

Supporting Information for

White-tailed deer (*Odocoileus virginianus*) may serve as a wildlife reservoir for nearly extinct SARS-CoV-2 variants of concern

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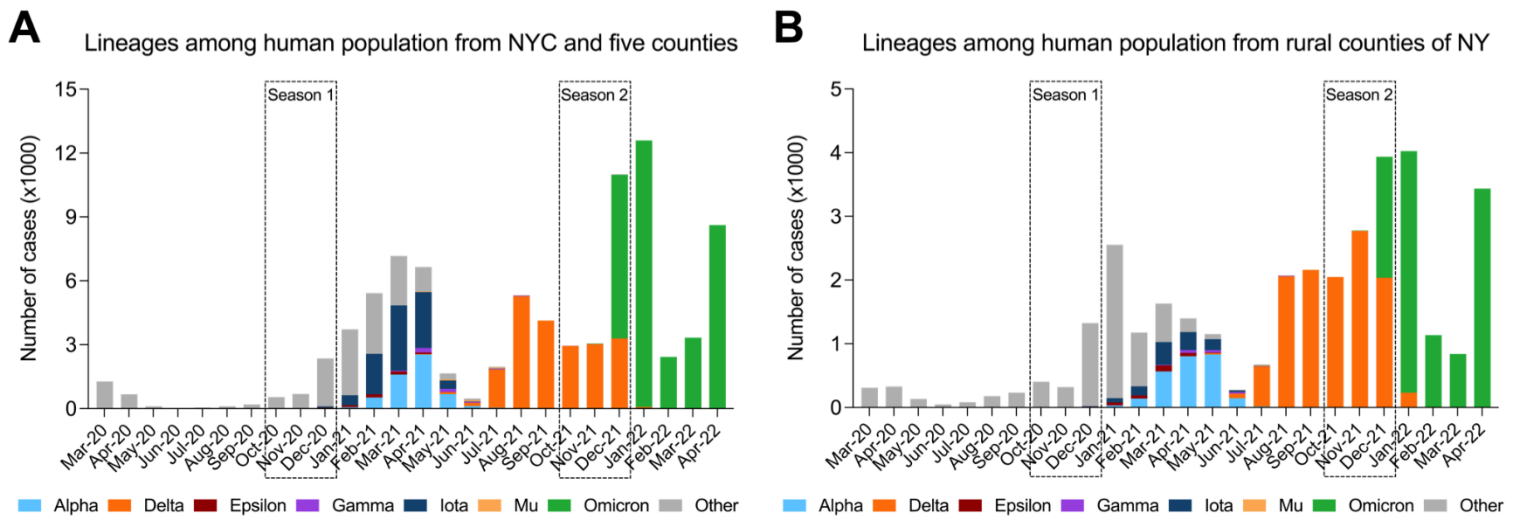


Fig. S1. Distribution of SARS-CoV-2 lineages across the rural and urban counties of State of New York (NY). (A) Daily distribution of SARS-CoV-2 human cases (March 2020 to April 2022) from urban counties in NY (NYC and five counties) and (B) rural counties in NY. The colored stacked bars represent proportion of each SARS-CoV-2 lineage. Total cases/sequences from March 2020 to April 2022 in NYC ($n = 86,142$) or in rural NY ($n = 34,686$).

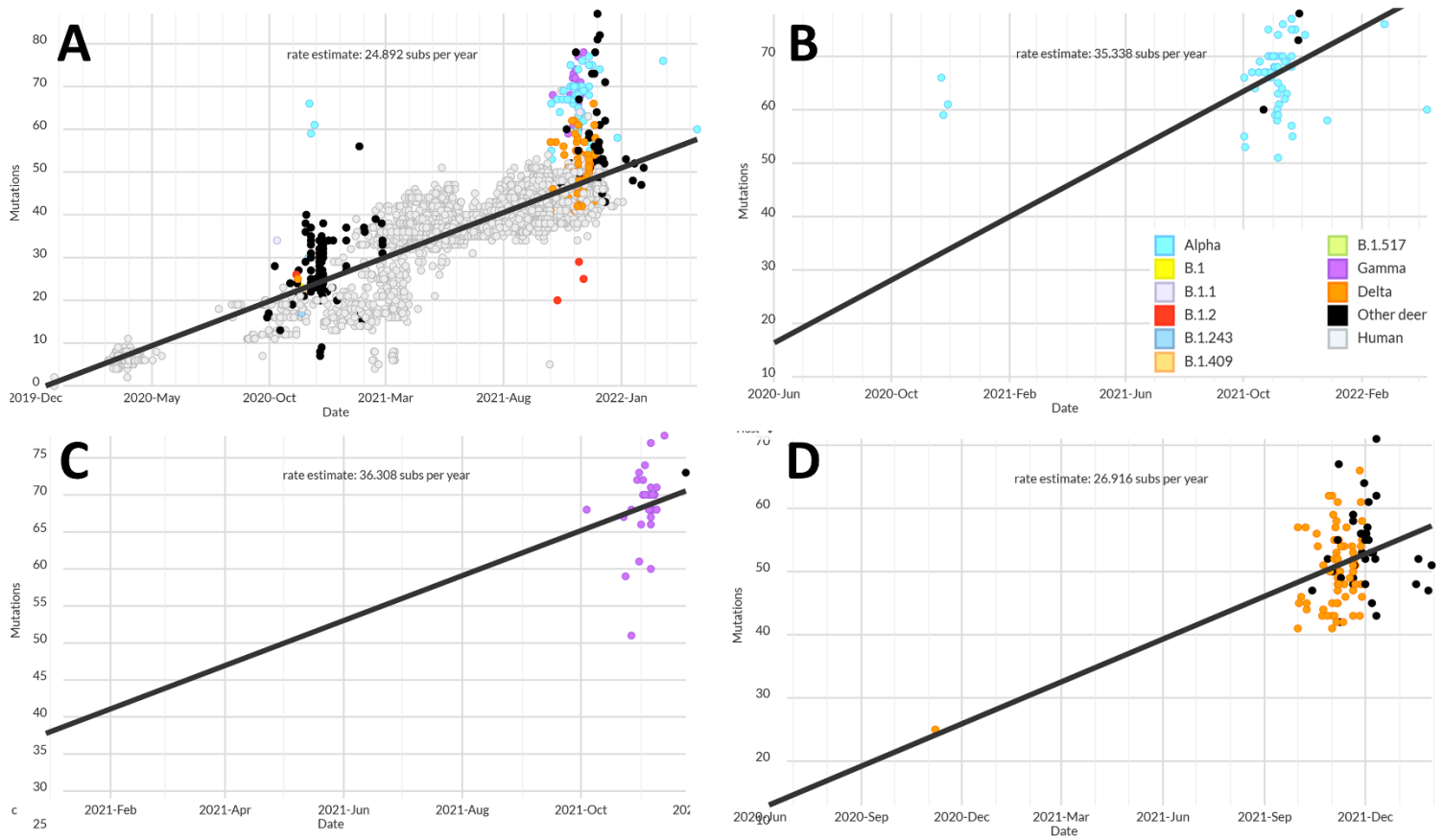


Fig. S2. Estimates of substitution rates per year. Colored dots (sky blue: Alpha; purple: Gamma and orange: Delta) represent SARS-CoV2 variants of concern (VOCs) derived from white-tailed deer (WTD) from this study, black dots represent the Pan-US SARS-CoV-2 sequences derived from WTD and grey dots represent SARS-CoV-2 sequences derived from human. The Y axis shows the number of mutations compared to the reference sequence Wuhan-1 (GenBank accession number MN908947.3). (A) Substitution rate of all WTD-derived sequences and 3,837 human-derived sequences, (B) Alpha VOC substitution rate in deer, (C) Gamma VOC substitution rate in deer and (D) Delta VOC substitution rate in deer.

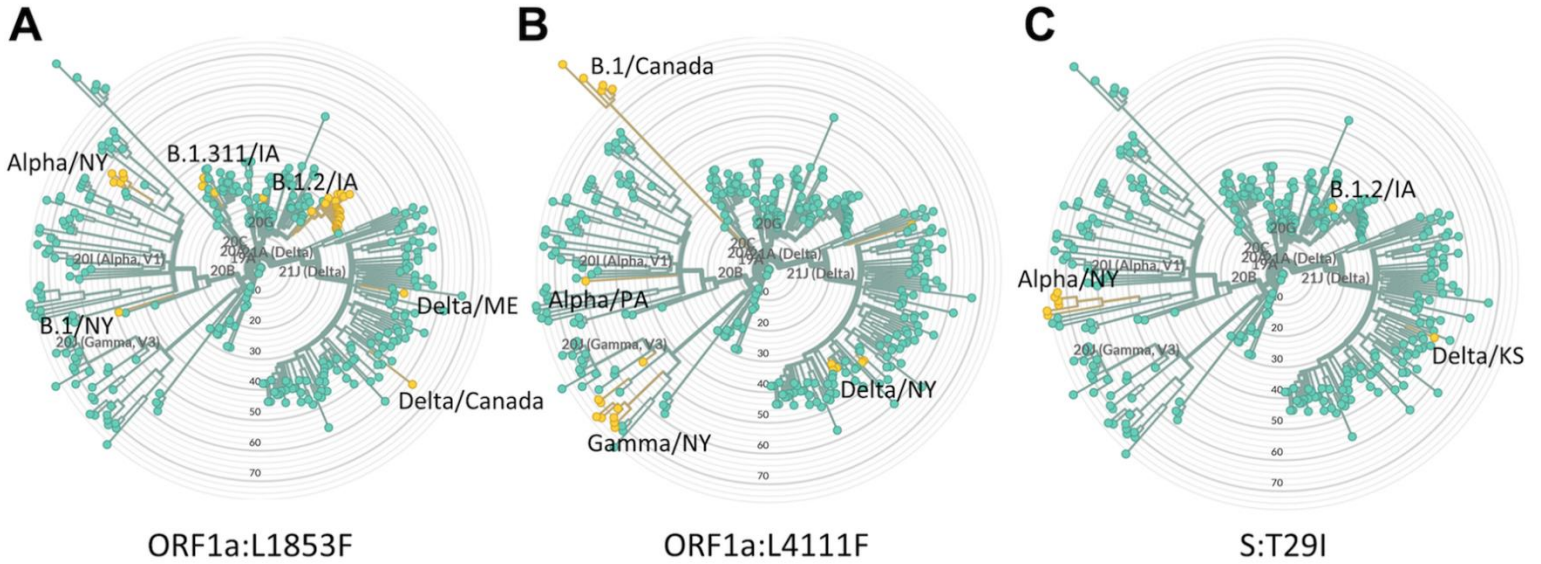


Fig. S3 Potential host-adaptive mutations detected in WTD SARS-CoV-2 samples. Mutations highlighted were selected by homoplasy consistency index, prevalence in white-tailed deer (WTD) derived sequences and detection in multiple geographical regions. Yellow nodes represent sequences with the mutation and green nodes represent the original amino acid. The subclades or nodes where the potential host-adaptive mutations were detected are identified with labels describing the lineage and the state where the samples were collected. (A) Mutation ORF1a:L1853F, (B) mutation ORF1a:L4111F, and (C) mutation S:T29I

Table S1. Number of retropharyngeal lymph nodes from white-tailed deer tested in each county in the State of New York (NY) in Seasons 1 (September - December 2020, n = 2700) and Seasons 2 (September - December 2021, n = 2762).

County	Tested 2020	Positive 2020	Tested 2021	Positive 2021
Albany	19	0	12	4
Allegany	157	0	148	70
Broome	98	0	97	14
Cattaraugus	115	0	143	32
Cayuga	48	0	42	11
Chautauqua	123	0	228	62
Chemung	75	1	82	16
Chenango	56	0	52	12
Clinton	69	0	56	1
Columbia	33	0	33	4
Cortland	27	0	21	1
Delaware	77	1	78	0
Dutchess	43	0	31	5
Erie	109	0	84	17
Essex	32	0	40	7
Franklin	35	0	24	2
Fulton	7	0	12	0
Genesee	45	0	32	5
Greene	23	0	61	2
Hamilton	7	0	9	1
Herkimer	28	0	20	0
Jefferson	42	0	39	8
Lewis	30	0	22	10
Livingston	52	0	69	23
Madison	38	0	39	10
Monroe	41	2	43	9
Montgomery	16	0	10	0
Nassau			5	0
Niagara	65	0	39	4
Oneida	65	0	55	6

Onondaga	55	0	49	9
Ontario	85	0	40	7
Orange	66	0	70	32
Orleans	32	1	31	6
Oswego	64	0	46	2
Otsego	29	0	35	8
Putnam	13	0	17	0
Rensselaer	24	0	53	12
Rockland	5	0	27	2
Saratoga	16	0	24	0
Schenectady	10	0	7	0
Schoharie	26	0	29	3
Schuyler	21	0	22	3
Seneca	50	0	29	1
St. Lawrence	49	0	37	5
Steuben	120	4	143	30
Suffolk	24	0	23	1
Sullivan	64	2	97	45
Tioga	44	0	60	19
Tompkins	29	0	33	12
Ulster	41	1	47	14
Warren	13	0	13	0
Washington	40	0	56	4
Wayne	52	0	52	10
Westchester	24	0	58	1
Wyoming	59	0	55	15
Yates	24	0	22	1

Table S2. The presence of SARS-CoV-2 in white-tailed deer in the State of New York has been observed in spatial clusters in the hunting Season 2 (September - December 2021)¹.

cluster	Total IUMPS ²	Radius (Km)	Observed (O)	Expected (E)	O/E	Relative Risk (RR)	Log-Likelihood Ratio	p-Value ³
C1	29	55.31	89	36.86	2.41	2.68	41.029	<0.001
C2	14	21.70	56	22.12	2.53	2.70	27.62	<0.001
C3	57	67.98	0	20.85	0	0	23.91	<0.001
C4	22	34.75	0	19.59	0	0	22.43	<0.001
C5	26	80.43	1	19.80	0.049	1.1	18.42	<0.001
C6	20	64.38	0	15.38	0	0	17.53	<0.001
C7	17	21.17	30	11.79	2.54	2.63	14.58	<0.001
C8	6	17.89	14	4.21	3.32	3.38	11.11	0.016
C9	12	25.18	0	9.27	0	0	10.50	0.040
C10	24	36.33	1	10.95	0.091	0.090	8.79	0.154
C11	20	28.30	2	13.06	0.15	0.15	8.60	0.164
C12	17	27.21	50	29.49	1.70	1.76	8.42	0.187
C13	7	16.99	13	4.63	2.81	2.85	7.54	0.404
C14	12	22.57	7	6.11	0	0	6.90	0.585
C15	8	19.84	0	5.05	0	0	5.70	0.921
C16	12	29.41	0	4.63	0	0	5.22	0.983
C17	10	20.02	1	6.5	0.14	0.14	4.68	0.996
C18	3	10.66	8	2.95	2.71	2.74	4.83	0.999
C19	13	46.33	1	6.53	0.15	0.15	4.26	0.999

¹ Results of the spatial clusters model

² IUMPS (Internal database ID for unique towns from the IPUMS geospatial dataset, which is based on the US Census TIGER data)

³ Statistically significant at $p \leq 0.005$.

Table S3. Results of the logistic regression model using demographic and seasonal factors for SARS-CoV-2 testing in white-tailed deer positive in the State of New York, Season 1 (September - December 2020) and Season 2 (September - December 2021)¹.

Response Variable	Predictor variables	OR ²	95% CI ³	P-Value ⁴
Testing Result	Season 2021-22	59.04	34.83-111.08	<0.01
	Yearling	0.865	0.70-1.059	0.164
	Male	1.952	1.591-2.407	<0.01
Testing Result	Yearling	0.876	0.711-1.07	0.210
	Male	1.906	1.55-2.355	<0.01

¹ Outcome (N = SARS-CoV-2 cases from 5,462 deer samples)

² OR- Odds ratio

³ CI- Confidence Interval of the OR

⁴ Statistically significant at P≤0.05

Table S4. Mutations above 4% frequency in each variant of concern (VOC) detected in the spike gene of New York (NY) white-tailed deer (WTD) SARS-CoV-2 with frequencies < 1% in GISAID database.

Lineage	nt. position	Region	a.a mutation	Proportion in VOC of NY WTD ¹	Number of GISAID sequences with the mutation ²	Proportion in lineage or sublineages
Alpha	21604	S	Q14H	9.3	7258	<0.5%
Delta	21635	S	P25S	6	4331	1%
Alpha	21648	S	T29I	9.3	10751	<0.5%
Delta	21806	S	P82T	6.3	1021	1%
Alpha	21853	S	K97N	8.3	2995	<0.5%
Alpha	21969	S	C136S	11.4	50	<0.5%
Alpha	22095	S	D178G	6.7	1095	<0.5%
Alpha	22115	S	N185D	10.9	1622	<0.5%
Alpha	22118	S	F186L	15.6	1159	<0.5%
Alpha	22336	S	W258C	27.8	441	<0.5%
Alpha	22896	S	V445A	6.3	738	<0.5%
Gamma	23253	S	Q564L	40.7	167	<0.5%
Alpha	23264	S	D568N	5.5	297	<0.5%
Alpha	23268	S	I569T	5.5	109	<0.5%
Delta	23609	S	R683W	5.7	1516	<0.5%
Alpha	24054	S	A831V	7.3	5776	<0.5%
Gamma	24086	S	G842S	11.1	1611	<0.5%
Gamma	24372	S	S937L	7.7	37	<0.5%
Alpha	24914	S	D1118Y	12.7	6222	<0.5%
Alpha	25169	S	L1203F	7.3	2256	<0.5%
Delta	25169	S	L1203F	4.3	2256	1%
Alpha	25184	S	Q1208E	7.3	515	<0.5%
Alpha	25317	S	S1252F	16.4	9185	<0.5%

¹ Proportion in sequences obtained in the present study

² As of June 6th 2022

Table S5. Mutations above 30% frequency in each variant of concern (VOC) of New York (NY) white-tailed deer (WTD) SARS-CoV-2 with frequencies < 1% in GISAID database.

Lineage	Nt. position	Region	A.a mutation	Proportion in VOC of NY WTD ¹	Number of GISAID sequences with the mutation ²	Proportion in lineage or sublineages
Alpha	2207	Orf1a	I648L	27.8	2116	<0.5%
Alpha	28011	ORF8	H40Y	38.5	3871	<0.5%
Gamma	2937	Orf1a	T891I	100	7882	1%
Gamma	6723	Orf1a	T2153I	44	7390	<0.5%
Gamma	11511	Orf1a	T3749I	33.3	1880	1%
Gamma	12596	Orf1a	L4111F	33.3	1374	<0.5%
Gamma	14575	Orf1b	A370S	100	1154	<0.5%
Gamma	17738	Orf1b	T1424I	55.6	2443	<0.5%

¹ Proportion in sequences obtained in the present study

² As of June 6th 2022

Table S6. Homoplasious mutations detected in this study and other studies, with frequencies detected in New York (NY) white-tailed deer (WTD).

Lineage	nt position	Region	a.a mutation	Proportion in VOC of NY WTD ¹	Reference ²
Alpha	5822	Orf1a	L1853F	9.1	(1), (2)
Alpha	9510	Orf1a	T3082I	1.9	(1)
Alpha	9510	Orf1a	3082	1.9	(1)
Gamma	9711	Orf1a	S3149F	12	(1)
Delta	9711	Orf1a	S3149F	2.9	(1)
Delta	9714	Orf1a	T3150I	1.4	Present study
Alpha	11195	Orf1a	L3644F	14	(1)
Delta	11195	Orf1a	L3644F	1.4	(1)
Alpha	15451	Orf1b	G662S	1.8	(1)
Gamma	21618	S	T19I	34.6	(1)
Delta	21635	S	P25S	6	Present study
Alpha	21648	S	T29I	9.3	Present study
Delta	25563	ORF3a	Q57H	1.4	(1)

¹ Proportion within VOC in sequences obtained in the present study

² Study that identified mutation as homoplasious

Table S7. Detection of mutations close to variant of concern (VOC) defining mutations in the SARS-CoV-2 spike gene.

Lineage	a.a mutation in the spike of NY WTD SARS-CoV-2	Proportion in VOC of NY WTD ¹	VOC spike defining mutation
Alpha	D1118Y	12.7%	D1118H
Alpha	C136S	50%	D138H
Alpha	D568N	5.5%	A570D
Alpha	I569T	5.5%	A570D
Delta	R683W	5.7%	P681R

¹ Proportion within VOC in sequences obtained in the present study

Table S8. Metadata table of samples used in the present study.

Short ID	GISAID accession number	Genbank accession number	Date	Country	State	County	Town	Cluster	Sex	Lineage classification
119428	EPI_ISL_13610627	OP006287	2021-11-03	USA	New York	STEU	Cohocton		M	Alpha
119438	EPI_ISL_13610615	OP006288	2021-10-30	USA	New York	ALLE	Friendship	C2	M	Gamma
119457	EPI_ISL_13610654	OP006289	2021-11-07	USA	New York	LIVI	Dansville	C7	M	Alpha
119459	EPI_ISL_13610602	OP006290	2021-10-17	USA	New York	LIVI	North Dansville	C7	M	Alpha
119471	EPI_ISL_13610640	OP006291	2021-11-06	USA	New York	WYOM	Attica		M	Delta
119478	EPI_ISL_13610603	OP006292	2021-10-18	USA	New York	LIVI	Ossian	C7	M	Alpha
119480	EPI_ISL_13610610	OP006293	2021-10-27	USA	New York	LIVI	Geneseo		M	Alpha
119505	EPI_ISL_13610625	OP006294	2021-11-02	USA	New York	ALLE	Burns	C7	M	Alpha
119521	EPI_ISL_13610663	OP006295	2021-11-09	USA	New York	ALLE	Amity	C2	M	Gamma
119555	EPI_ISL_13610611	OP006296	2021-10-27	USA	New York	ALLE	Belfast	C2	M	Gamma
119558	EPI_ISL_13610621	OP006297	2021-11-01	USA	New York	SULL	Delaware	C1	M	Delta
119559	EPI_ISL_13610655	OP006298	2021-11-07	USA	New York	ALLE	Wellsville	C2	M	Gamma
119567	EPI_ISL_13610667	OP006299	2021-11-11	USA	New York	ORAN	Montgomery	C1	M	Alpha
119591	EPI_ISL_13610613	OP006300	2021-10-28	USA	New York	SULL	Delaware	C1	M	Delta
119607	EPI_ISL_13658779	OP006301	2021-10-27	USA	New York	ULST	Pine Bush	C1	M	Alpha
119611	EPI_ISL_13610628	OP006302	2021-11-03	USA	New York	ORAN	Warwick	C1	M	Delta
119627	EPI_ISL_13610678	OP006303	2021-11-20	USA	New York	ORAN	Montgomery	C1	M	Alpha
119639	EPI_ISL_13610626	OP006304	2021-11-02	USA	New York	ALLE	Scio	C2	M	Gamma
119640	EPI_ISL_13610605	OP006305	2021-10-23	USA	New York	ALLE	Alma	C2	M	Gamma
119642	EPI_ISL_13610664	OP006306	2021-11-09	USA	New York	ALLE	Amity	C2	M	Gamma
119770	EPI_ISL_13658805	OP006307	2021-11-19	USA	New York	DUTC	Verbank		M	Delta
119777	EPI_ISL_13658806	OP006308	2021-11-20	USA	New York	ULST	New Paltz		F	Alpha
119785	EPI_ISL_13610591	OP006309	2021-10-02	USA	New York	BROO	Conklin		F	Delta
119867	EPI_ISL_13610696	OP006310	2021	USA	New York	MADI	Sullivan		F	Alpha
119941	EPI_ISL_13658817	OP006311	2021	USA	New York	RENS			F	Alpha
119945	EPI_ISL_13610641	OP006312	2021-11-06	USA	New York	TOMP	Ithaca	C18	M	Delta
119983	EPI_ISL_13610642	OP006313	2021-11-06	USA	New York	TOMP	Danby	C13	M	Alpha
119988	EPI_ISL_13658807	OP006314	2021-11-20	USA	New York	CHEN	Sherburne		F	Alpha
119997	EPI_ISL_13610659	OP006315	2021-11-08	USA	New York	TIOG	Owego		M	Alpha
140996	EPI_ISL_13610693	OP006316	2021-11-28	USA	New York	SULL	Cochecton	C1	F	Delta
147551	EPI_ISL_13610614	OP006317	2021-10-29	USA	New York	LEWI	Martinsburg	C8	M	Delta
149738	EPI_ISL_13610691	OP006318	2021-11-27	USA	New York	TOMP	Ulysses	C18	M	Delta
149792	EPI_ISL_13658808	OP006319	2021-11-20	USA	New York	OTSE	Roseboom		M	Delta
149832	EPI_ISL_13658813	OP006320	2021-11-24	USA	New York	ORAN	Hamptonburgh	C1	M	Alpha
149844	EPI_ISL_13658816	OP006321	2021-11-28	USA	New York	SCHO	Jefferson		M	Delta
149845	EPI_ISL_13610688	OP006322	2021-11-22	USA	New York	ORAN	Vails Gate	C1	M	Delta
149849	EPI_ISL_13610689	OP006323	2021-11-22	USA	New York	ORAN	Montgomery	C1	M	Alpha
149911	EPI_ISL_13610599	OP006324	2021-10-10	USA	New York	RENS	East Greenbush		M	Alpha
149932	EPI_ISL_13610670	OP006325	2021-11-13	USA	New York	ONON	Manlius		M	Alpha
149937	EPI_ISL_13610588	OP006326	2020-11-22	USA	New York	MADI	Sullivan		M	Alpha

149959	EPI_ISL_13610697	OP006327	2021	USA	New York						Alpha
149982	EPI_ISL_13610671	OP006328	2021-11-13	USA	New York	CHAU	Portland		M		Delta
149990	EPI_ISL_13610668	OP006329	2021-11-11	USA	New York	CHAU	Charlotte		M		Delta
152918	EPI_ISL_13658777	OP006330	2021-10-02	USA	New York	ERIE	Orchard Park		M		Alpha
154944	EPI_ISL_13610593	OP006331	2021-10-03	USA	New York	ALBA	Voorheesville		M		Alpha
155877	EPI_ISL_13610592	OP006332	2021-10-02	USA	New York	LIVI	Portage	C7	M		Alpha
155912	EPI_ISL_13658814	OP006333	2021-11-26	USA	New York	SULL	Callicoon	C1	M		Delta
155994	EPI_ISL_13610616	OP006334	2021-10-30	USA	New York	CAYU	Aurelius		M		Delta
158016	EPI_ISL_13610619	OP006335	2021-10-31	USA	New York	ALLE	Wirt	C2	M		Gamma
158035	EPI_ISL_13610677	OP006336	2021-11-17	USA	New York	CHAU	Carroll	C12	M		Delta
158072	EPI_ISL_13610698	OP006337	2021	USA	New York	CATT	Mansfield		M		Delta
158076	EPI_ISL_13658818	OP006338	2021	USA	New York	CATT	Perrysburg		F		Alpha
159048	EPI_ISL_13610586	OP006339	2020-11-13	USA	New York	Sullivan	Liberty	C1	M		B.1.409
159201	EPI_ISL_13610584	OP006340	2020-11-12	USA	New York	Greene	Leeds		M		B.1.243
159212	EPI_ISL_13610587	OP006341	2020-11-21	USA	New York	Ulster	Saugerties		M		B.1.243
161392	EPI_ISL_13610582	OP006342	2020-11-07	USA	New York	Steuben	Addison		M		Delta
161809	EPI_ISL_13610699	OP006343	2020	USA	New York	Columbia	Ancram		F		B.1.517
161864	EPI_ISL_13658781	OP006344	2021-11-01	USA	New York	ORAN	Chester	C1	M		Delta
161956	EPI_ISL_13658787	OP006345	2021-11-03	USA	New York	ALLE	Amity	C2	M		Gamma
161965	EPI_ISL_13610633	OP006346	2021-11-05	USA	New York	ALLE	Amity	C2	M		Gamma
162299	EPI_ISL_13610580	OP006347	2020-10-11	USA	New York	Orleans	Carlton		F		B.1.1
162885	EPI_ISL_13610581	OP006348	2020-11-05	USA	New York	Chemung	Horseheads		M		B.1.2
162900	EPI_ISL_13610583	OP006349	2020-11-07	USA	New York	Monroe	Henrietta		M		B.1.1
162948	EPI_ISL_13610600	OP006350	2021-10-10	USA	New York	Steuben	Campbell		M		B.1.2
162950	EPI_ISL_13610585	OP006351	2020-11-12	USA	New York	Steuben	Lindley		M		B.1
163183	EPI_ISL_13610675	OP006352	2021-11-14	USA	New York	ONEI	Trenton		M		Delta
163188	EPI_ISL_13658801	OP006353	2021-11-10	USA	New York	ONEI	Whitestown		M		Alpha
163192	EPI_ISL_13610672	OP006354	2021-11-13	USA	New York	ONEI	Westmoreland		M		Alpha
164040	EPI_ISL_13610597	OP006355	2021-10-09	USA	New York	CHAU	North Harmony	C12	M		Delta
164122	EPI_ISL_13610601	OP006356	2021-10-13	USA	New York	LIVI	Sparta	C7	F		Alpha
164135	EPI_ISL_13610598	OP006357	2021-10-09	USA	New York	ORLE	Ridgeway		F		Delta
164175	EPI_ISL_13610604	OP006358	2021-10-19	USA	New York	GENE	Pembroke		M		Delta
164255	EPI_ISL_13658780	OP006359	2021-10-30	USA	New York	ERIE	Aurora		F		Alpha
164331	EPI_ISL_13658778	OP006360	2021-10-23	USA	New York	CHAU	Busti	C12	M		Alpha
164343	EPI_ISL_13610606	OP006361	2021-10-23	USA	New York	CHAU	North Harmony	C12	F		Delta
164345	EPI_ISL_13610607	OP006362	2021-10-24	USA	New York	ALLE	Cuba	C2	M		Gamma
164384	EPI_ISL_13610617	OP006363	2021-10-30	USA	New York	ALLE	Wellsville	C2	F		Alpha
164389	EPI_ISL_13610612	OP006364	2021-10-27	USA	New York	ALLE	Bolivar	C2	F		Gamma
164395	EPI_ISL_13610608	OP006365	2021-10-24	USA	New York	WAYN	Butler		M		Delta
164412	EPI_ISL_13610622	OP006366	2021-11-01	USA	New York	CHAU	Poland	C12	M		Alpha
164447	EPI_ISL_13658782	OP006367	2021-11-02	USA	New York	ERIE	Newstead		F		Delta
164453	EPI_ISL_13610643	OP006368	2021-11-06	USA	New York	ALLE	Wirt	C2	M		Gamma
164458	EPI_ISL_13610618	OP006369	2021-10-30	USA	New York	TIOG	Spencer	C13	M		Alpha
164463	EPI_ISL_13610620	OP006370	2021-10-31	USA	New York	ALLE	Wirt	C2	M		Gamma
164465	EPI_ISL_13610644	OP006371	2021-11-06	USA	New York	ALLE	Bolivar	C2	M		Gamma

164468	EPI_ISL_13658792	OP006372	2021-11-06	USA	New York	CHAU	Busti	C12	M	Alpha
164472	EPI_ISL_13658788	OP006373	2021-11-03	USA	New York	CHAU	North Harmony	C12	M	Alpha
164477	EPI_ISL_13610656	OP006374	2021-11-07	USA	New York	CHAU	Chautauqua		F	Delta
164485	EPI_ISL_13610629	OP006375	2021-11-03	USA	New York	CHAU	Clymer		M	Delta
164487	EPI_ISL_13610630	OP006376	2021-11-03	USA	New York	CATT	Randolph	C12	M	Alpha
164489	EPI_ISL_13658793	OP006377	2021-11-06	USA	New York	CHAU	Kiantone	C12	M	Alpha
164493	EPI_ISL_13610594	OP006378	2021-10-04	USA	New York	ALLE	Cuba	C2	M	Gamma
164507	EPI_ISL_13658794	OP006379	2021-11-06	USA	New York	CHAU	Busti	C12	F	Delta
164509	EPI_ISL_13658799	OP006380	2021-11-07	USA	New York	CATT	East Otto		M	Delta
164510	EPI_ISL_13658795	OP006284	2021-11-06	USA	New York	CHAU	Busti	C12	M	Delta
164522	EPI_ISL_13610634	OP006381	2021-11-05	USA	New York	ERIE	Aurora		M	Alpha
164523	EPI_ISL_13610635	OP006382	2021-11-05	USA	New York	CHAU	Harmony	C12	F	Delta
164525	EPI_ISL_13610595	OP006383	2021-10-04	USA	New York	CHAU	Portland		M	Delta
164529	EPI_ISL_13658783	OP006384	2021-11-02	USA	New York	ALLE	Amity	C2	F	Gamma
164530	EPI_ISL_13610636	OP006385	2021-11-05	USA	New York	CHAU	Chautauqua		M	Delta
164531	EPI_ISL_13610589	OP006386	2021-10-01	USA	New York	CHAU	Chautauqua		M	Delta
164533	EPI_ISL_13658800	OP006387	2021-11-07	USA	New York	MONR	Rush		M	Alpha
164544	EPI_ISL_13610645	OP006388	2021-11-06	USA	New York	ALLE	Angelica		M	Gamma
164548	EPI_ISL_13610657	OP006389	2021-11-07	USA	New York	ALLE	Willing	C2	M	Gamma
164550	EPI_ISL_13610590	OP006390	2021-10-01	USA	New York	CHAU	Chautauqua		M	Delta
164553	EPI_ISL_13610660	OP006391	2021-11-08	USA	New York	ALLE	Wirt	C2	M	Gamma
164557	EPI_ISL_13658796	OP006392	2021-11-06	USA	New York	CHAU	Busti	C12	M	Alpha
164565	EPI_ISL_13610623	OP006393	2021-11-01	USA	New York	STEU	Greenwood		M	Gamma
164571	EPI_ISL_13658789	OP006394	2021-11-04	USA	New York	TOMP	Enfield	C18	M	Delta
164572	EPI_ISL_13610596	OP006395	2021-10-08	USA	New York	WYOM	Warsaw		F	Delta
164573	EPI_ISL_13658784	OP006396	2021-11-02	USA	New York	CHAU	French Creek		M	Delta
164580	EPI_ISL_13610646	OP006397	2021-11-06	USA	New York	CHAU	Chautauqua		F	Delta
164604	EPI_ISL_13610647	OP006398	2021-11-06	USA	New York	WAYN	Galen		F	Delta
164628	EPI_ISL_13610700	OP006399	2021	USA	New York	WYOM	Bennington		F	Delta
164637	EPI_ISL_13610648	OP006400	2021-11-06	USA	New York	TOMP	Danby	C13	M	Delta
164656	EPI_ISL_13610631	OP006401	2021-11-03	USA	New York	CHAU	Westfield		M	Delta
164661	EPI_ISL_13610649	OP006402	2021-11-06	USA	New York	ALLE	Amity	C2	F	Gamma
164669	EPI_ISL_13610632	OP006403	2021-11-03	USA	New York	ALLE	Alma	C2	M	Gamma
164672	EPI_ISL_13610637	OP006404	2021-11-05	USA	New York	ALLE	Cuba	C2	M	Gamma
164673	EPI_ISL_13658797	OP006405	2021-11-06	USA	New York	ALLE	Cuba	C2	M	Gamma
164676	EPI_ISL_13610673	OP006406	2021-11-13	USA	New York	ALLE	Scio	C2	M	Gamma
164702	EPI_ISL_13610661	OP006407	2021-11-08	USA	New York	CHEM	Baldwin	C13	M	Delta
164706	EPI_ISL_13610638	OP006408	2021-11-05	USA	New York	GENE			M	Delta
164707	EPI_ISL_13610650	OP006409	2021-11-06	USA	New York	WYOM	Pike	C7	M	Alpha
164709	EPI_ISL_13610651	OP006410	2021-11-06	USA	New York	CATT	New Albion		M	Delta
164713	EPI_ISL_13610676	OP006411	2021-11-15	USA	New York	TIOG	Spencer	C13	M	Alpha
164717	EPI_ISL_13658804	OP006285	2021-11-15	USA	New York	LIVI	Avon		M	Alpha
164723	EPI_ISL_13658790	OP006412	2021-11-05	USA	New York	ALLE	Hume	C7	M	Alpha
164729	EPI_ISL_13658798	OP006413	2021-11-06	USA	New York	ALLE	Amity	C2	M	Gamma
164730	EPI_ISL_13610695	OP006414	2021-12-27	USA	New York	ALLE	Granger	C7	M	Alpha

164733	EPI_ISL_13658803	OP006415	2021-11-12	USA	New York	TOMP	Ulysses	C18	M	Delta
164737	EPI_ISL_13610652	OP006416	2021-11-06	USA	New York	CATT	Farmersville		M	Alpha
164739	EPI_ISL_13658802	OP006286	2021-11-11	USA	New York	ALLE	Centerville		M	Alpha
164750	EPI_ISL_13610658	OP006418	2021-11-07	USA	New York	WYOM	Perry		M	B.1.2
164755	EPI_ISL_13610639	OP006419	2021-11-05	USA	New York	WYOM	Pike	C7	M	Alpha
164760	EPI_ISL_13610653	OP006420	2021-11-06	USA	New York	CATT	Yorkshire		M	Delta
164770	EPI_ISL_13610674	OP006421	2021-11-13	USA	New York	ALLE	Caneadea		F	B.1.2
164777	EPI_ISL_13610665	OP006422	2021-11-09	USA	New York	TOMP	Ulysses	C18	F	Delta
164781	EPI_ISL_13610662	OP006423	2021-11-08	USA	New York	CHEM	Baldwin	C13	F	B.1.1
164784	EPI_ISL_13610669	OP006424	2021-11-12	USA	New York	CHAU	Bemus Point		M	Delta
165189	EPI_ISL_13658791	OP006417	2021-11-05	USA	New York	SUFF	Southold		M	Delta
165273	EPI_ISL_13610666	OP006425	2021-11-10	USA	New York	WASH	Fort Ann		M	Delta
165621	EPI_ISL_13658785	OP006426	2021-11-02	USA	New York	TIOG	Spencer	C13	M	Alpha
165628	EPI_ISL_13610687	OP006427	2021-11-21	USA	New York	TIOG	Berkshire		M	Alpha
165672	EPI_ISL_13658811	OP006428	2021-11-21	USA	New York	DUTC	Amenia		M	Delta
165681	EPI_ISL_13658809	OP006429	2021-11-20	USA	New York	SULL	Bloomington	C1	F	Alpha
165697	EPI_ISL_13610679	OP006430	2021-11-20	USA	New York	SULL	Delaware	C1	F	Delta
165707	EPI_ISL_13610680	OP006431	2021-11-20	USA	New York	DUTC	Washington		M	Delta
165711	EPI_ISL_13610681	OP006432	2021-11-20	USA	New York	SULL	Tusten	C1	M	Delta
165715	EPI_ISL_13610682	OP006433	2021-11-20	USA	New York	SULL	Tusten	C1	M	Delta
165724	EPI_ISL_13610692	OP006434	2021-11-27	USA	New York	ORAN	Chester	C1	F	Delta
165726	EPI_ISL_13658810	OP006435	2021-11-20	USA	New York	SULL	Cochecton	C1	F	Delta
165733	EPI_ISL_13610683	OP006436	2021-11-20	USA	New York	ONON	Cicero		F	Alpha
165741	EPI_ISL_13610690	OP006437	2021-11-26	USA	New York	SULL	Thompson	C1	F	Delta
165751	EPI_ISL_13610701	OP006438	2021	USA	New York	SULL	Delaware	C1	M	Delta
165776	EPI_ISL_13610684	OP006439	2021-11-20	USA	New York	WAYN	Butler		M	Delta
165804	EPI_ISL_13658812	OP006440	2021-11-22	USA	New York	ALBA	Medusa		M	Delta
165834	EPI_ISL_13610685	OP006441	2021-11-20	USA	New York	TIOG	Newark Valley		M	Delta
165887	EPI_ISL_13610624	OP006442	2021-11-01	USA	New York	ONON	Camillus		M	Delta
165892	EPI_ISL_13610686	OP006443	2021-11-20	USA	New York	TIOG	Owego		M	Alpha
165908	EPI_ISL_13610702	OP006444	2021	USA	New York					Alpha
165920	EPI_ISL_13610694	OP006445	2021-12-04	USA	New York	TIOG	Owego		F	Alpha
165925	EPI_ISL_13658815	OP006446	2021-11-27	USA	New York	CAYU	Throop		F	Delta
165954	EPI_ISL_13610609	OP006447	2021-10-24	USA	New York	CHEN	Greene		M	Delta

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