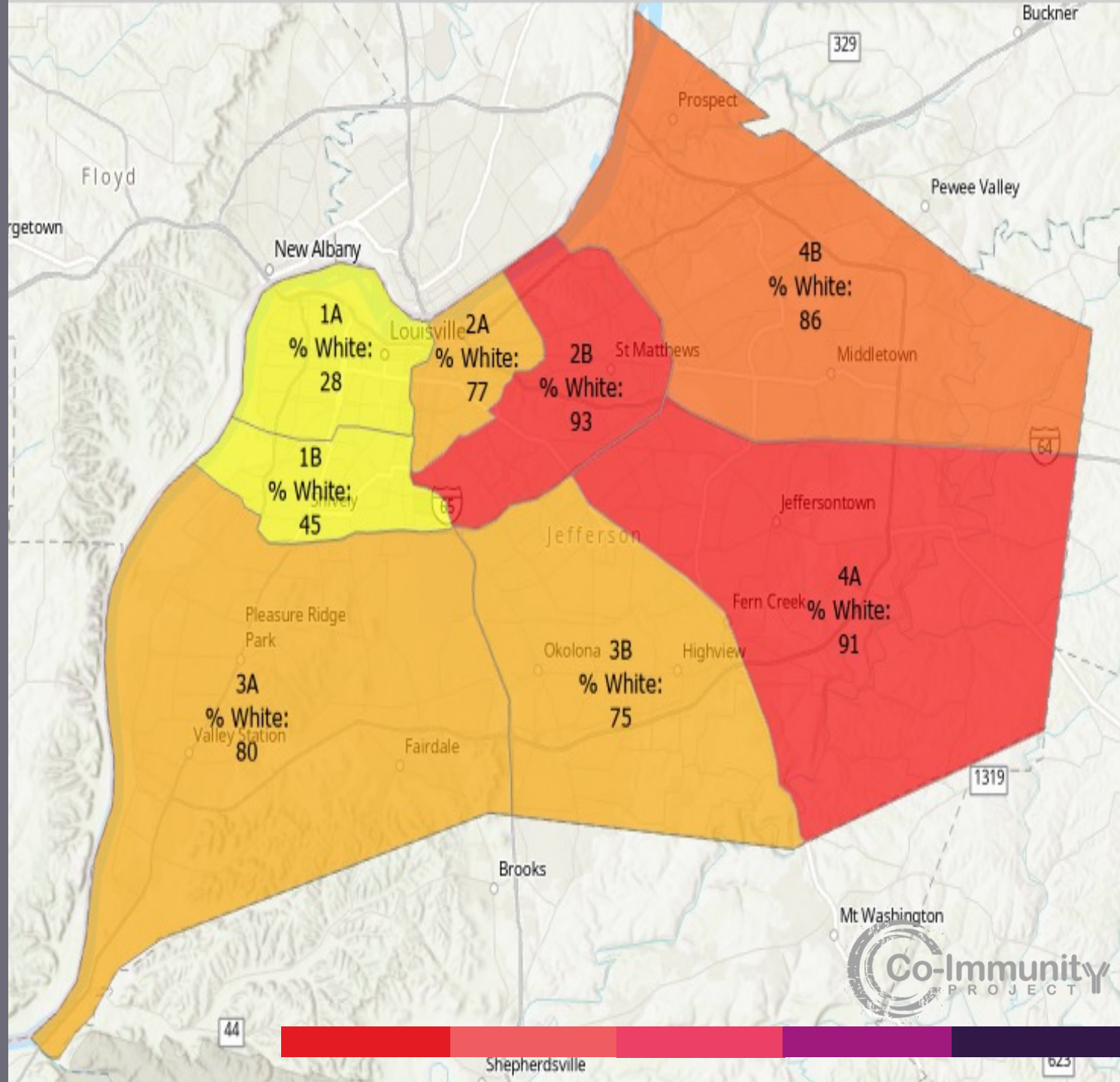

Co-Immunity
PROJECT

SOCIO-DEMOGRAPHIC AREAS OF JEFFERSON COUNTY



JEFFERSON COUNTY

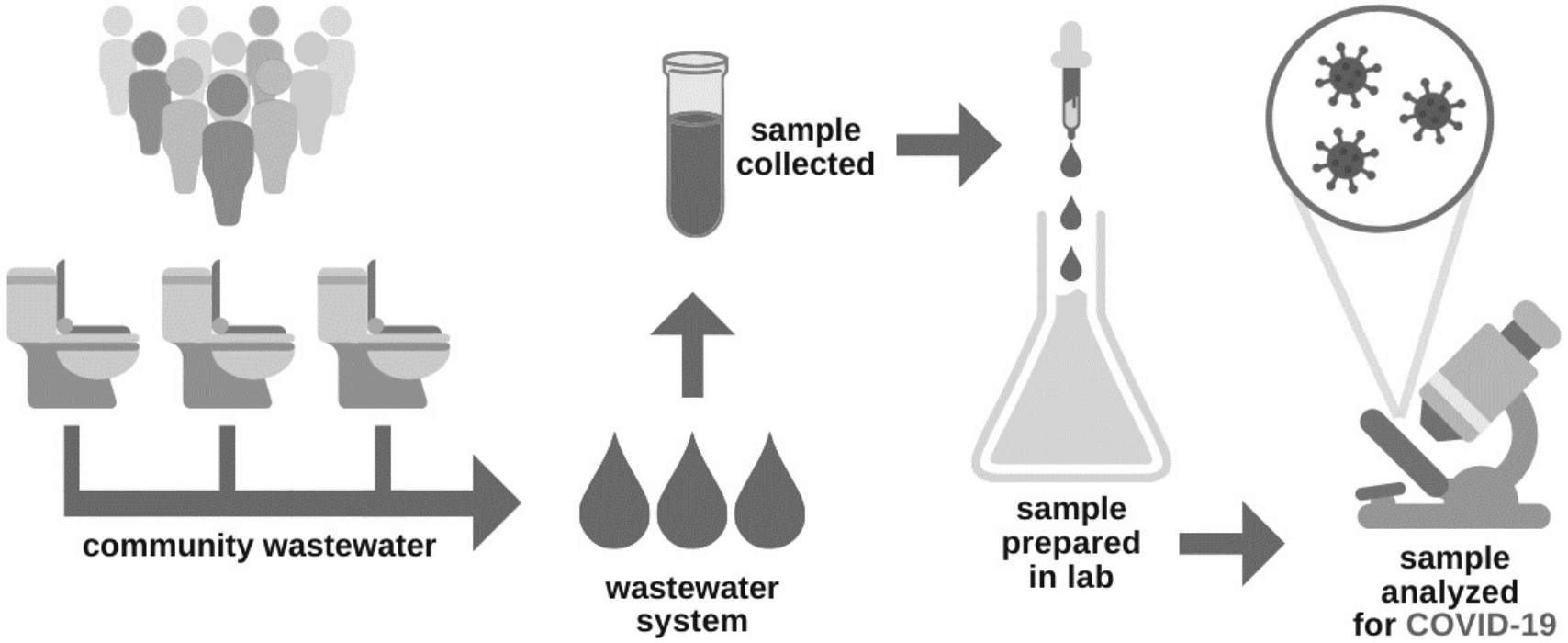
AREA 1	# to enroll	AREA 2		AREA 3		AREA 4	
A: 70793	229 165 NW	A: 41578	135 32 NW	A: 151, 551	490 94 NW	A: 101,725	329 29 NW
B: 48317	156 86 NW	B: 72910	236 17 NW	B: 122,656	396 99 NW	B: 131,970	427 60 NW

RANDOMIZATION

STAGE 1	PARTICIPANTS RECRUITMENT 0.32 % OF TOTAL POPULATION	FIXED PROPORTION
STAGE 2: RACE	% WHITE: 1A, 28; 1B, 45; 2A, 77: 2B, 93; 3A, 80; 3B, 75; 4A, 91; 4B, 86.	FIXED PROPORTION
STAGE 3: AGE	20-35 , 36-60 61-90	FIXED PROPORTION
STAGE 4: SEX	1200 Males and 1200 Females	FIXED NUMBER

* NW = Non White – Blacks, Hispanic, and Asians

Measurement of Coronavirus in Wastewater



Wastewater results must correspond to community prevalence

Need for reliable estimates of disease prevalence and wastewater abundance

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APPROACH

A stratified sample of households was selected after allocating the sample proportional to the total population of the sector

Sampling frame of household was based on addresses derived from the US Postal Service delivery files

Within each sector, the addresses were stratified by whether they lived in a census Block Group with a high proportion that are non-White. Households were then sampled with a higher sampling rate for those living in Block Groups with a high proportion of non-White persons.

For each wave - 25,000 – 35,000 invitations were mailed.

Response rate was around 3 %

Additional participants from convenience sampling

RANDOM SAMPLING OF JEFFERSON COUNTY

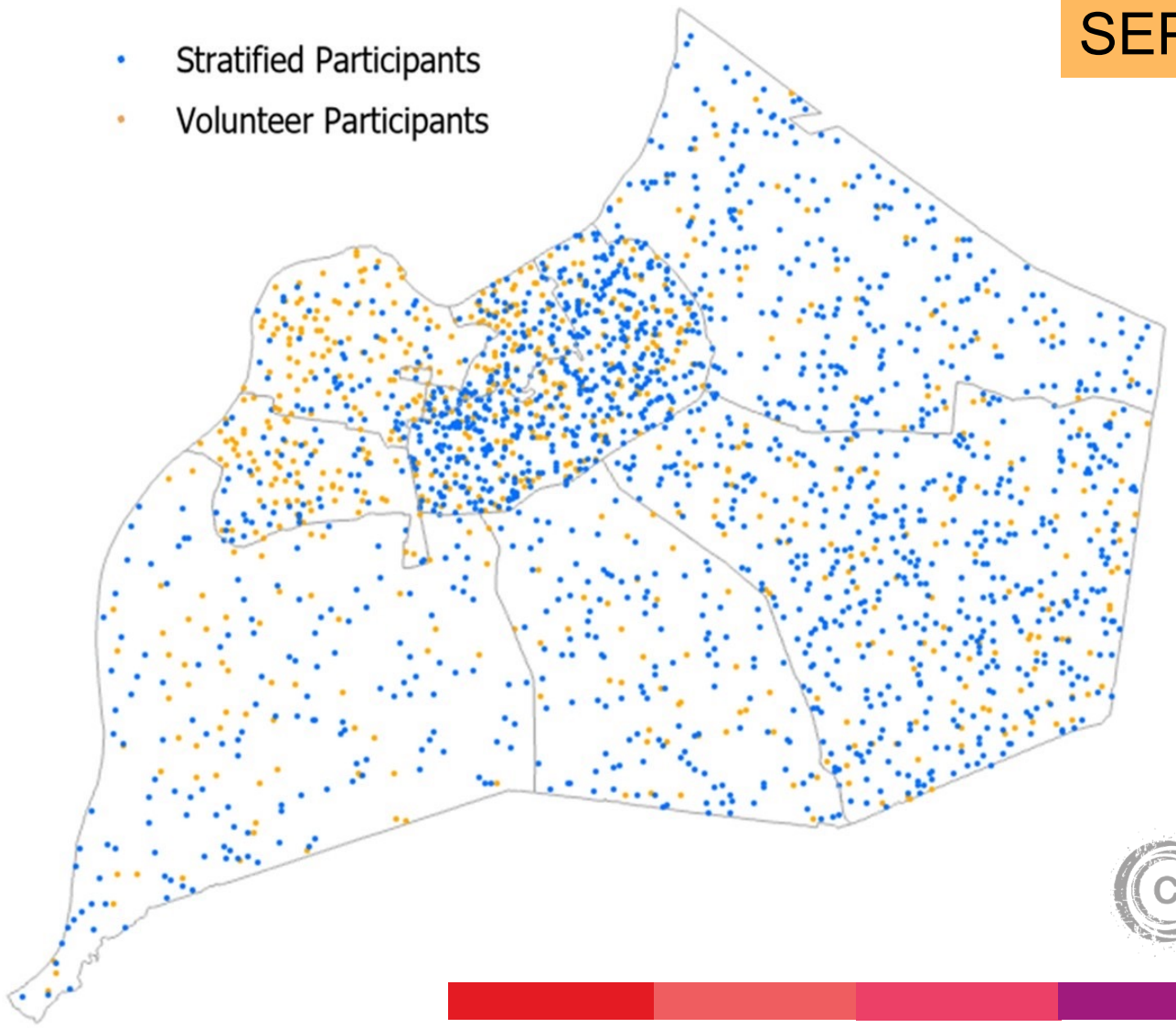
SEPT 2020

Invitations: 32,000

Responses: 1576

Volunteers: 632

Total tested: 2,208



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RANDOM SAMPLING OF JEFFERSON COUNTY

SEPT 2020

RANDOM SAMPLING

Serology

Total: 1576 percent positive – 4.44 (95% CI: 2.8-6.9)

In Jefferson county = 34,044 (21,469 – 52,906)

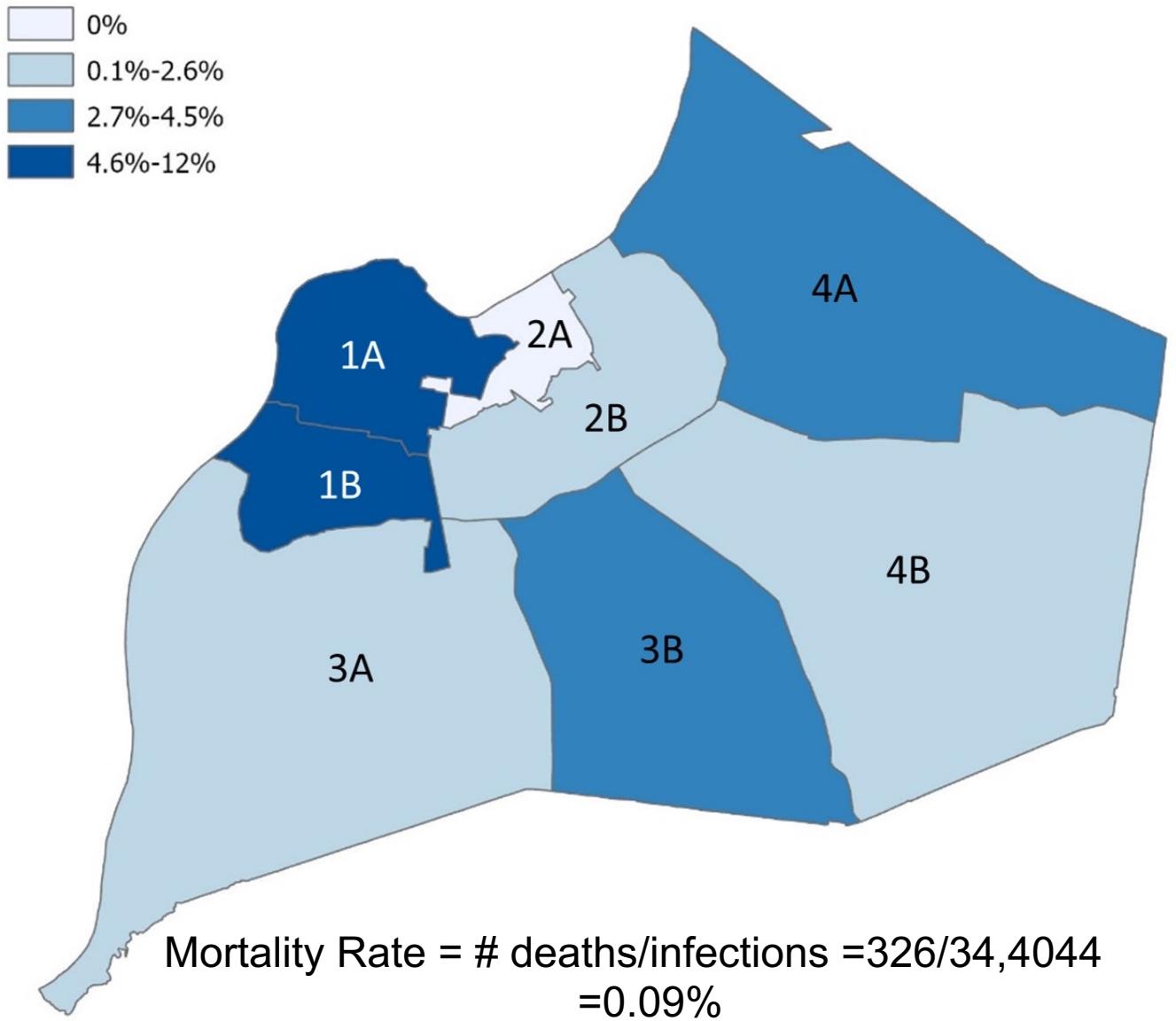
Reported = 17,516

PCR

Total: 1550, percent positive – 0.20 (0.06 -0.62)

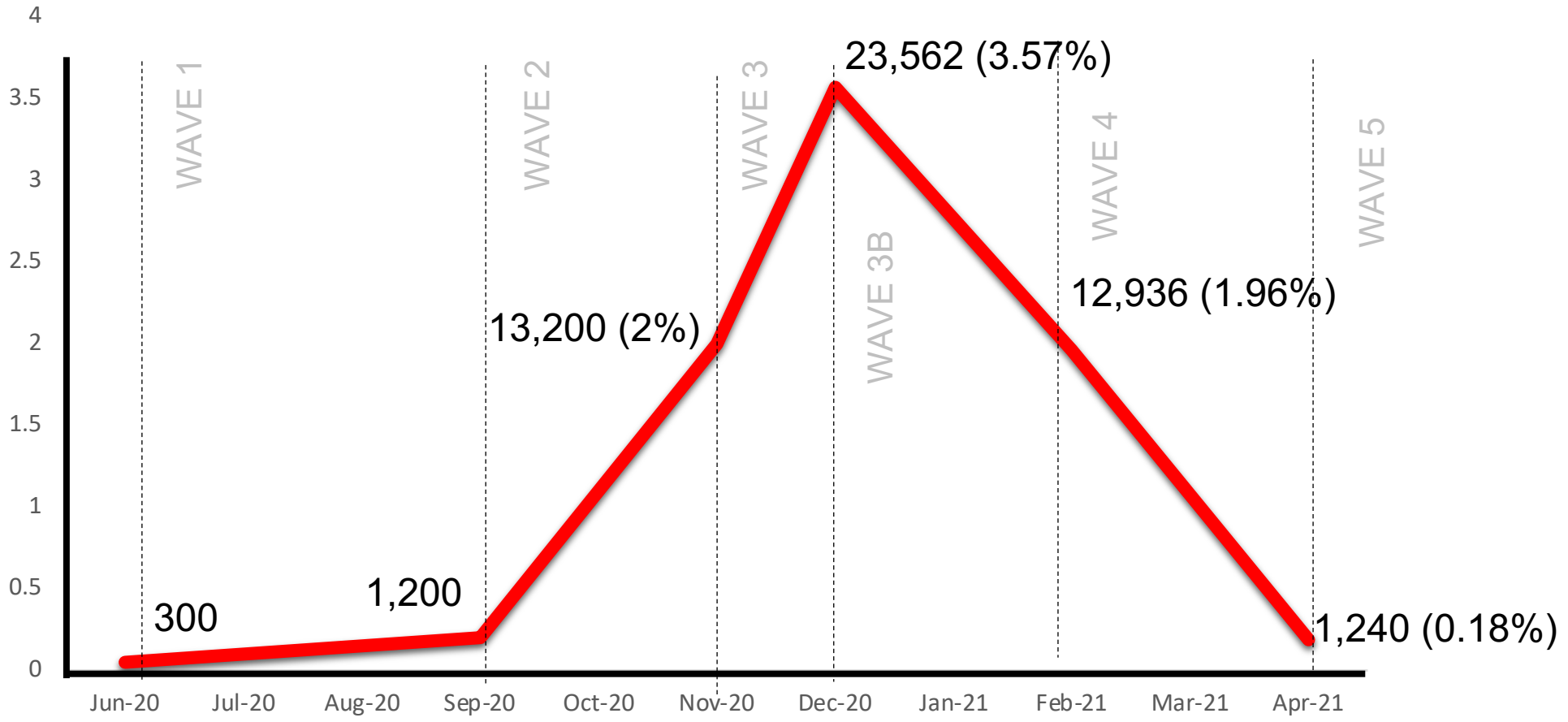
In Jefferson County = 1,533 (460 - 4,753)

Reported (average) = 707; (total = 7787)



Mortality Rate = # deaths/infections =326/34,4044 =0.09%

INFECTION RATES



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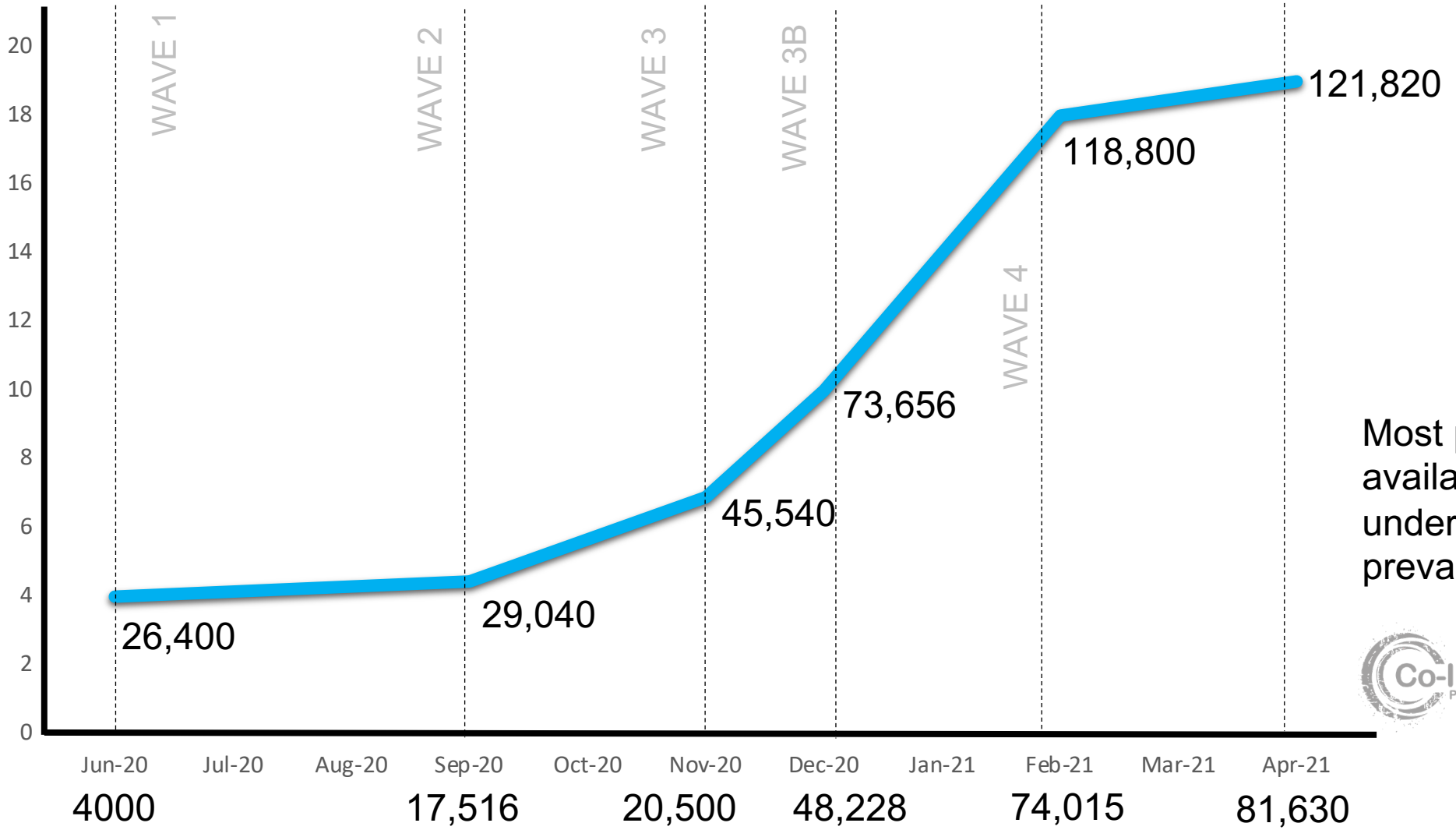
ANTIBODY POSITIVITY RATE

% Antibody positive population



Most publicly available data underestimate prevalence

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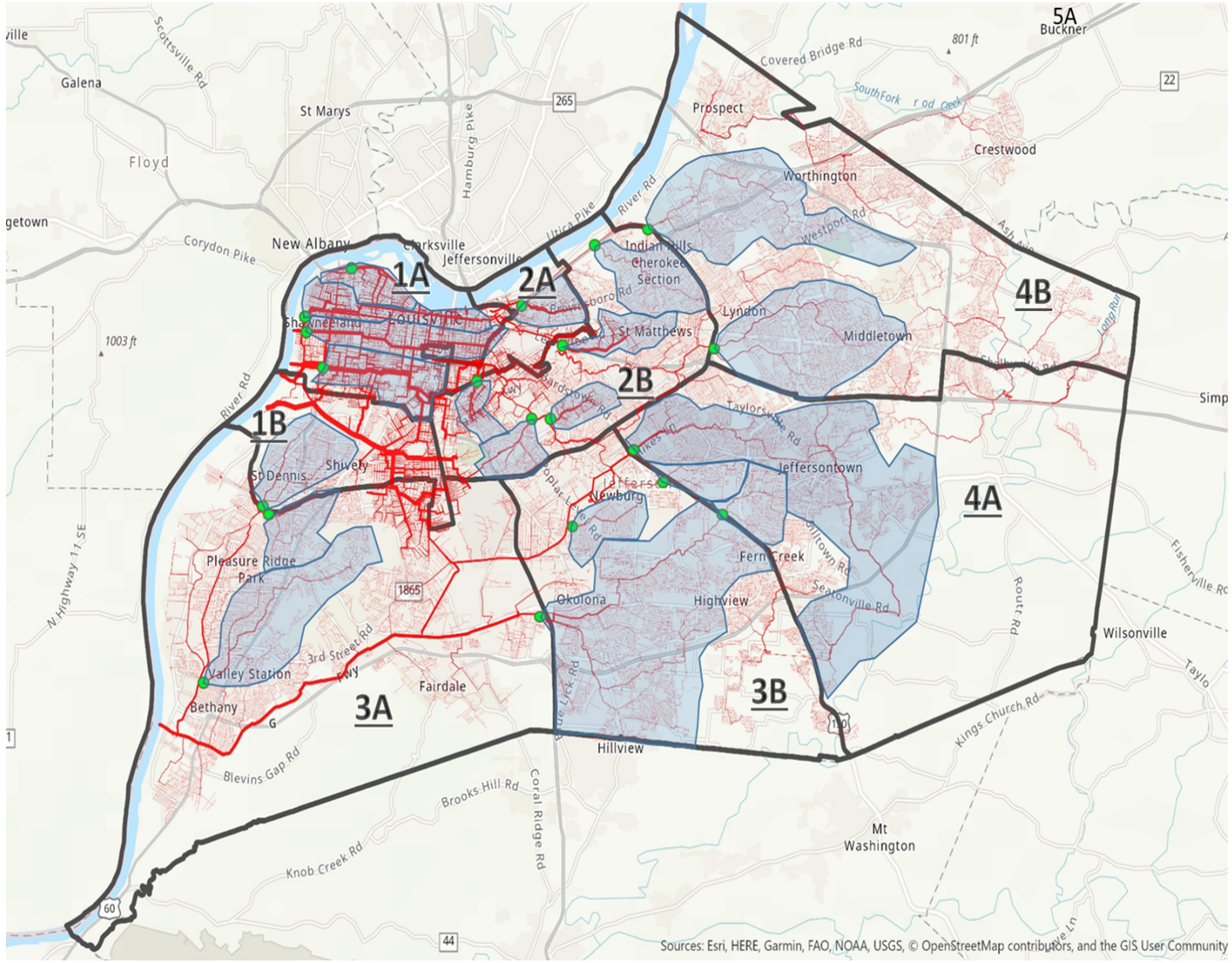
REPORTED CASES	4000	17,516	20,500	48,228	74,015	81,630

Waste Water Sampling In Jefferson County



Contemporaneous waste water sampling and randomized community testing

In 8 different zones of the city

Sampling Frequency – Twice a week at 20 different sites

Community Testing – Once every eight weeks

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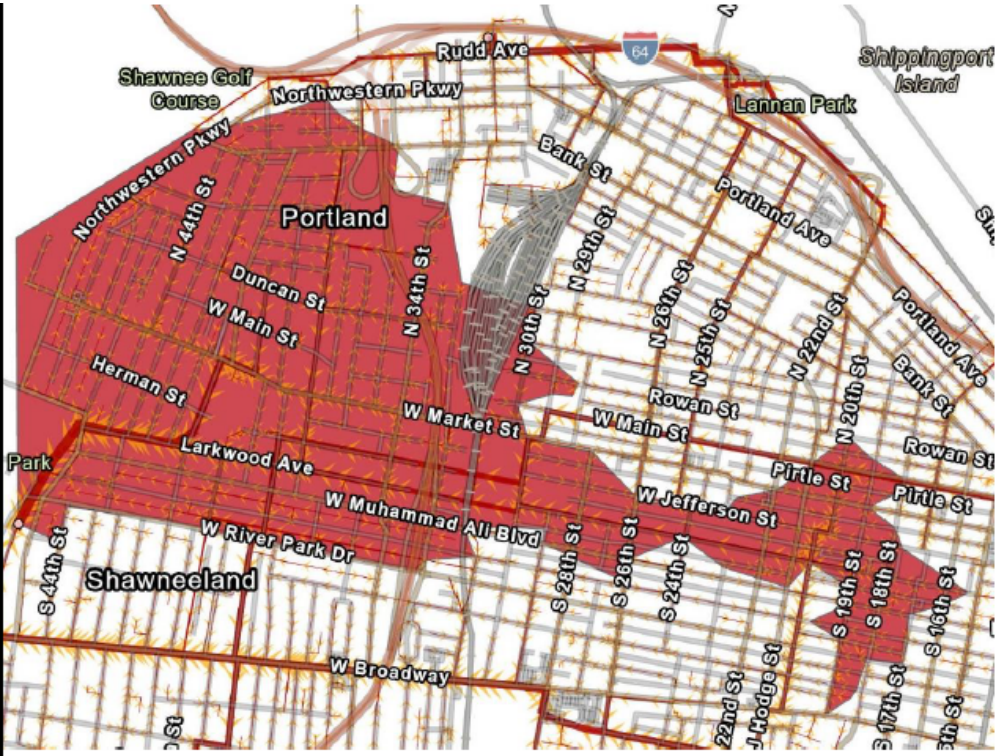
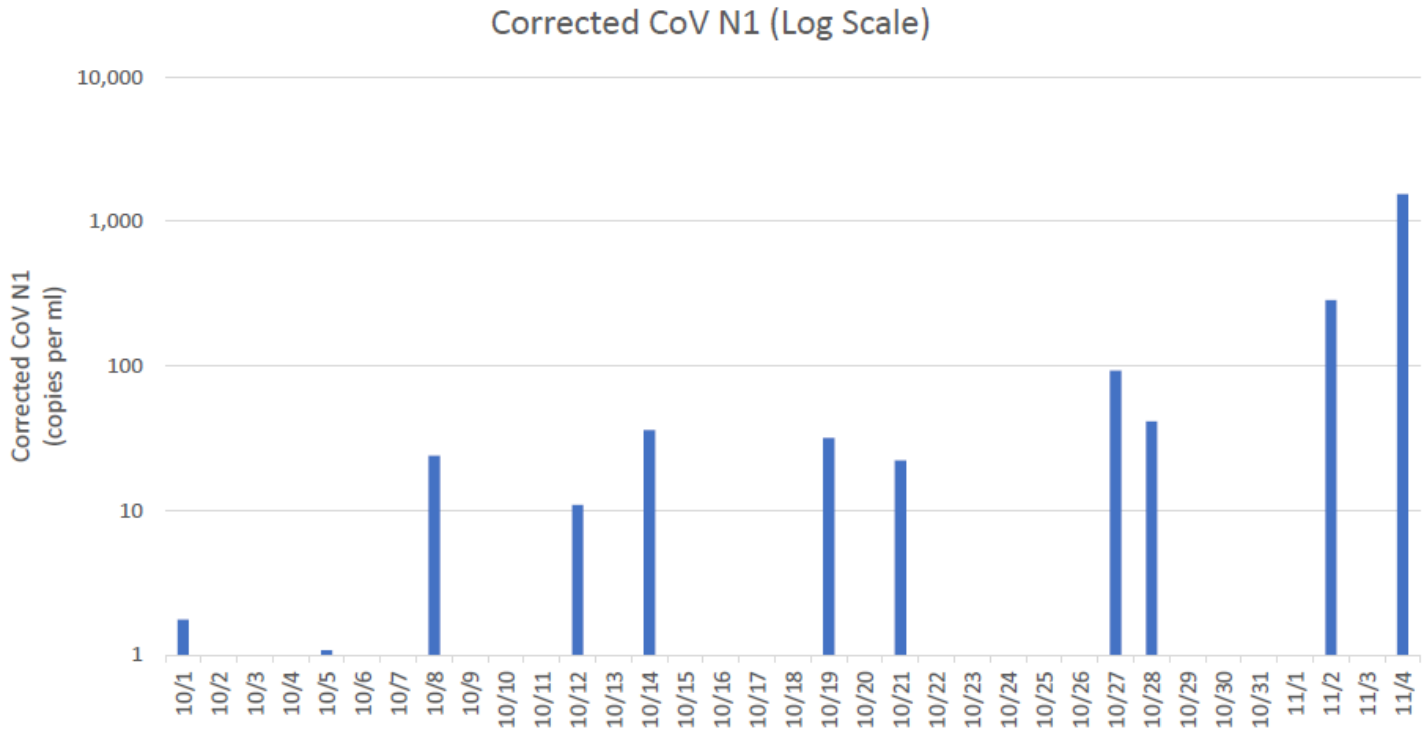
Map ID	Sewershed ID	Site Name	Median HH Income	Population	White (%)	Black (%)	Hispanic (%)
1	MSD0278	Morris Forman WQTC	$54,138	349,850	68	25	4
2	MSD0277	Guthrie WQTC	$53,577	295,910	72	21	7
3	MSD0289	Cedar Creek WQTC	$76,606	55,928	82	12	4
4	MSD0294	Floyds Fork WQTC	$113,699	32,460	87	8	3
5	MSD0202	Hite Creek WQTC	$106,769	31,269	75	14	4
6	MH03554 (B) CS0189 (A)	Shawnee Park	$27,695	10,739	9	88	1
7	MSD0082-PS	34th Street PS	$27,446	7,820	68	26	3
8	MSD40870-PS	Muddy Forks PS	$103,304	11,203	92	3	2
9	MH32985	Wood Rd & Terry Rd	$45,895	35,956	59	37	4
10	MH09837	Ashby Ln	$51,656	25,073	83	12	5
11	MH08915A, CSO140	Locust St & Lobdell Alley	$77,842	99,061	87	7	4
12	MH50495, CSO108	Newburg Road	$68,259	139,251	79	13	5
13	MH23290	West Indian Trail	$53,542	73,666	63	28	9
14	MH57769	Pineland Drive	$61,837	46,659	75	18	8
15	MH57350	Preston & South Park Rd	$63,642	22,437	80	13	5
16	MH71910, CSO146	Kentucky St & Swan St	$49,031	8,071	90	6	3
17	MH70101	S. 15th and Wilson	$24,084	20,832	61	32	5



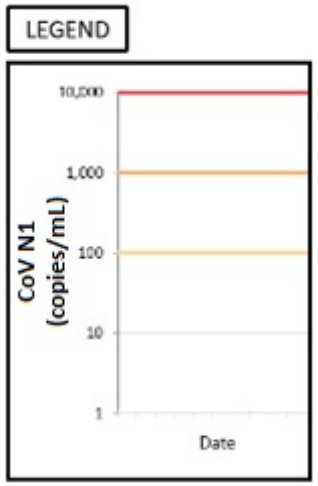
Shawnee Park
(CSO189)

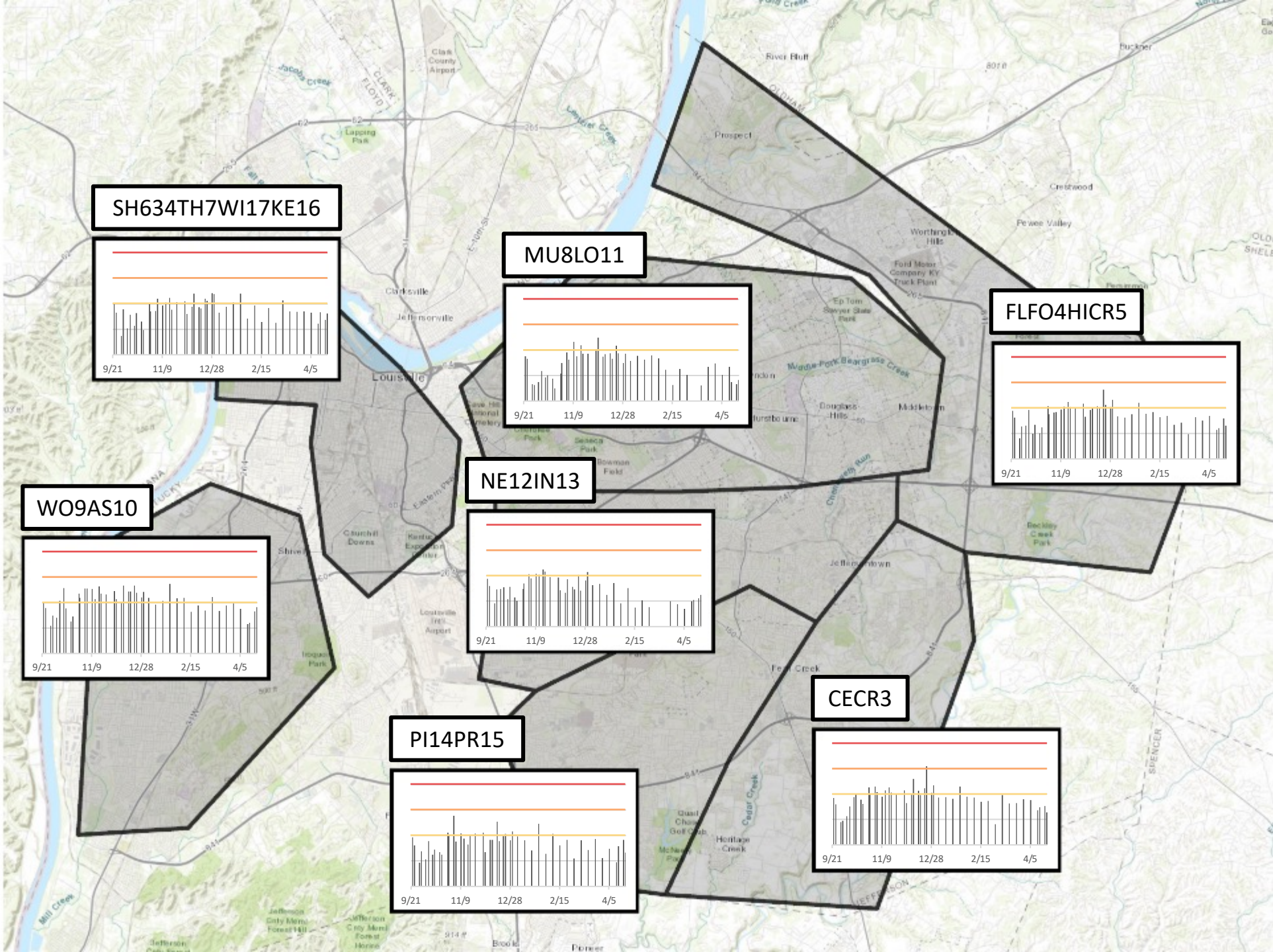
Map ID	Site	Median HH Income	Population	% White	% Black	% Hispanic
6	Shawnee Park	$27,695	10,739	9	88	1



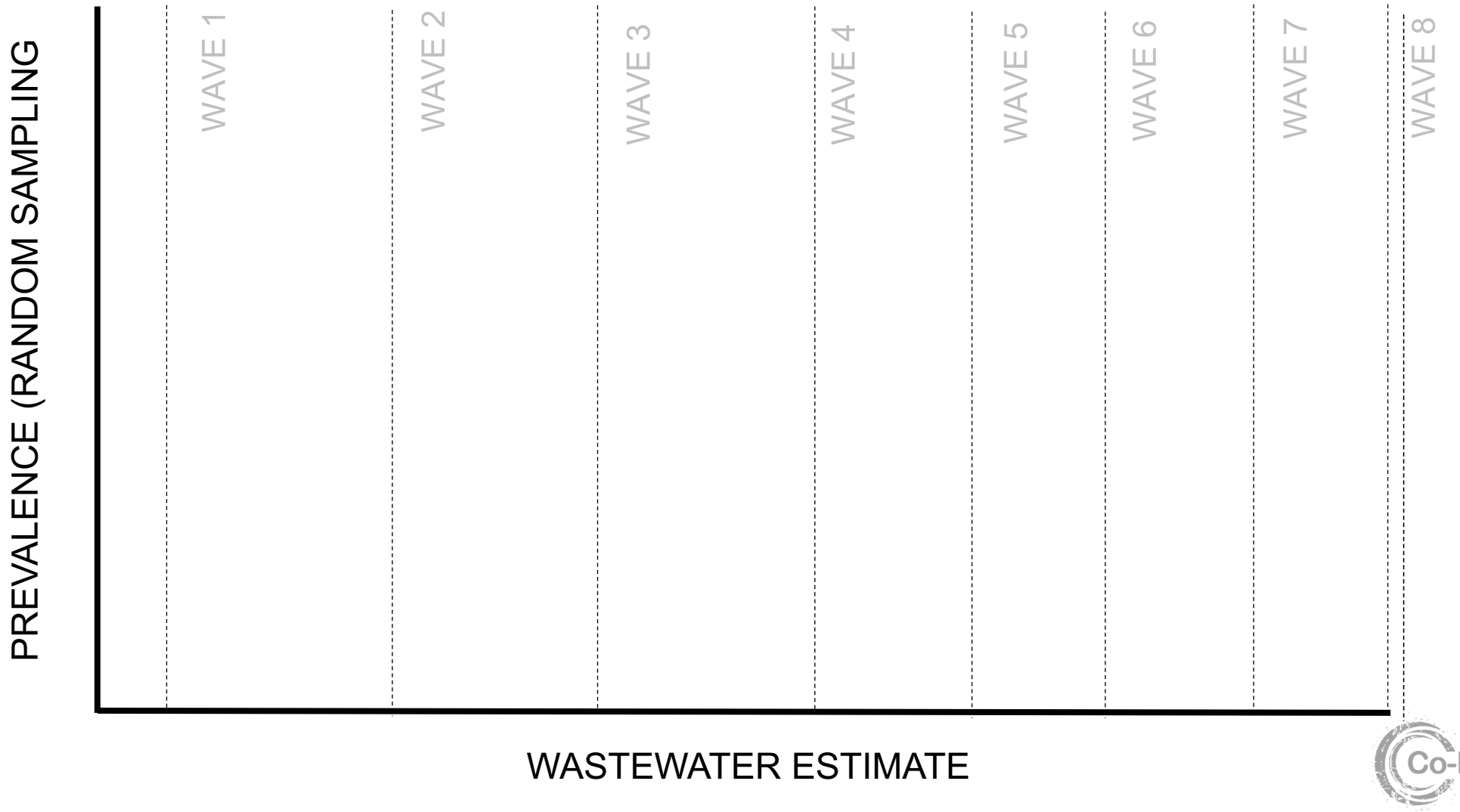
Wastewater Sampling Trends by Zone

2020/09/21 – 2021/04/21





CORRESPONDENCE BETWEEN WASTEWATER ESTIMATES AND COMMUNITY PREVALENCE



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ACKNOWLEDGEMENTS

Christina Lee Brown Envirome Institute:
Ted Smith, Ph.D.
Rochelle Holm, Ph.D.,
Ray Yeager, Ph.D.,
Shesh Rai, Ph.D.,
Joe Moore, Ph.D.,
Rachel Keith, R.N., Ph.D.
Alok R. Amraotkar, M.D.,.,
Barbra Cave, R.N., Ph.D.
Krystal Harmorsky, Ph.D.,
David Hoetker,
Rick Strehl,
Jacob Ziegler,
Mamata Chaudhari,
Dan Riggs

Center for Predictive Medicine:
Joshua Fuqua, Ph.D.,
Kenneth Palmer, Ph.D.,
Saurabh Kumar, Ph.D.

Genomics Core:
Wolfgang Zacharias, Ph.D.
Mei Zhang, Ph.D.
Sabine Waigel

Bioinformatics Core:
Eric Rouchka, D.Sc

Microbiology & Immunology:
Kevin Sokoloski, PhD

Westat:
J. Michael Brick, Ph.D.

Louisville Metropolitan Sewer District:
Daymond Tally

Louisville Metro Public Health & Wellness:
Sarah Moyer, M.D.
William Altman, J.D.

Arizona State University:
Rolf Halden, Ph.D.
Arvind Varsani, Ph.D
Erin Driver, Ph.D.

The Ohio State University:
Mark Weir, Ph.D.
Grzegorz Rempala, Ph.D.

Funding

Louisville Metro Government LMPHW, Commonwealth of Kentucky DPH/DOC, James Graham Brown Foundation, Owsley Brown II Family Foundation, Foundation for a Healthy Kentucky, Centers for Disease Control