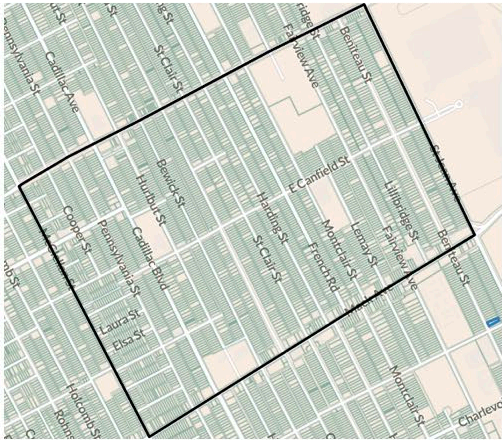


5. Publish

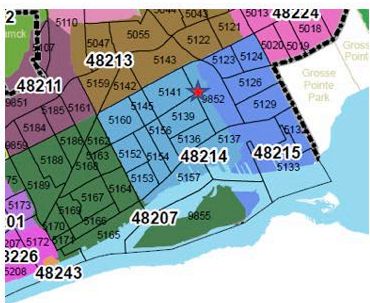
6. Distribute



Source	Description	Level	Open Access
MiHIN	Demographic, clinical information, insurance	Patient	No
OpenStreetMap	Point of Interests	City/Instance	Yes
Census Bureau	Socioeconomic data	Census Tract	Yes
Detroit Open Data Portal	Crime and violence data	Census Block	Yes
Michigan Department of Environmental Quality	Environmental conditions	Census Tract	Yes
USDA	Food access	Census Tract	Yes
Landgrid, Loveland Tech	Housing security	Census Block	Yes
Bureau of Labor Statistics	Monthly employment, unemployment	Census Tract	Yes
Data Driven Detroit	Transportation, education	Census Tract	Yes
Neighborhood Atlas	Area deprivation index	Census Block	Yes



Census Tract 5141, Detroit
Lat: 42.3798303, Lon:-82.9893988
Square miles: 0.62148509
With a radius around 715.8 meters



Detroit Zip Codes and
2010 Census Tracts

radius = 500

parking	6
place_of_worship	5
school	2
ice_cream	1
doctors	1

radius = 715.8

parking	18
place_of_worship	8
school	4
fuel	1
ice_cream	1
doctors	1
bus_station	1
marketplace	1

radius = 1500

parking	97
place_of_worship	34
school	22
fast_food	4
social_facility	3
restaurant	2
fire_station	2
marketplace	1
bench	1
fuel	1
ice_cream	1
doctors	1
bus_station	1
car_wash	1
college	1

MRN: 12345678 AGE: 54 EMPLOYER: General Motors ROLE: Manufacturing - Welding LOCATION: Detroit, Michigan

	Prior BP	Current BP	Next Visit BP	ASCVD Target BP
SYS	156	↑ 155	↓ 148	117
DIA	95	95	82	77
Pulse	80	74	70	22

SOCIAL DETERMINANTS OF HEALTH

Economic Stability: Fair

Livability: Above Standard

Education: Below Regional Standards

Food Access: No 'healthy' options within 5 mi

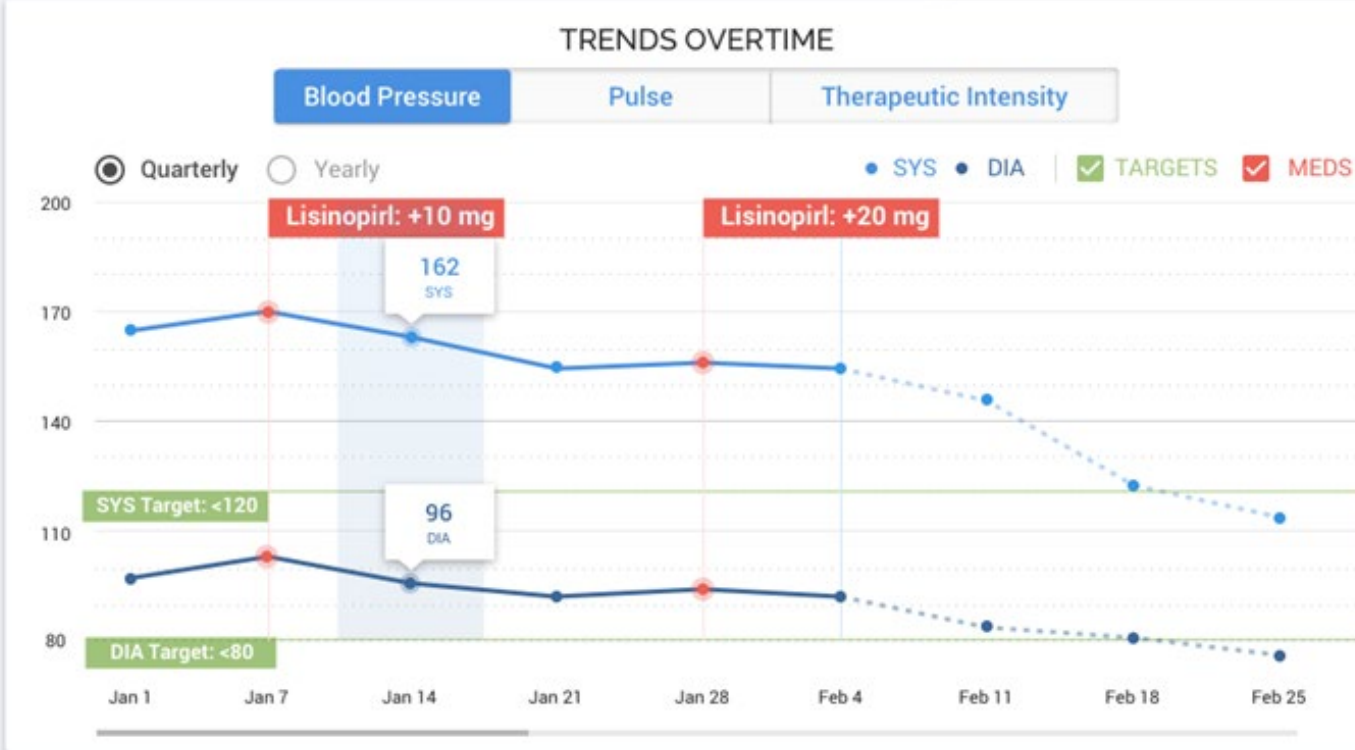
BEHAVIORAL RISKS

☒ Low Physical Activity

☒ Poor diet adherence

☐ Missed medical encounters

☐ Alcohol Risk



ORDER HISTORY

All Orders

Orders	Date	BP
Lab Results	01/07/2019	165/99
VALUE		RESULTS
Blood Urea Nitrogen		20 mg/dL
Glucose		102 mg/dL
Creatinine		1.3 mg/dL
Urine Albumin/Creatinine		30 mg/L
Lisinopril	01/07/2019	170/104
Nutritionist	01/14/2019 @ 11...	162/96
Excercise	01/21/2019	155/92
Lisinopril	01/28/2019	156/95
Support Group	02/04/2019 @ 3...	155/95
Support Group	02/11/2019 @ 3...	---

MRN: 12345678 AGE: 54 EMPLOYER: General Motors ROLE: Manufacturing - Welding LOCATION: Detroit, Michigan

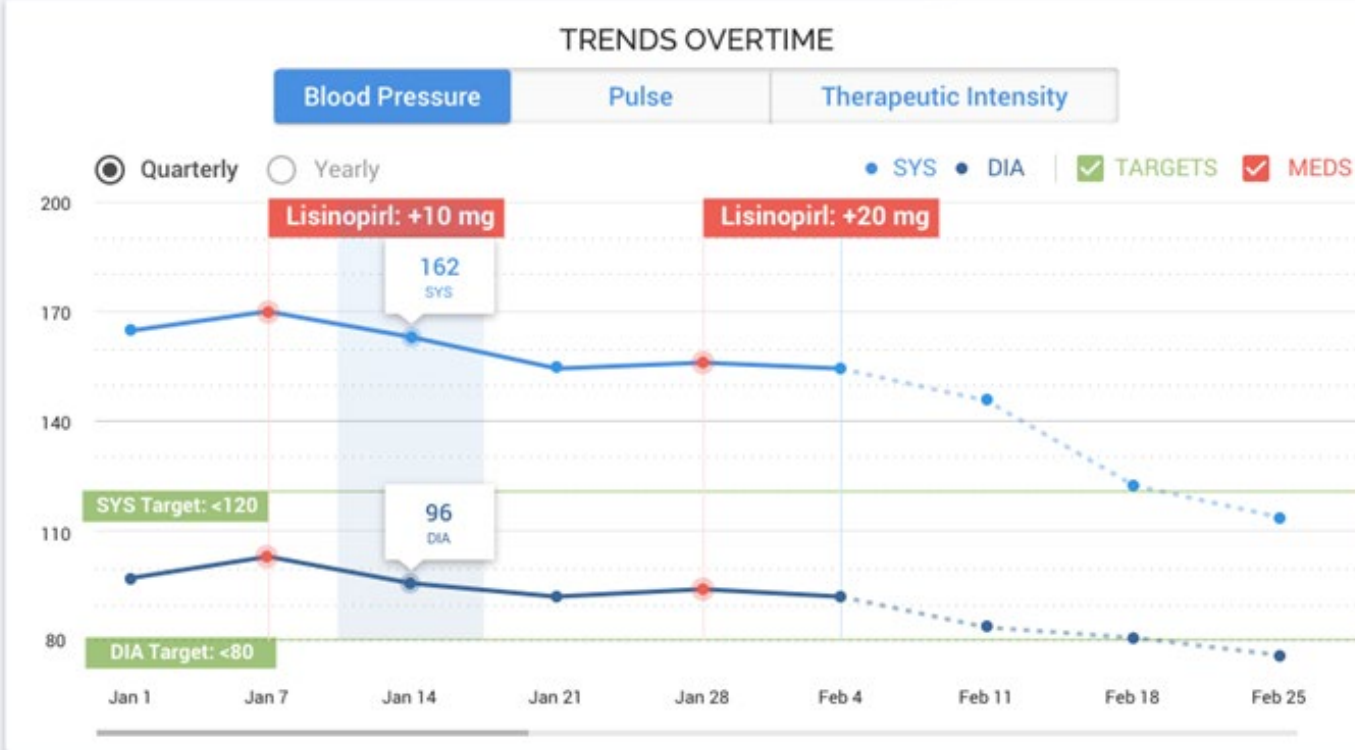
	Prior BP	Current BP	Next Visit BP	ASCVD Target BP
SYS	156	↑ 155	↓ 148	117
DIA	95	95	82	77
Pulse	80	74	70	22

SOCIAL DETERMINANTS OF HEALTH

- Economic Stability: Fair
- Livability: Above Standard
- Education: Below Regional Standards
- Food Access: No 'healthy' options within 5 mi

BEHAVIORAL RISKS

- ☒ Low Physical Activity
- ☒ Poor diet adherence
- ☐ Missed medical encounters
- ☐ Alcohol Risk



ORDER HISTORY

All Orders

Orders	Date	BP
Lab Results	01/07/2019	165/99
VALUE		RESULTS
Blood Urea Nitrogen		20 mg/dL
Glucose		102 mg/dL
Creatinine		1.3 mg/dL
Urine Albumin/Creatinine		30 mg/L
Lisinopir	01/07/2019	170/104
Nutritionist	01/14/2019 @ 11...	162/96
Excercise	01/21/2019	155/92
Lisinopir	01/28/2019	156/95
Support Group	02/04/2019 @ 3...	155/95
Support Group	02/11/2019 @ 3...	---

Referrals

Classes



HFHS Smoking Cessation Program

Community Center · 9464 Main St
Learn about the effect of cigarette smoking on you BP

Next Available Date

Mon. 3/4/2019

9:30 am

10:45 am

Thur. 3/7/2019

1:30 pm

4:45 pm



HFHS Diabetes Prevention Program

GW Hospital · 9464 Main St
Better glucose managment; Better BP managment

Mon. 3/4/2019

9:30 am

10:45 am

Thur. 3/7/2019

1:30 pm

4:45 pm



Fitness Workshop @ FitnessWorks

Community Center · 9464 Main St
Learn about the effect of cigarette smoking on you BP

Mon. 3/4/2019

9:30 am

10:45 am

Thur. 3/7/2019

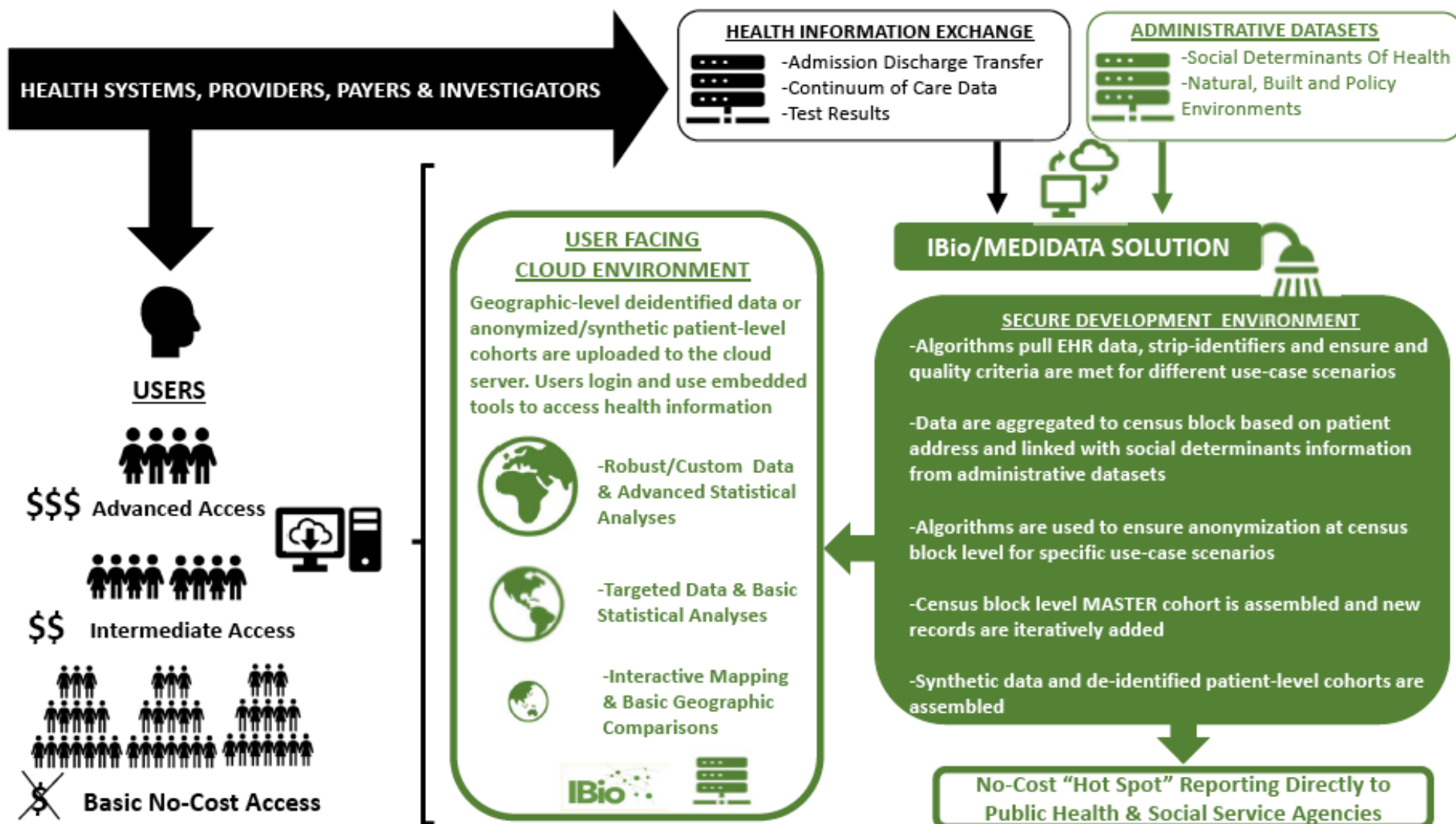
1:30 pm

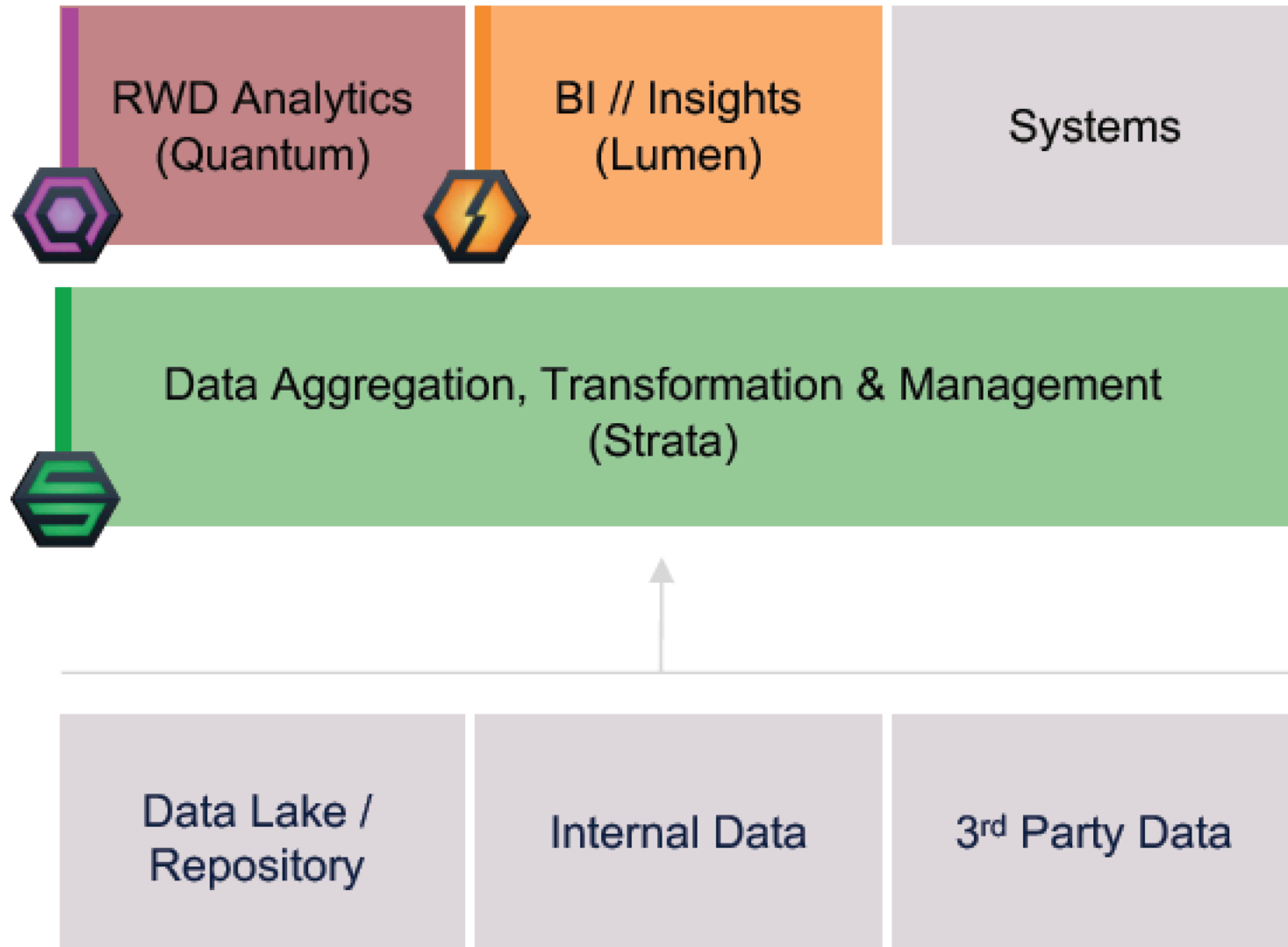
4:45 pm

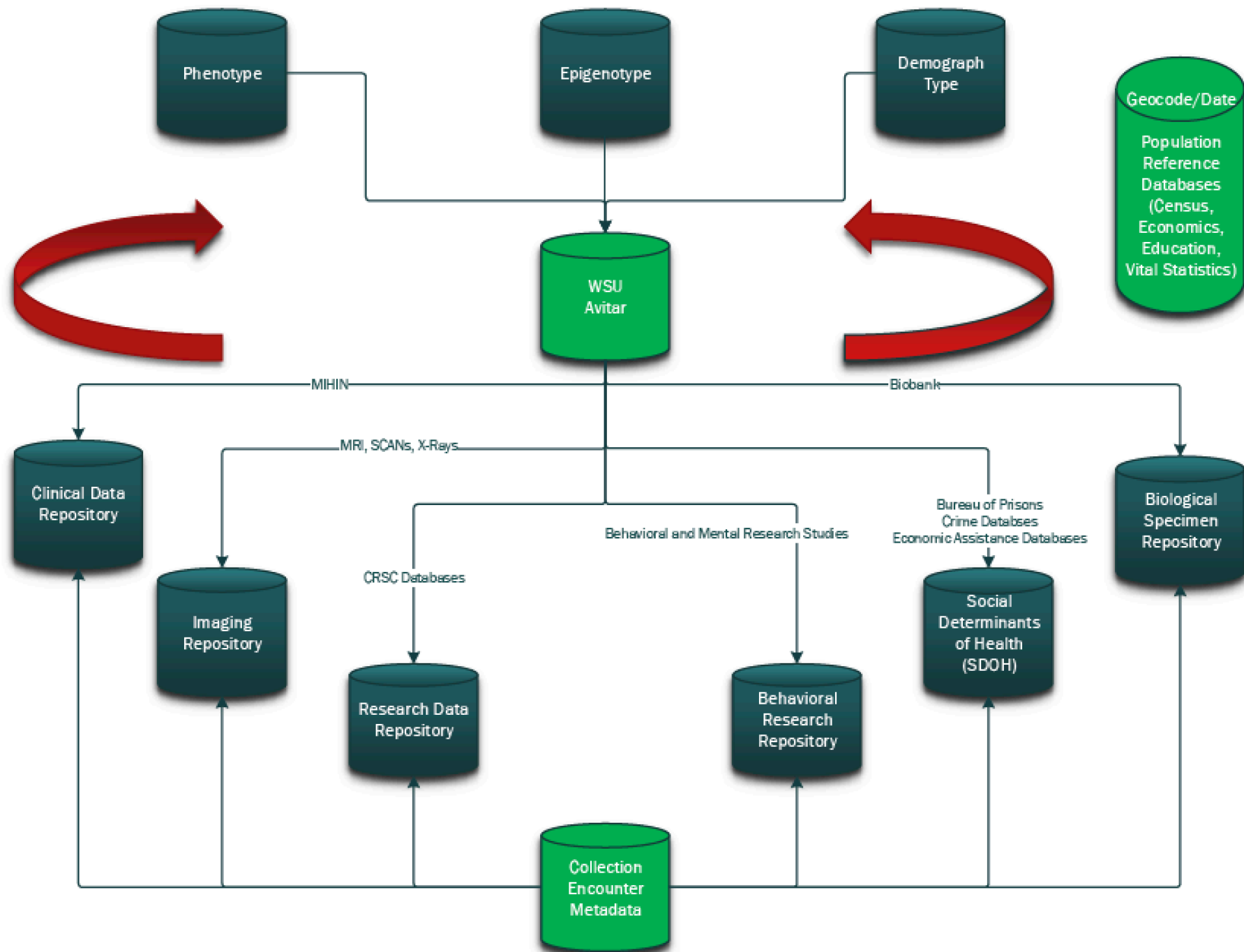
SEND REFERRALS



Zoom in







A photograph of a modern building at night. The building features a large glass facade that is illuminated from within, reflecting the city lights. A prominent section of the building is clad in horizontal wooden slats, which are also lit from within, creating a warm glow. The building is situated in an urban environment, with other buildings visible in the background. The sky is dark blue with some clouds. The overall scene is a nighttime architectural shot.

plevy@med.wayne.edu