Supplementary Information

Equity-Centered Adaptive Sampling in Sub-Sewershed Wastewater Surveillance Using Census Data

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Keywords: health equity, wastewater surveillance, probabilistic assignment, census block, SARS-CoV-2, wastewater-based epidemiology

Synopsis: Identifying strategies to design wastewater sampling frameworks that equitably represent diverse populations within sampling areas.

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Supplementary tables

Table S1. Primer and probe sequences for the specified targets.

Target	Oligonucleotide	Primer Sequence (5' → 3')	Fluorophore
SARS-CoV-2 N1	Forward	GAC CCC AAA ATC AGC GAA AT	FAM
	Reverse	TCT GGT TAC TGC CAG TTG AAT CTG	
	Probe	ACC CCG CAT TAC GTT TGG TGG ACC	
SARS-CoV-2 N2	Forward	TTA CAA ACA TTG GCC GCA AA	VIC
	Reverse	GCG CGA CAT TCC GAA GAA	
	Probe	ACA ATT TGC CCC CAG CGC TTC AG	
BCoV	Forward	CTGGAAGTTGGTGGAGTT	HEX
	Reverse	ATTATCGGCCTAACATACATC	
	Probe	CCTTCATATCTATACACATCAAGTTGTT	
PMMoV	Forward	GAGTGGTTTGACCTTAACGTTTGA	FAM
	Reverse	TTGTCGGTTGCAATGCAAGT	
	Probe	CCTA+C+C+GAAGCA+A+A+TG	

Table S2. Cycling conditions for the RT-ddPCR process.

Cycling step	Temp (℃)	Time	# Cycles
Plate equilibrium	25	3 min	1
Reverse Transcription	50	60 min	1
Enzyme activation	95	10 min	1
Denaturation	94	30 sec	40
Annealing/Extension	58	1 min	
Enzyme Deactivation	98	10 min	1
Droplet Stabilization	25	1 min	1

Table S3. Limit of blank (LOB, reported as a rank position value) and limit of detection (LOD), as reported in Daza-Torres et al. (2023).

		LoB	STD	Theoretical LOD
Conc (copies/mL of wastewater)	N1	13.605	5.547	24.700
	N2	18.544	6.712	31.967
Conc (copies/mL of wastewater)	N1	3.401	1.387	6.175
	N2	4.636	1.678	7.992

Table S4. Sub-sewershed zones and their populations.

Sub-sewershed Zone	**Population**
SR-A	12389
SR-B	7936
SR-C	15920
SR-D	1324
SR-E	1794
SR-F	3920
SR-G	5935
SR-H	3696
SR-I	10912

Table S5. Correlation of wastewater data for each sub-sewershed zone (population-weighted moving average) with the overall COD WWTP data (moving average).

Zone Name	Correlation Coefficient	P-Value
SR-A	0.770	4.19e-15
SR-B1	0.935	8.81e-33
SR-B2	0.836	1.24e-19
SR-B3	0.927	4.69e-31
SR-B4	0.922	3.26e-30
SR-C1	0.793	1.69e-16
SR-C2	0.890	3.22e-25
SR-D	0.734	3.15e-13
SR-E	0.877	1.13e-23
SR-F1	0.877	1.24e-23
SR-F2	0.870	6.78e-23
SR-G	0.738	2.20e-13
SR-H	0.733	3.88e-13
SR-I	0.866	1.92e-22