

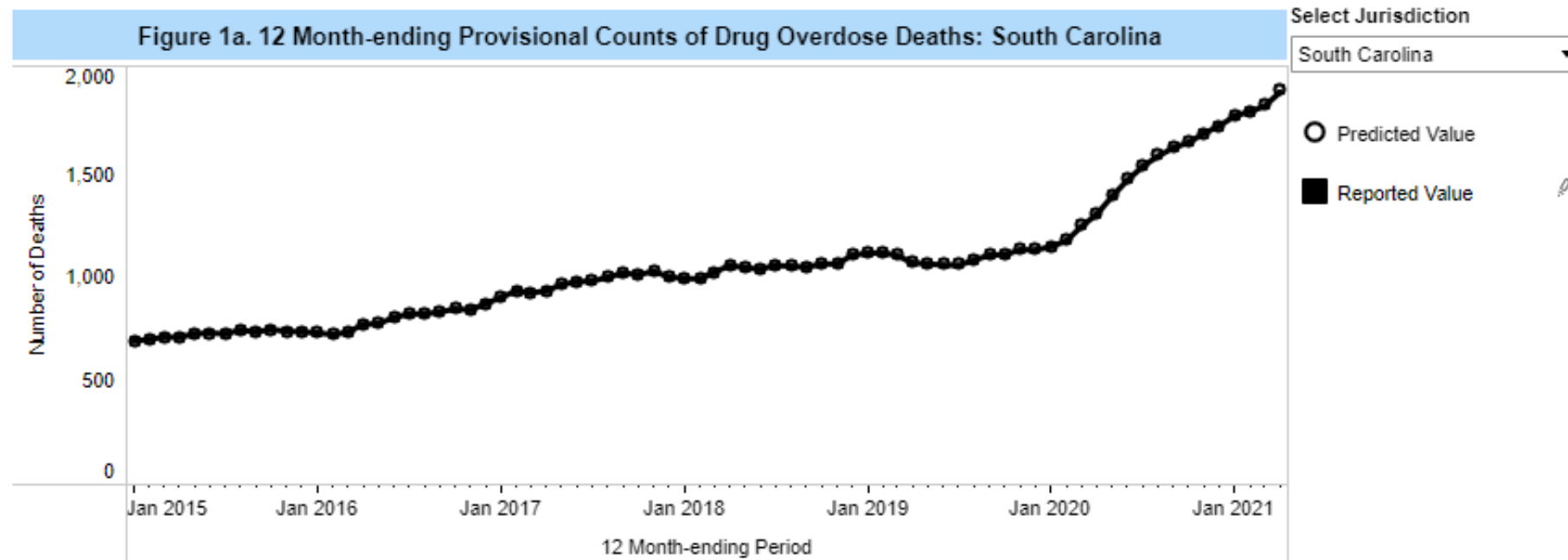


Opioid Biosurveillance Program at the South Carolina Public Health Laboratory

***Beth Bair, MS
Director, Chemistry Division***



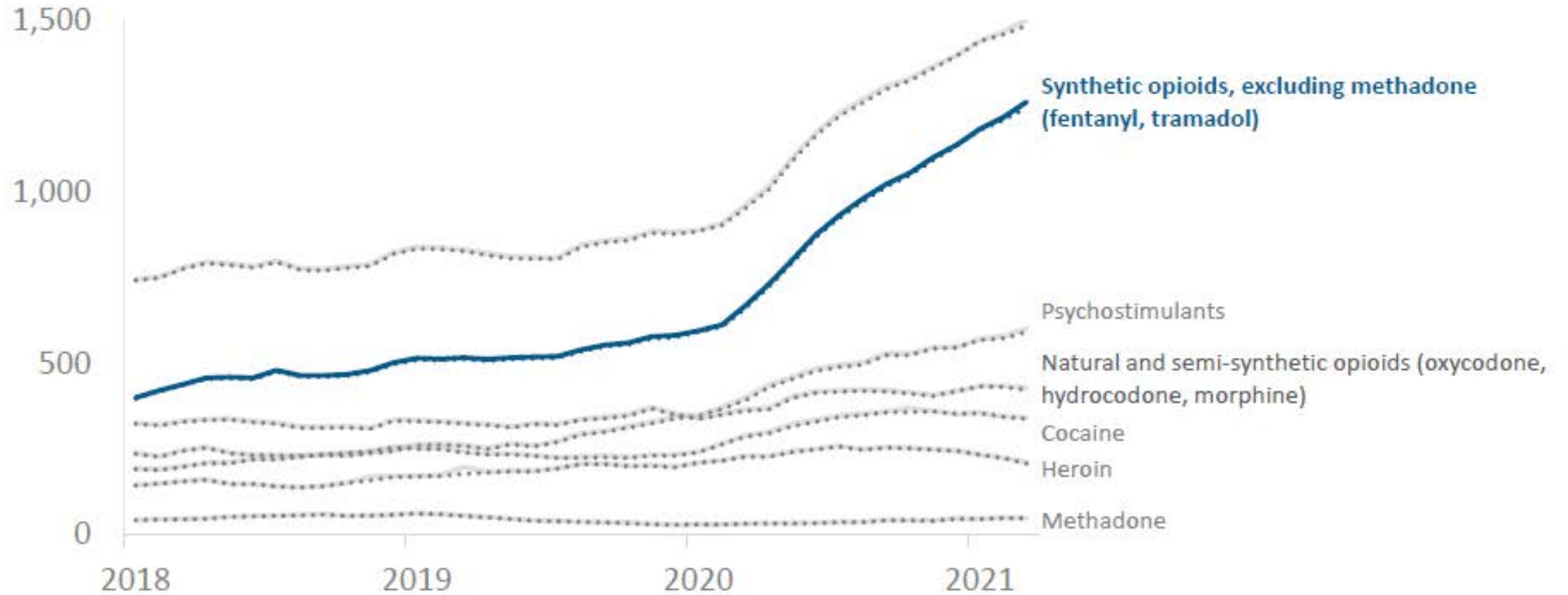
- CDC predicts 1,729 drug overdose deaths (ODs) in South Carolina (SC) in 2020, a 52.9% increase over 2019.
- 1,133 (65.4%) of the total predicted OD's for SC in 2020 were estimated to involve synthetic opioids, including fentanyl. Deaths involving synthetic opioids are estimated to have increased 97% from 2019 to 2020.



12 Month-Ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class in South Carolina

Any opioids (includes synthetic and other opioids)

Number
of Drug
Overdose
Deaths



*Deaths may involve more than one drug.

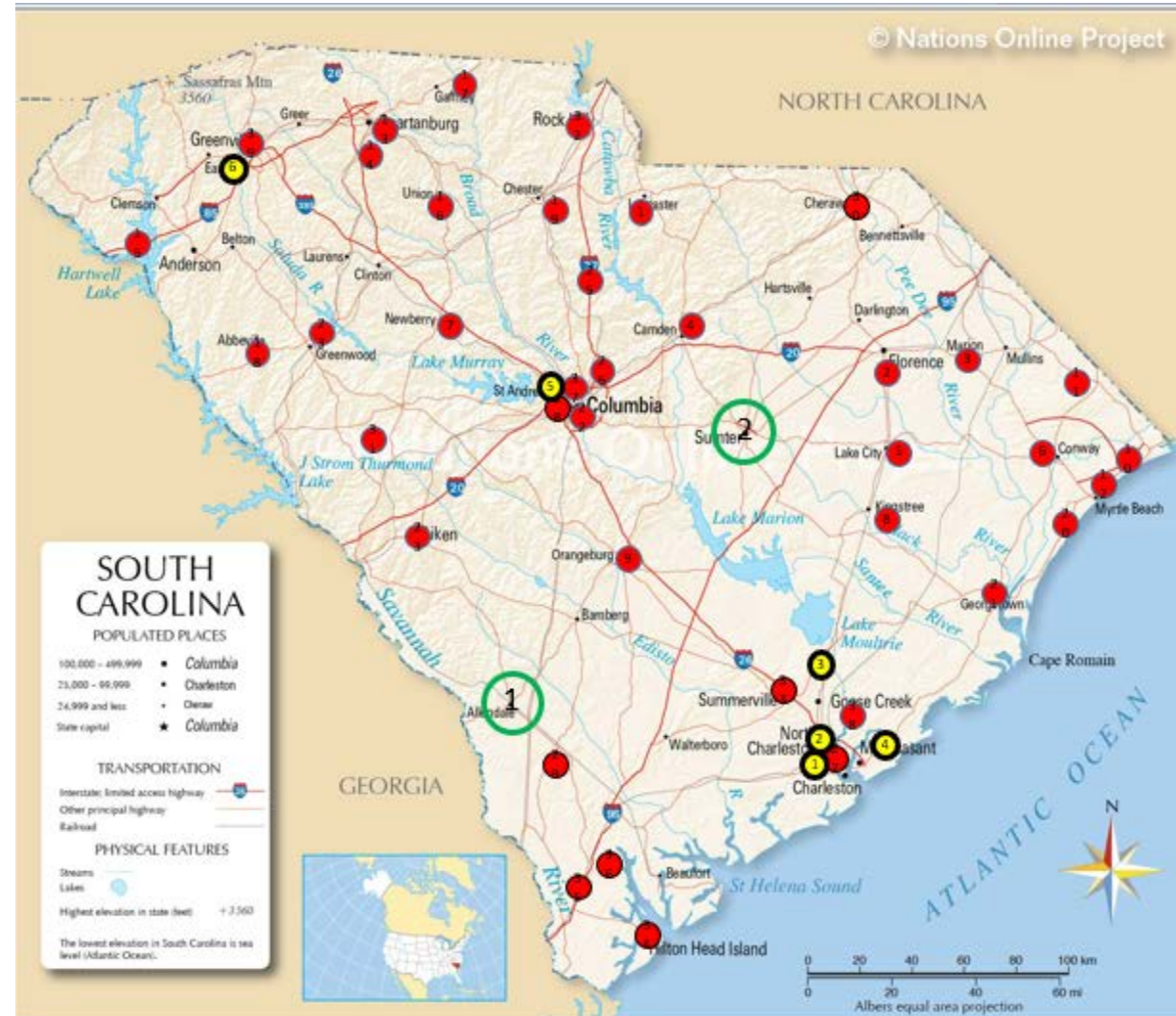
South Carolina's Opioid Biosurveillance Program

-> 29 signed MOA's
(includes 37 hospitals plus 2 freestanding ER's)

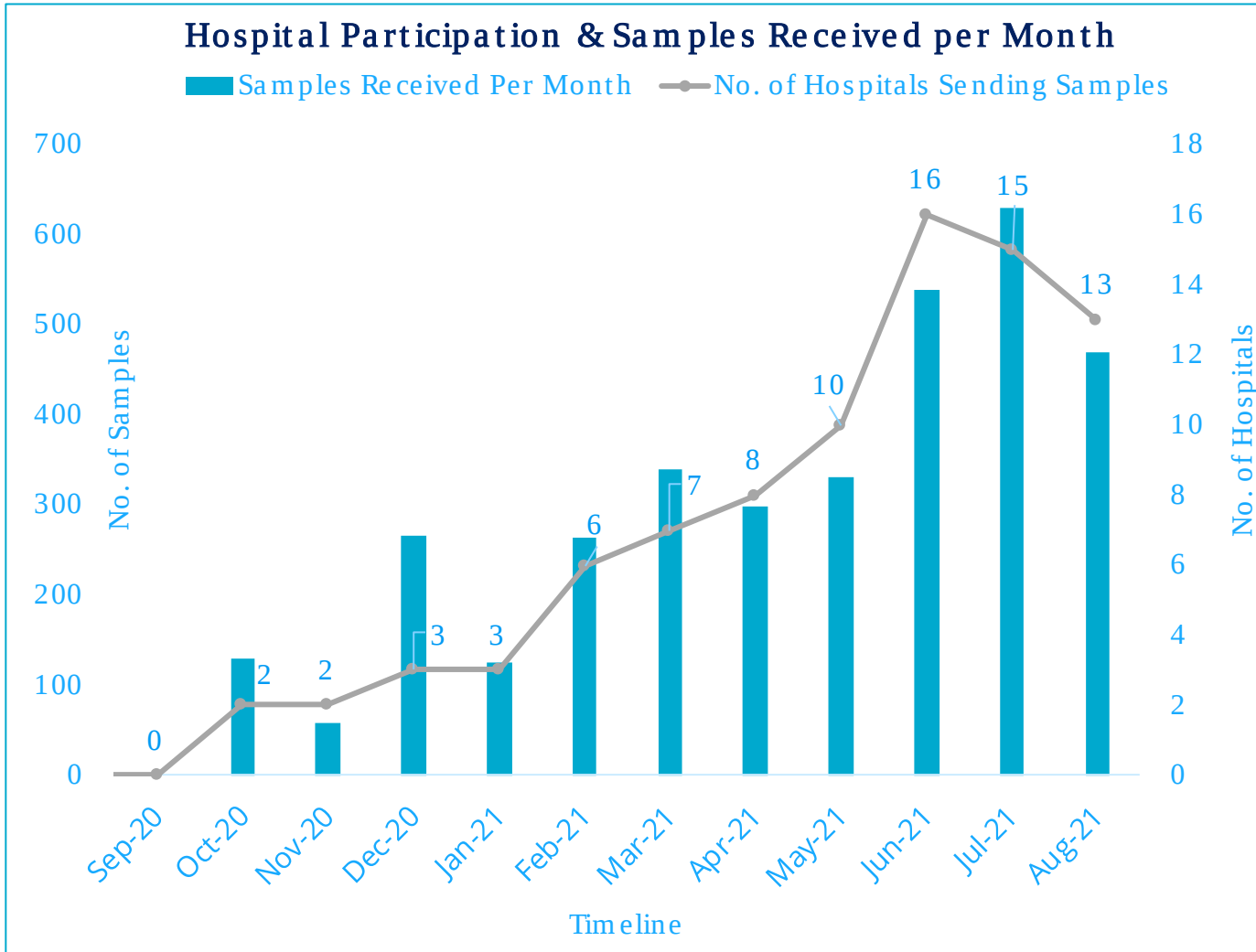
-> 71% of hospitals with signed MOA's have submitted de-identified urine specimens

-> 4,767 specimens received since Oct. 2020

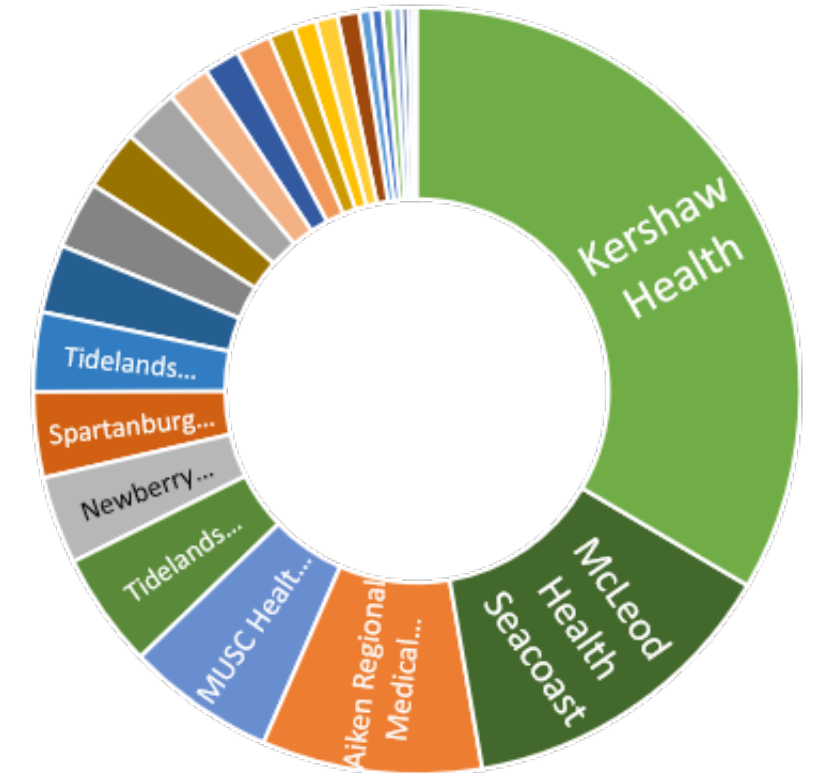
-> 4,225 specimens analyzed since Oct. 2020



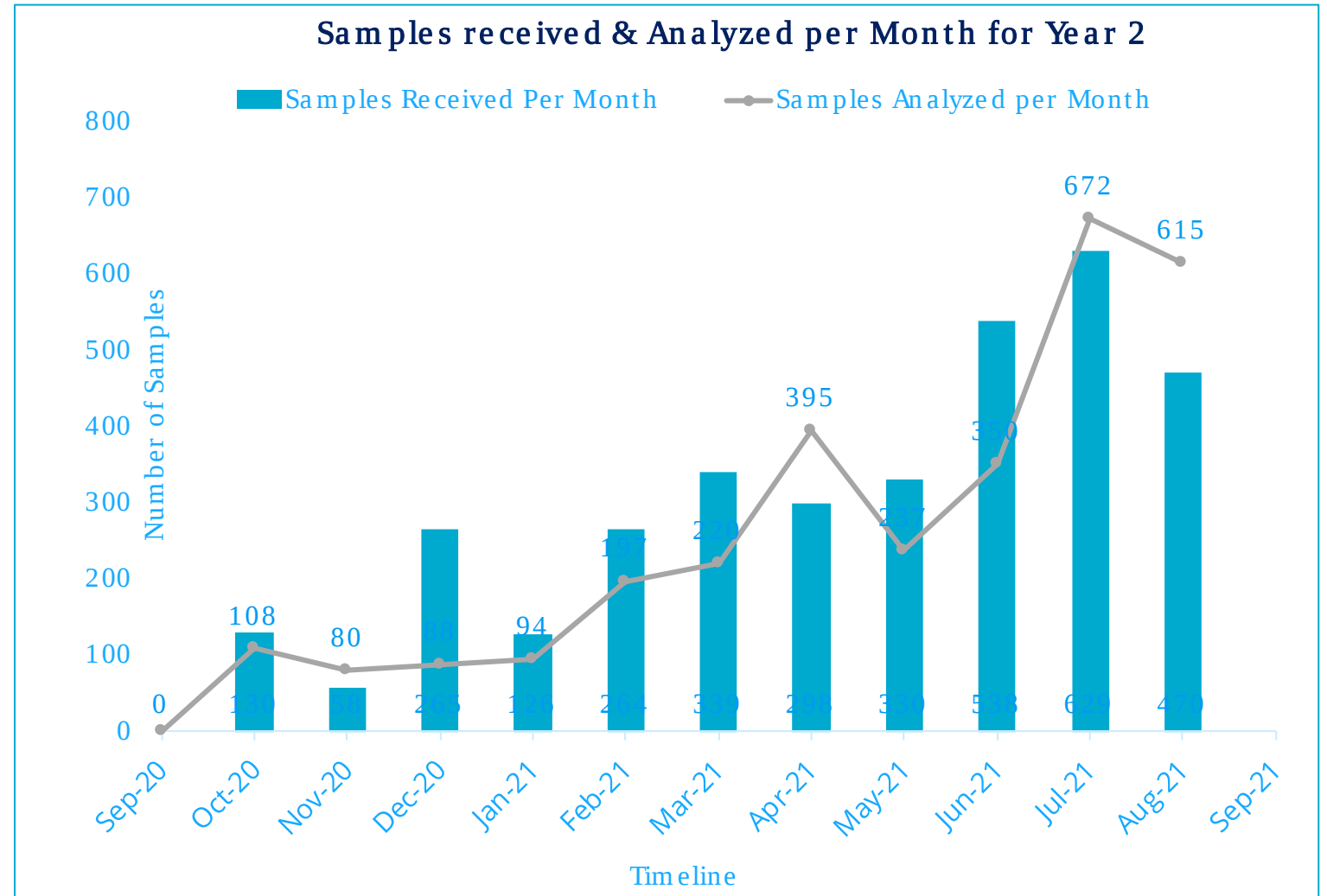
Hospital Participation per Month



Hospital Participation for OD2A Year 2



Samples Received and Tested



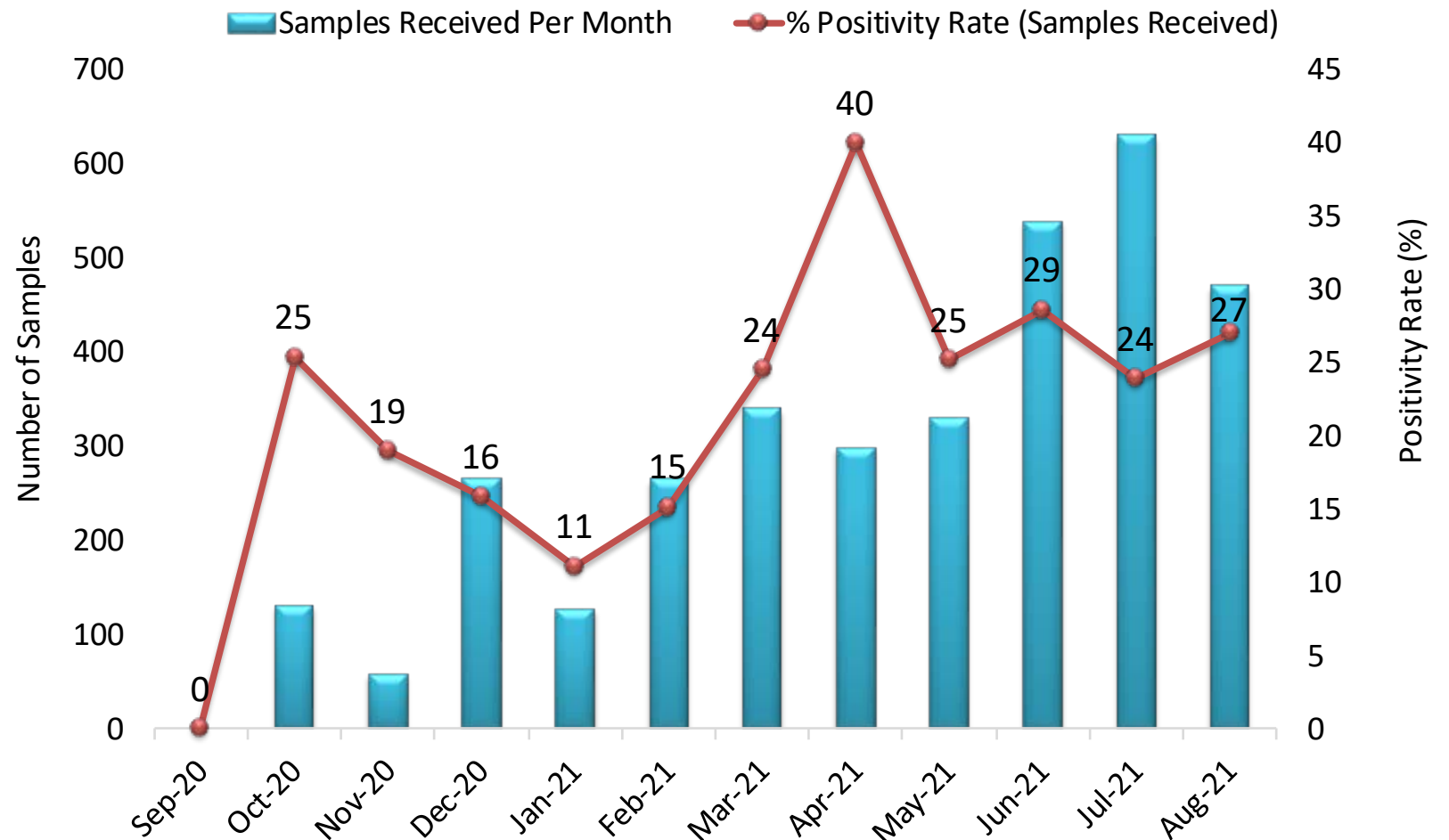


Samples Received per Month and Percent Positivity

Month	Samples Received	Positive Samples
Oct 2020	130	30
Nov 2020	58	13
Dec 2020	265	16
Jan 2021	126	17
Feb 2021	264	21
Mar 2021	339	30
Apr 2021	298	94
May 2021	330	106
June 2021	538	85
July 2021	629	150
Aug 2021	470	127
Total	3447	856

Avg. Percent Positivity: 25%

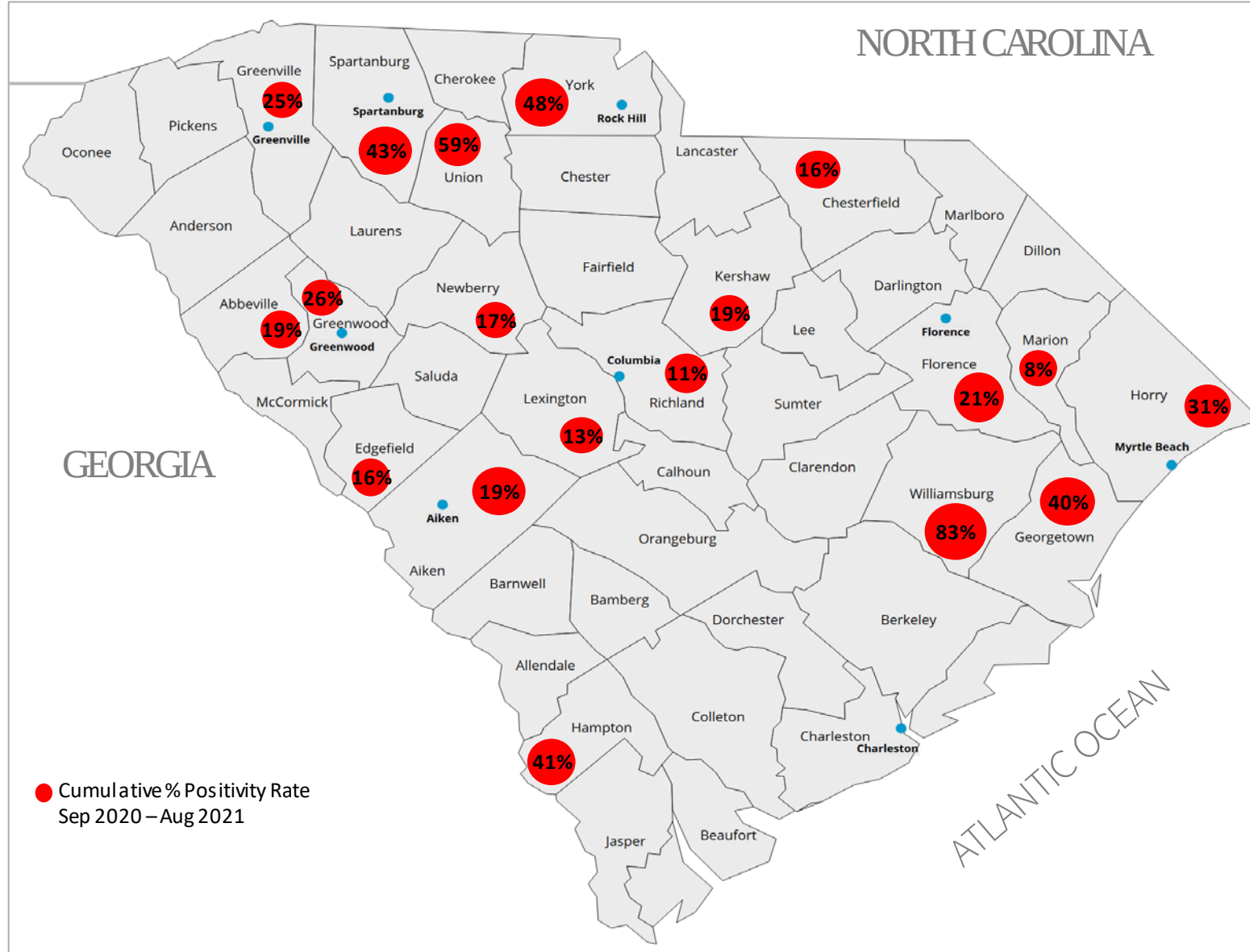
Samples Received and % Positivity Rate for Year 2



Month	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21
Samples Received	130	58	264	126	264	339	298	330	538	629	470
Positivity Rate	25%	19%	16%	11%	15%	25%	40%	25%	29%	24%	27%
Most Frequent Analytes	•Fentanyl •4-ANPP	•Fentanyl •4-ANPP	•Fentanyl •4-ANPP •p-Fluoro fentanyl	•Fentanyl •4-ANPP	•Fentanyl •4-ANPP •p-Fluoro fentanyl	•Fentanyl •4-ANPP •p-Fluoro fentanyl	•Fentanyl •p-Fluoro fentanyl •4-ANPP	•Fentanyl •4-ANPP •p-Fluoro fentanyl	•Fentanyl •4-ANPP •p-Fluoro fentanyl	•Fentanyl •4-ANPP •p-Fluoro fentanyl	•Fentanyl •4-ANPP •p-Fluoro fentanyl
Other Analytes Tested Positive	•Acetyl Fentanyl •Acryl Fentanyl •p-Fluoro fentanyl •Furanyl fentanyl •Valeryl fentanyl	•Acryl Fentanyl •Furanyl fentanyl	•Acetyl Fentanyl •Acryl Fentanyl •Furanyl fentanyl •b-Hydroxythio-fentanyl	•Furanyl fentanyl •p-Fluoro fentanyl •Carfentanil	•Acetyl Fentanyl •Acryl Fentanyl •p-Fluoro fentanyl •Valeryl Fentanyl •b-Hydroxythio-fentanyl	•Acetyl Fentanyl •p-Fluorobutryl fentanyl •Valeryl fentanyl •Butyryl fentanyl •U-47700 •Acryl Fentanyl •3-Methyl Fentanyl •U-48800	•Norfentanyl •Naloxone •Acetyl Fentanyl •Acryl Fentanyl •Butyryl fentanyl •Valeryl fentanyl •Carfentanil	•Norfentanyl •Naloxone •Acetyl Fentanyl •Acryl Fentanyl •Butyryl fentanyl •Valeryl fentanyl •p-Fluorobutryl fentanyl •Methoxyacetyl Fentanyl	•Norfentanyl •Naloxone •Acetyl Fentanyl •Acryl Fentanyl •Butyryl fentanyl •Methoxyacetyl Fentanyl •p-Fluorobutryl fentanyl •Valeryl fentanyl	•Norfentanyl •Naloxone •Acetyl Fentanyl •Acryl Fentanyl •Butyryl fentanyl •Valeryl fentanyl •Methoxyacetyl Fentanyl	•Norfentanyl •Naloxone •Acetyl Fentanyl •Acryl Fentanyl •Butyryl fentanyl •p-Fluorobutryl fentanyl •Methoxyacetyl fentanyl
Facilities sending samples	1.Kershaw Health 2.McLeod Seacoast	1.Kershaw Health 2.McLeod Seacoast	1.Kershaw Health 2.McLeod Seacoast 3.MUSC Florence	1.Kershaw Health 2.McLeod Seacoast 3.MUSC Florence	1.Kershaw Health 2.McLeod Seacoast 3.Newberry Hospital 4. Conway MC 5. MUSC Marion 6. Lake City Community Hospital	1.Kershaw Health 2.McLeod Seacoast 3.Newberry Hospital 4.Conway MC 5. MUSC Florence 6. McLeod Health Loris 7.Tidelands Waccamaw	1.Tidelands Georgetown 2.McLeod Seacoast 3.Kershaw Health 4.Conway MC 5.Aiken Regional MC 6.Abbeyville Area MC 7. Tidelands Waccamaw 8.Newberry Hospital	1.Providence NE 2.Conway MC 3.McLeod Seacoast 4.Kershaw Health 5.MUSC Florence 6.Aiken Regional MC 7.Tidelands Waccamaw Forest 8.Providence-Downtown 9.Lexington MC 10.Newberry Hospital	1.Williamsburg RMC 2.McLeod Sea coast 3.Spartanburg Pel ham 4.Spartanburg Church St 5.Tidelands Georgetown 6.McLeod Health Carolina 7. Tidelands Waccamaw 8.Lexington MC 9.Kershaw Health 10.Union MC 11.Abbeyville Area MC 12.McLeod Health Cheraw 13.Edgefield County Hospital 14.Conway MC 15.Hampton RMC 16.Aiken RMC	1.Kershaw Health 2.Edgefield County Hospital 3.Spartanburg Pel ham 4.Aiken RMC 5.Tidelands Waccamaw 6.Newberry Hospital 7.McLeod Sea coast 8.Self Regional Greenwood 9.Tidelands Georgetown 10.Piedmont MC 11.Spartanburg MC (Church St) 12.Union MC 13.McLeod Health Cheraw 14. McLeod Health Loris 15.Lexington MC	1.Abbeyville Area Medical Center 2.Edgefield County Hospital 3.Piedmont Medical Center 4.McLeod Sea coast 5.Spartanburg Pel ham 6.Conway Medical Center 7.Spartanburg Medical Center (Church St) 8.Tidelands Waccamaw 9.Newberry Hospital 10.Columbia Veterans Administration Hospital 11.St. F Bon Secours Downtown 12.Aiken Regional Medical Center 13.Kershaw Health

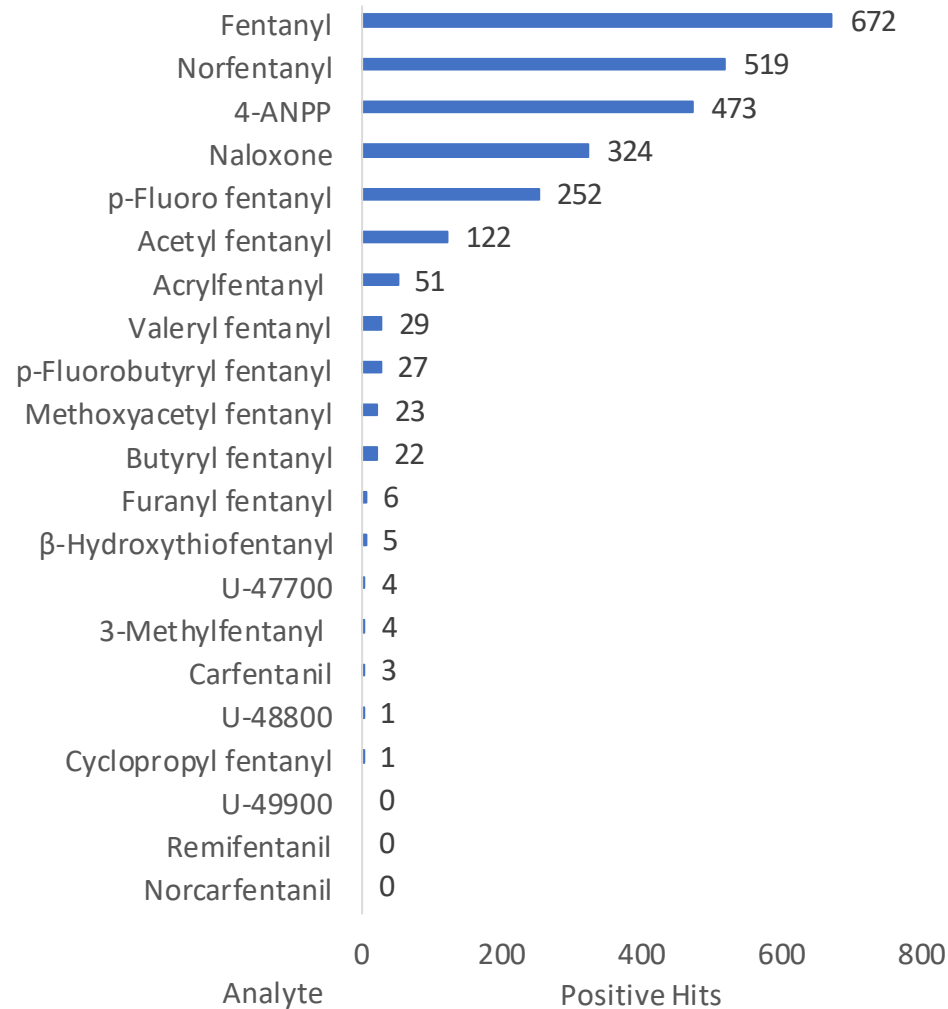


SC Cumulative % Positivity Map

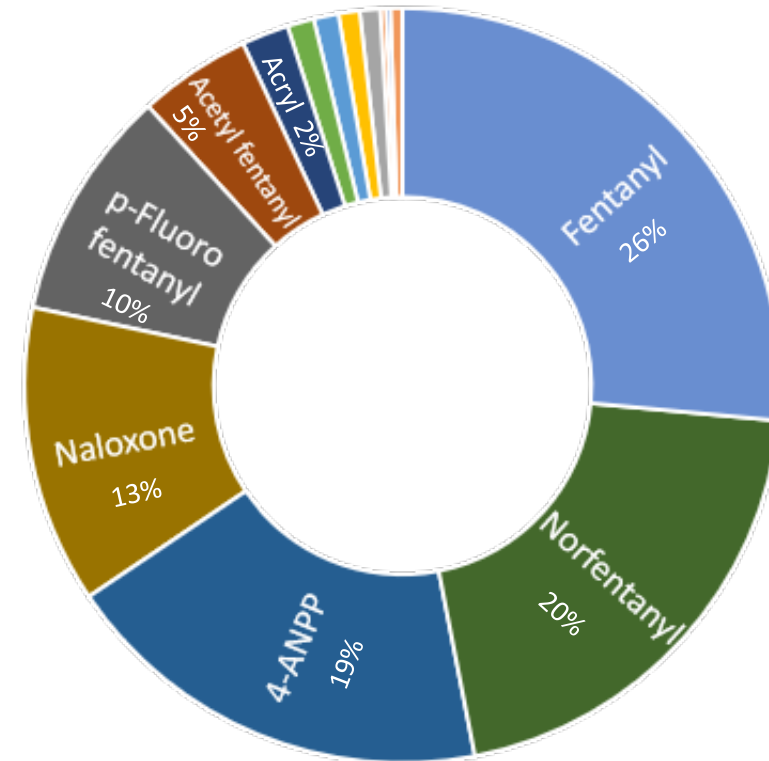


Cumulative percent positivity is calculated by dividing the total number of positive samples (samples that tested positive for any of the fentanyl analogues) by the total number of samples received in OD2A year 2 for each county.

Opioid Biosurveillance – Analyte Trends



Hits per Analyte
Sep 2020 – Aug 2021



Total Analytes Detected in 856 Positive Samples: 2538

Suspected Overdose Data



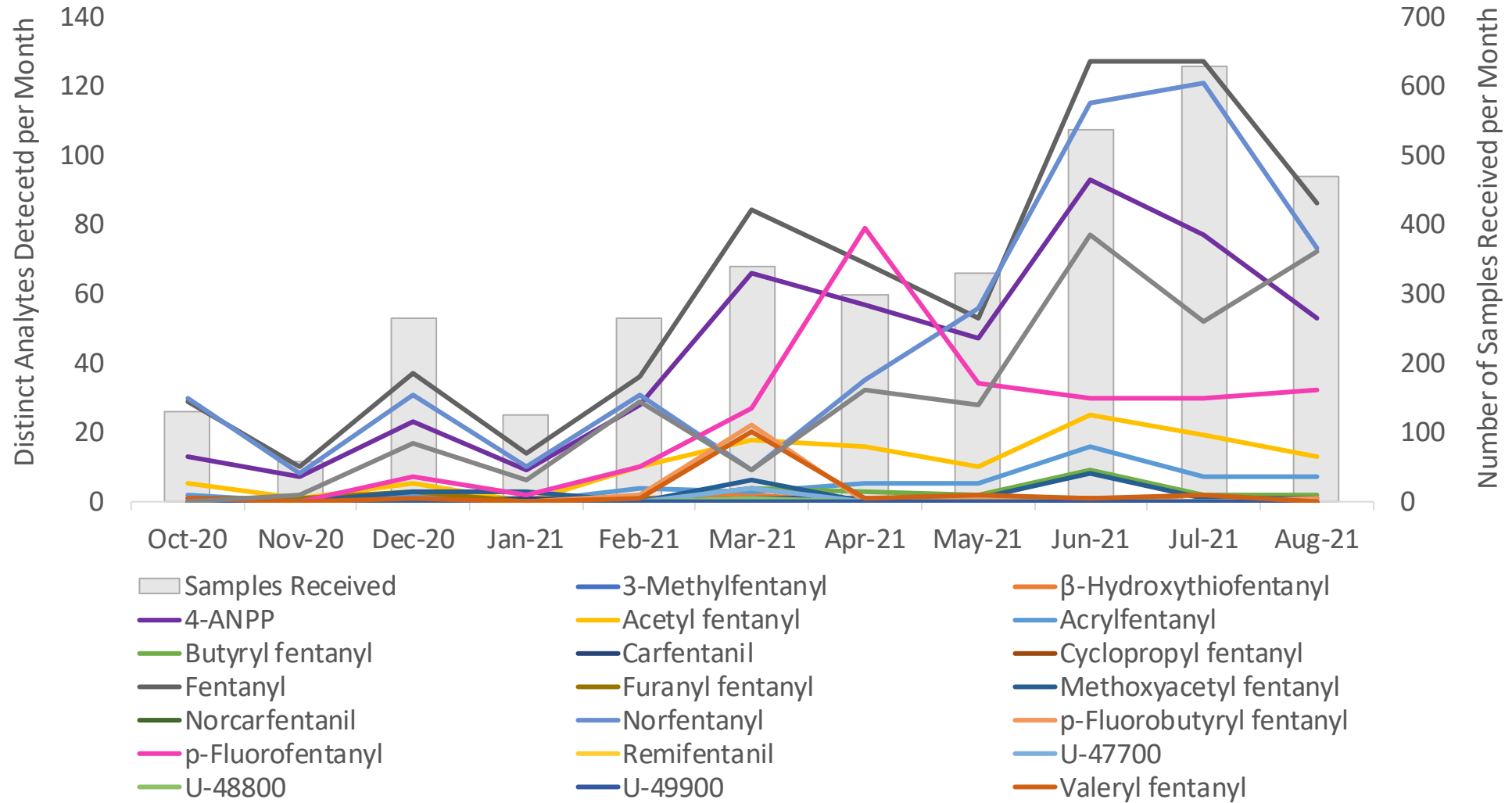
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Analyte	Month of Samples Received											Total
	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	
3-Methylfentanyl	0	0	0	0	0	4	0	0	0	0	0	4
β-Hydroxythiofentanyl	0	0	1	0	1	2	0	0	1	0	0	5
4-ANPP	13	7	23	9	28	66	57	47	93	77	53	473
Acetyl fentanyl	5	1	5	0	10	18	16	10	25	19	13	122
Acrylfentanyl	2	0	2	0	4	3	5	5	16	7	7	51
Butyryl fentanyl	0	0	0	0	0	4	3	2	9	2	2	22
Carfentanil	0	0	0	1	0	1	1	0	0	0	0	3
Cyclopropyl fentanyl	0	0	0	0	0	0	0	0	1	0	0	1
Fentanyl	29	10	37	14	36	84	69	53	127	127	86	672
Furanyl fentanyl	1	1	3	0	1	0	0	0	0	0	0	6
Methoxyacetyl fentanyl	0	0	3	3	0	6	0	1	8	1	1	23
Norcarfentanil	0	0	0	0	0	0	0	0	0	0	0	0
Norfentanyl	30	8	31	10	31	9	35	56	115	121	73	519
p-Fluorobutyryl fentanyl	0	0	0	0	2	22	0	1	1	0	1	27
p-Fluorofentanyl	1	0	7	2	10	27	79	34	30	30	32	252
Remifentanyl	0	0	0	0	0	0	0	0	0	0	0	0
U-47700	0	0	0	0	0	4	0	0	0	0	0	4
U-48800	0	0	0	0	0	1	0	0	0	0	0	1
U-49900	0	0	0	0	0	0	0	0	0	0	0	0
Valeryl fentanyl	1	0	1	0	1	20	1	2	1	2	0	29
Naloxone	0	2	17	6	29	9	32	28	77	52	72	324
Total Analyte Hits per Month	82	29	130	45	153	280	298	239	504	438	340	2538
Samples Received	130	58	265	126	264	339	298	330	538	629	470	3447
Analyte Hits per 100 Samples	63	50	49	36	58	83	100	72	94	70	72	74



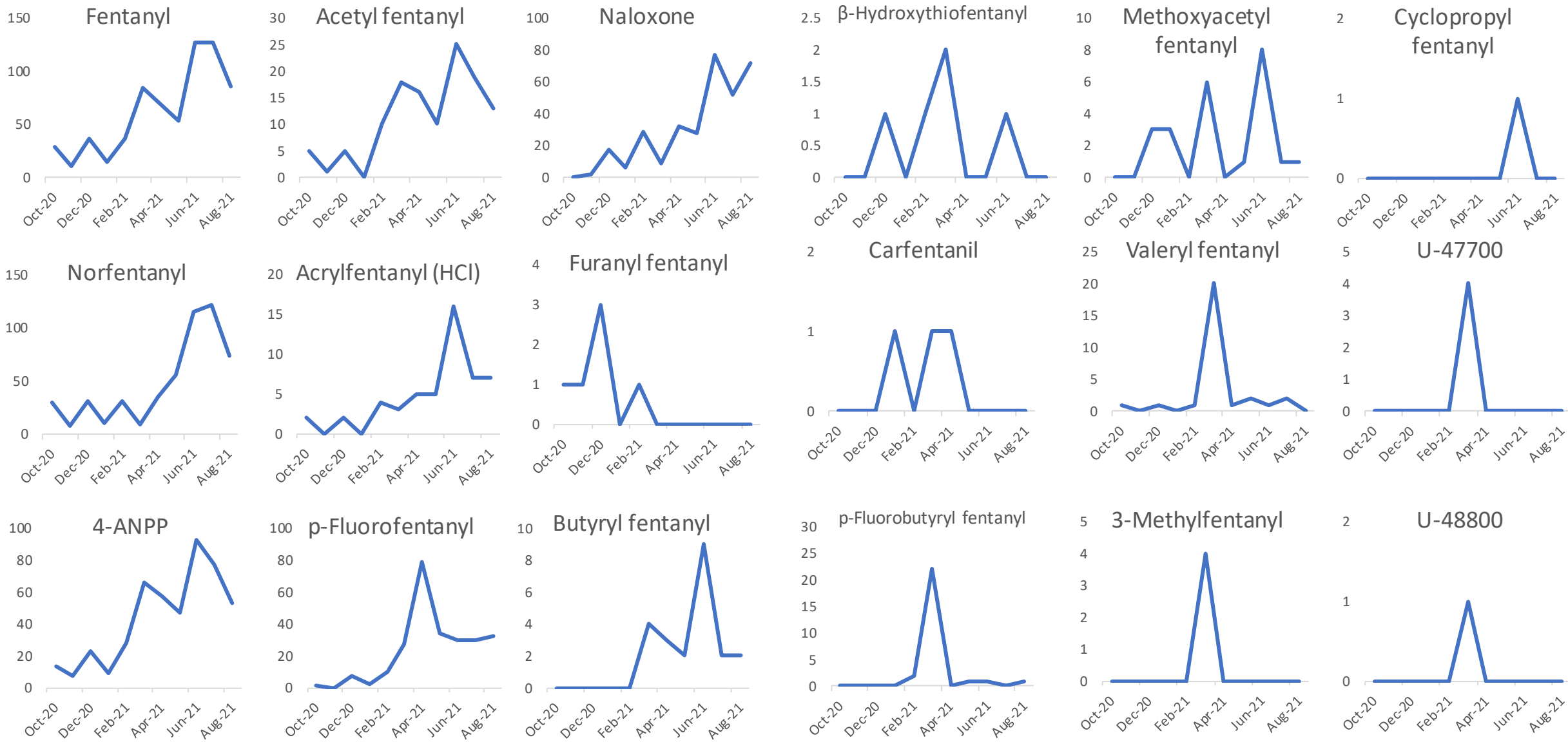
OD2A Year 2 Analyte Trends and Samples Received





South Carolina Department of Health and Environmental Control
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Variable Y-Axis



Challenges

- We're chemists.....
- Adapting to a program that is growing very fast.
- Staffing (chemists, EPI, biostatistics), instrumentation, and LIMS.
- Hospitals all have their own way of doing things (sample submission and using the data).
- Hospital confusion with reporting.



Successes

- Results reported to hospitals as positive/negative for each analyte.
- Expanding the program to include 17 additional fentanyl analogs and adding a new method for stimulants and benzodiazepines.
- Hiring another chemist and getting ready to install a new LC-MS-MS for opioids.
- Hospital participation recognition – certificates and media release.

Acknowledgements

- OD2A Grant
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