

Introduction

Although it has never been easy to meet case completeness goals, the New York State Cancer Registry (NYSCR) has always strived to attain the NPCR and, more recently, the SEER 12-month data completeness standards, the latter of which was set at 95% until shortly before this year's submission date. However, as the February 2022 Calls for Data deadline loomed, reaching 95% completeness for 12-month data of 2020 cases seemed impossible – despite intense pressure on reporting facilities by field staff, completeness was stalled at 85%. The NYSCR turned to claims records in the hope of uncovering information about the missing cancer case reports.

Methods

- The New York State Department of Health's Statewide Planning and Research Cooperative System (SPARCS) requires reporting of all patient encounters from licensed ambulatory surgery, emergency department (ED), hospital inpatient and outpatient facilities. Each claims record includes patient demographics and up to 17 ICD-10-CM codes for the time period of interest. We extracted 6,725,416 SPARCS claims records with any malignant neoplasm diagnosis code (ICD-10-CM C00-C96) for 2018 through June of 2021 for New York State residents.
- Using SAS 9.4, we examined the time trends of cancer-related records by month and year. We also compared the total numbers of cancer-related records by discharge year.
- Next, selecting 2019 as the pre-COVID comparison year, we analyzed the 2020 records by patient age, sex, race/ethnicity, type of encounter (i.e., inpatient, outpatient, ambulatory surgery, or emergency department), and the number of encounters per patient.
- Finally, we compared the facility-level number of cancer-related records for 10 high-volume facilities in New York City and 10 high-volume facilities in the rest of the state, selected from 378 facilities based on their claim counts.

Results

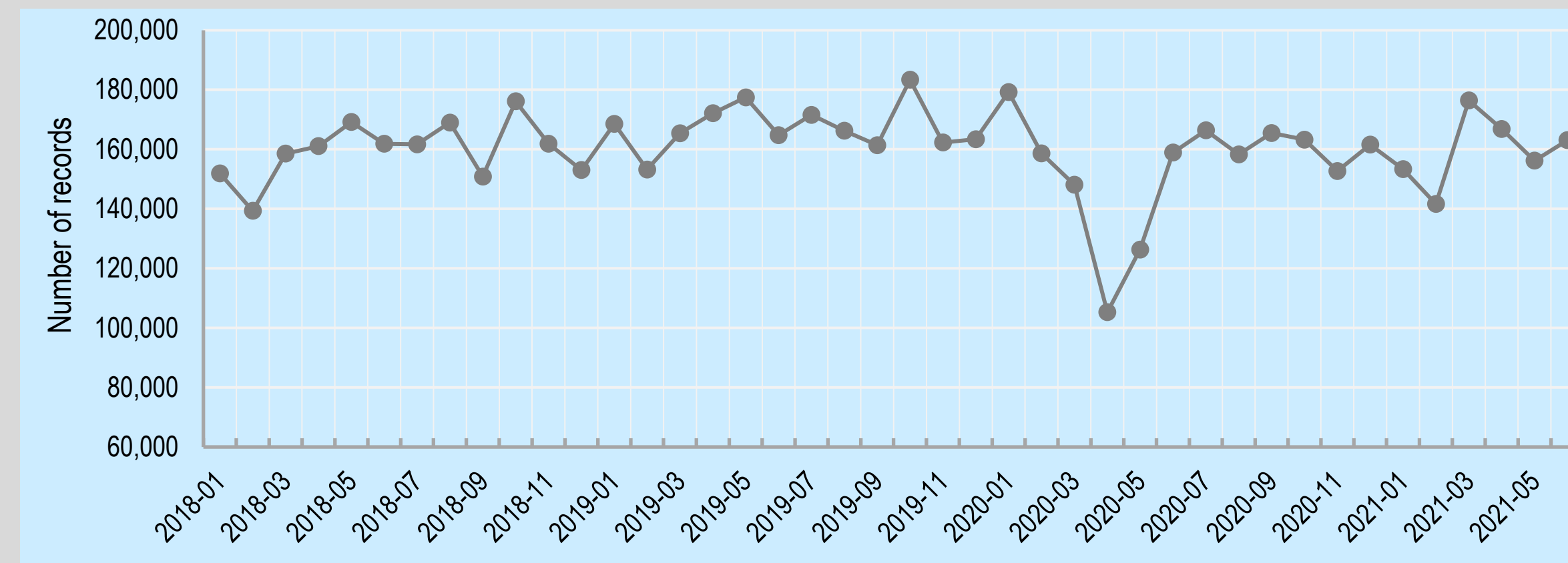
- Overall, there were 5% more cancer-related records in 2019 than there had been in 2018 (2,009,600 vs. 1,914,346), but 8.2% fewer records in 2020 (1,844,054 total) than in 2019 (see Table 1).
- Month-by-month, the number of claims in the first two months of 2020 exceeded the numbers from 2019 by 5%, but a decrease started in March 2020, with the biggest drop in April 2020. That month had a deficit of 38.8% for cancer-related encounter reports relative to the same month the previous year. Although the numbers rose after April, the claims for the last half of 2020 were 4% lower than for 2019 (see Table 1 and Fig. 1).

Results - Continued

Table 1. Number of cancer-related records by discharge year or month

Discharge year or month	Number of cancer-related encounters	% change in number of encounters relative to the same time frame the previous year
2018	1,914,346	
2019	2,009,600	5.0%
2020	1,844,054	-8.2%
Jan & Feb 2019	321,763	
Jan & Feb 2020	337,833	5.0%
April 2019	172,112	
April 2020	105,285	-38.8%
Jul-Dec 2019	1,008,157	
Jul-Dec 2020	96,7637	-4.0%

Fig 1. Monthly number of cancer-related records for discharge year 2018 through June 30, 2021



- Comparing 2020 to 2019 records by type of encounter, there were substantial decreases for all encounter types. See Table 2 and Figs. 2a and 2b.

Table 2. Number of cancer-related records by encounter type

Encounter type	Number of records for 2019	Number of records for 2020	% decrease (2020 over 2019)
Ambulatory Surgery	121,465	102,593	15.5%
Emergency Dept.	49,923	41,215	17.4%
Inpatient	198,239	172,790	12.8%
Outpatient	1,639,973	1,527,456	6.9%
Total	2,009,600	1,844,054	8.2%

Fig 2a. Outpatient Service

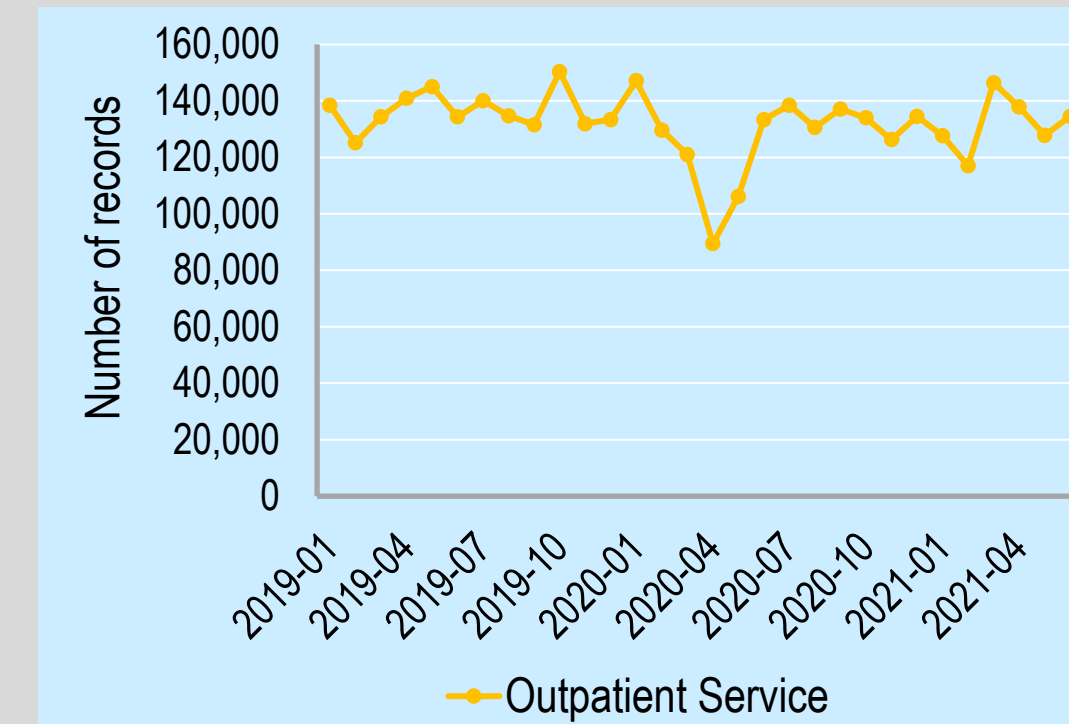
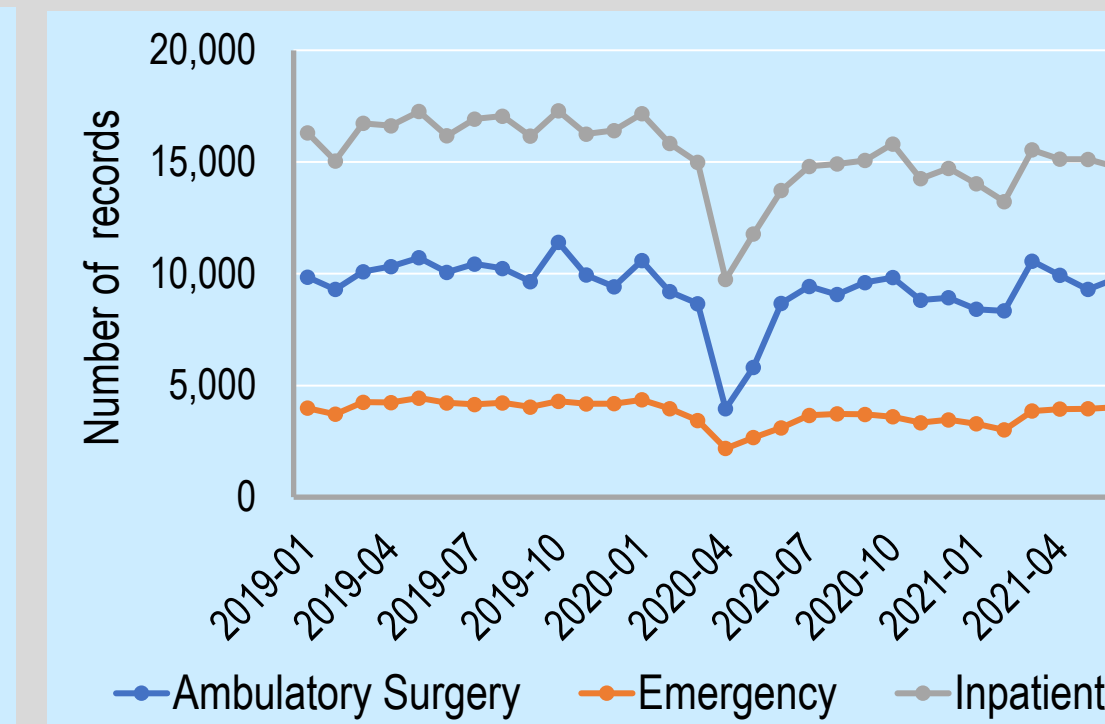


Fig 2b. Ambulatory Surgery, Emergency, and Inpatient



- Comparing 2020 to 2019 records by age, sex, race/ethnicity, and number of encounters per patient, there were substantial decreases across all categories of each covariate. See Figs. 3, 4, and 5 and Table 3.

Fig 3. Number of cancer-related records by age

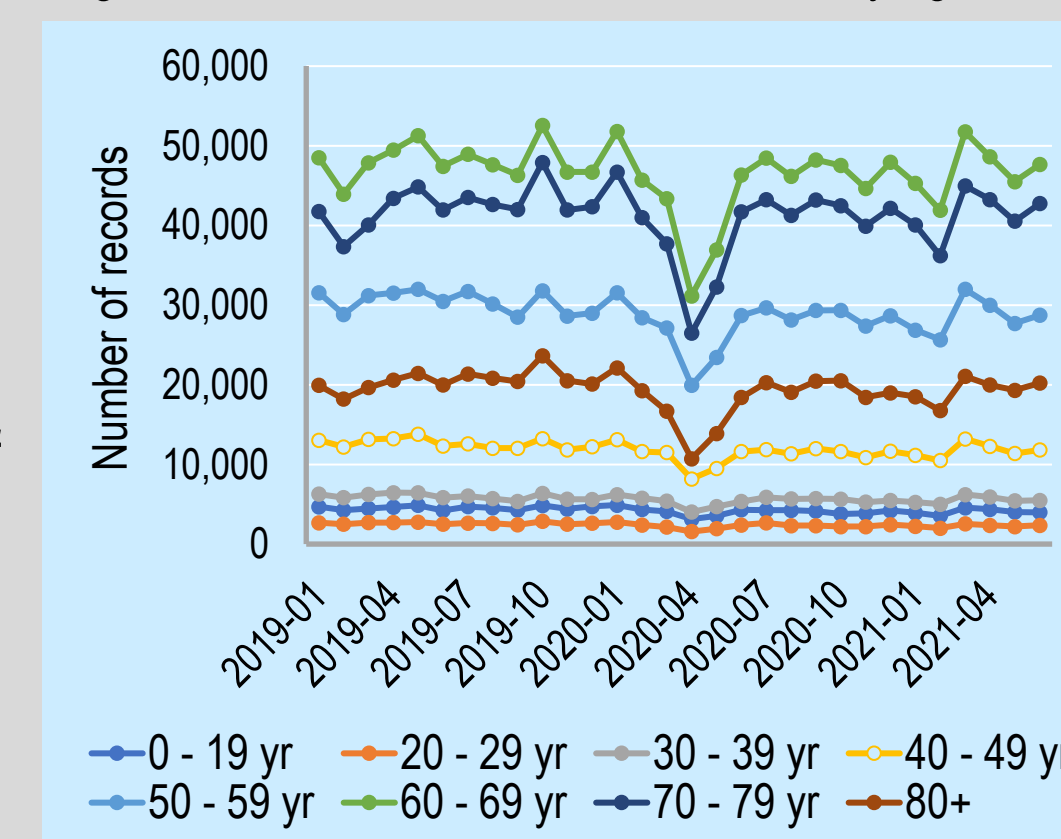


Fig 4. Number of cancer-related records by sex

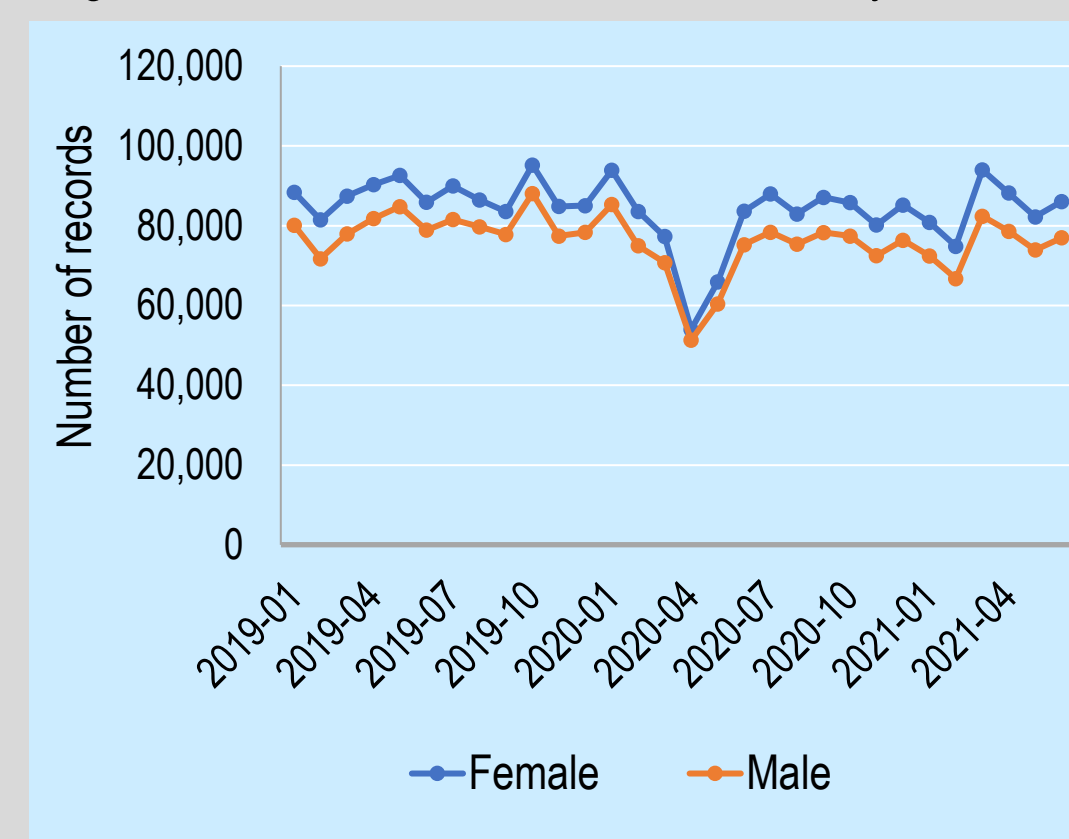


Fig 5. Num. of cancer-related records by race/ethnicity

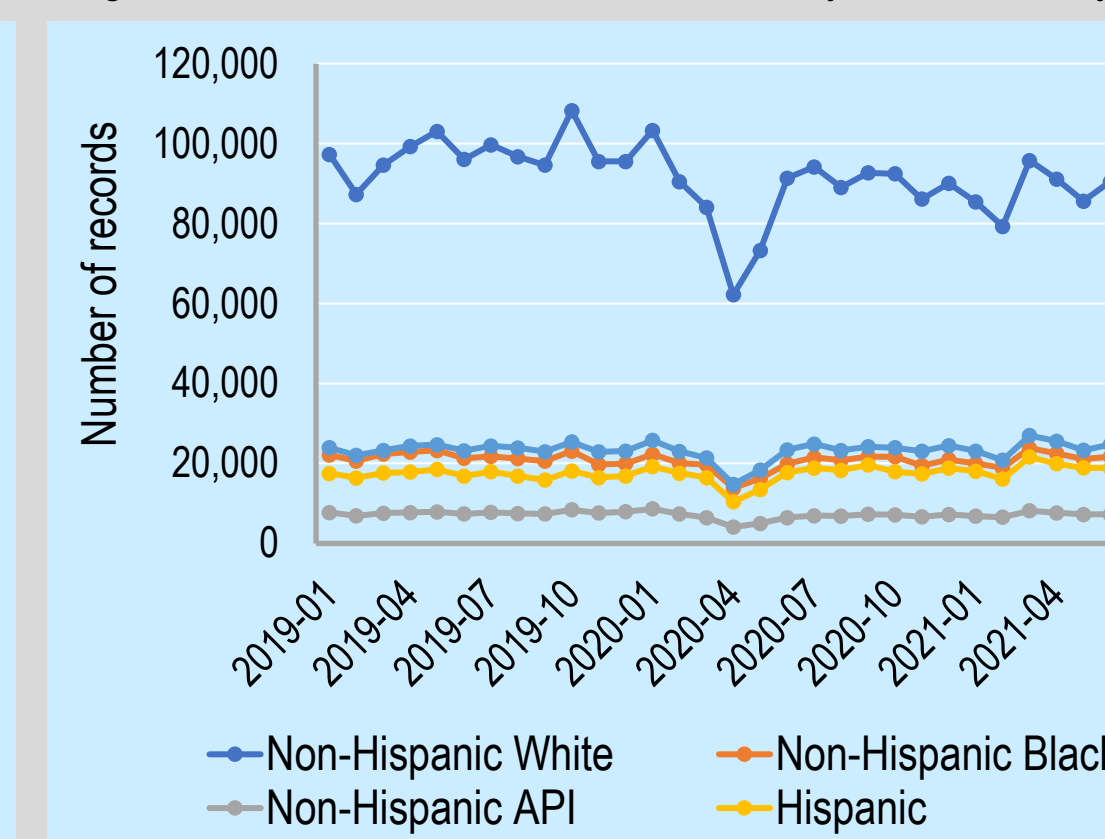
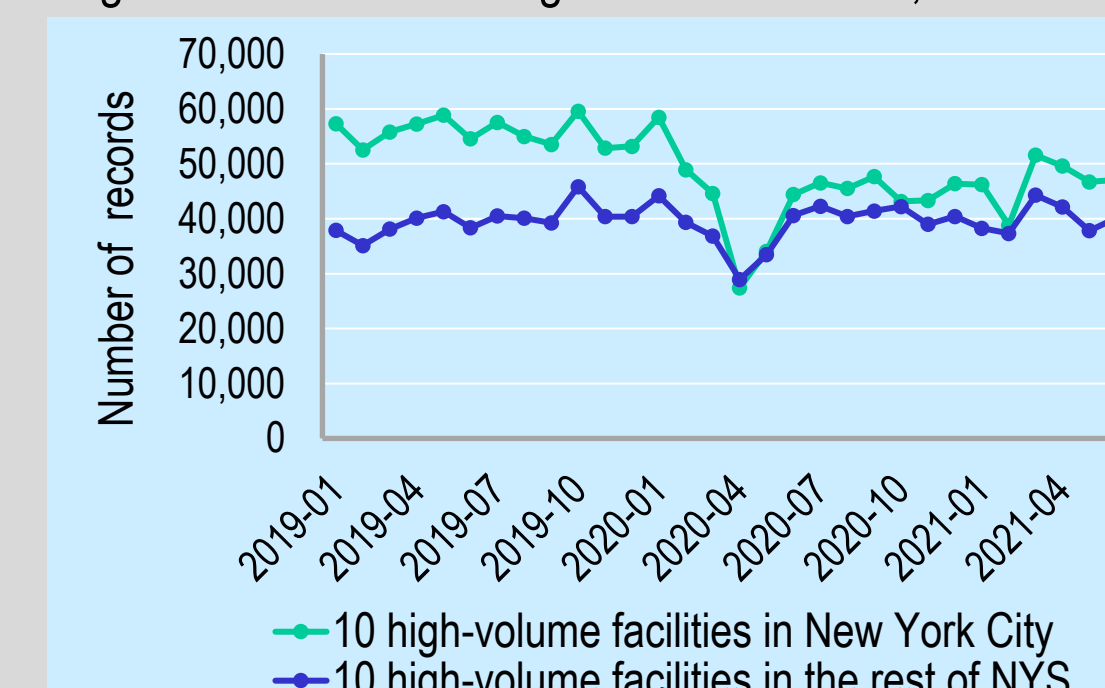


Table 3. Number of cancer-related encounters per patient

Number of records per patient	2019	2020	% decrease (2020 over 2019)
1	154,239	146,257	5.2%
2	72,273	66,822	7.5%
3	40,364	37,566	6.9%
4	26,276	23,821	9.3%
5 - 6	30,563	27,888	8.8%
7 - 9	22,946	21,369	6.9%
10 - 19	29,424	27,292	7.2%
>= 20	22,396	20,231	9.7%
Total	398,481	371,246	6.8%

- In analyses of 20 (of 378) high-volume reporting facilities, which accounted for 56% of claims records, 10 facilities in New York City had a more pronounced and more prolonged drop in reporting in 2020 than 10 facilities in the rest of the state overall (See Fig. 6a) and by type of encounter (See Figs. 6b, 6c, 6d, and 6e)

Fig 6a. Encounters for high-volume facilities, overall



Results - Continued

Fig 6b. Ambulatory Surgery encounters

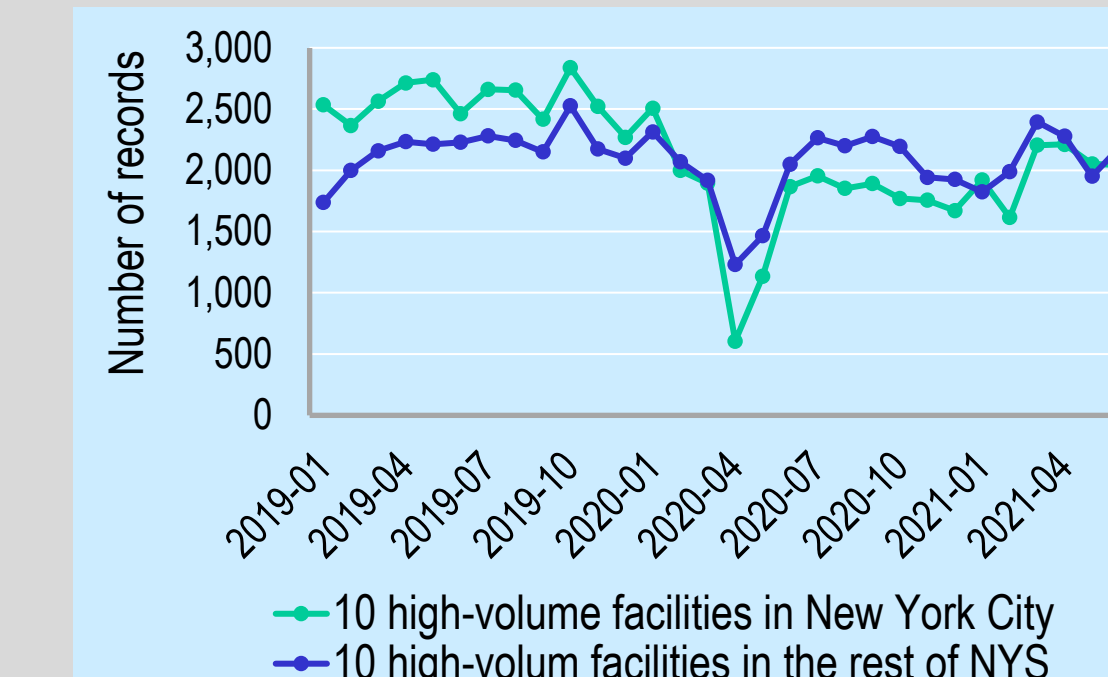


Fig 6c. Emergency Department encounters

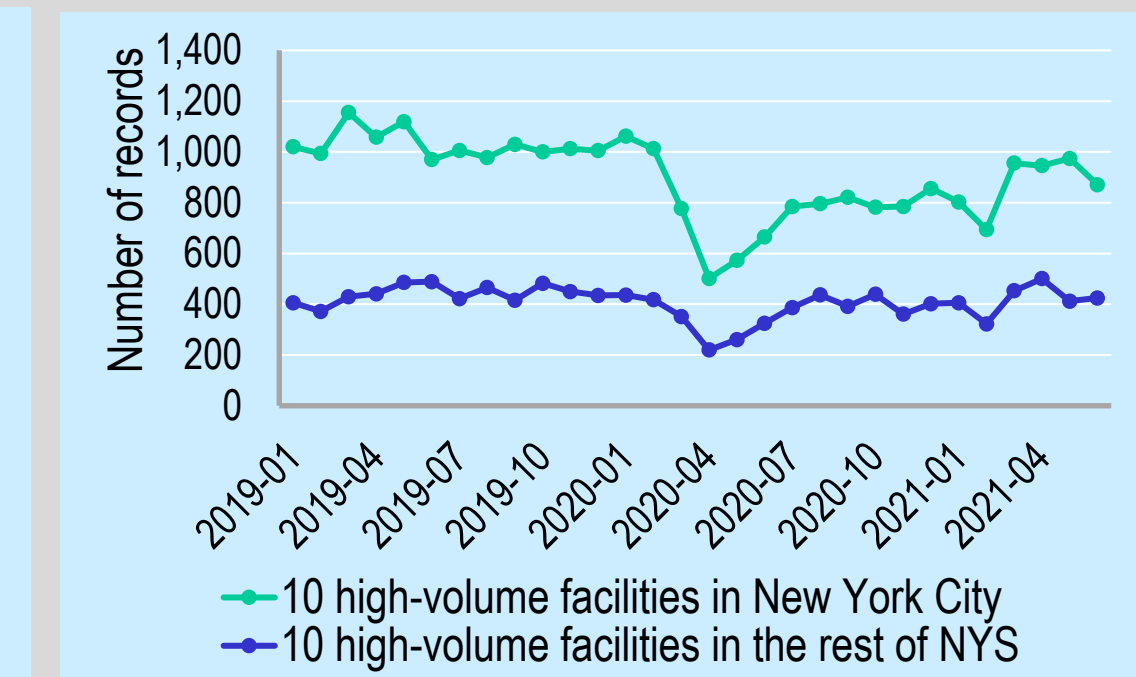


Fig 6d. Inpatient encounters

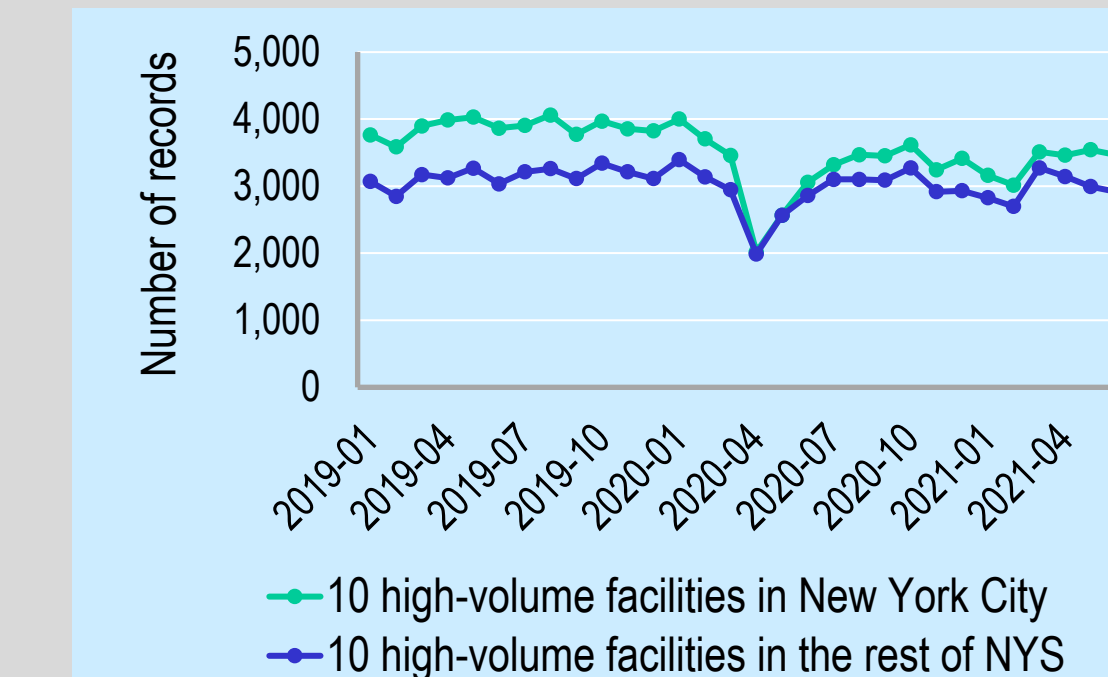
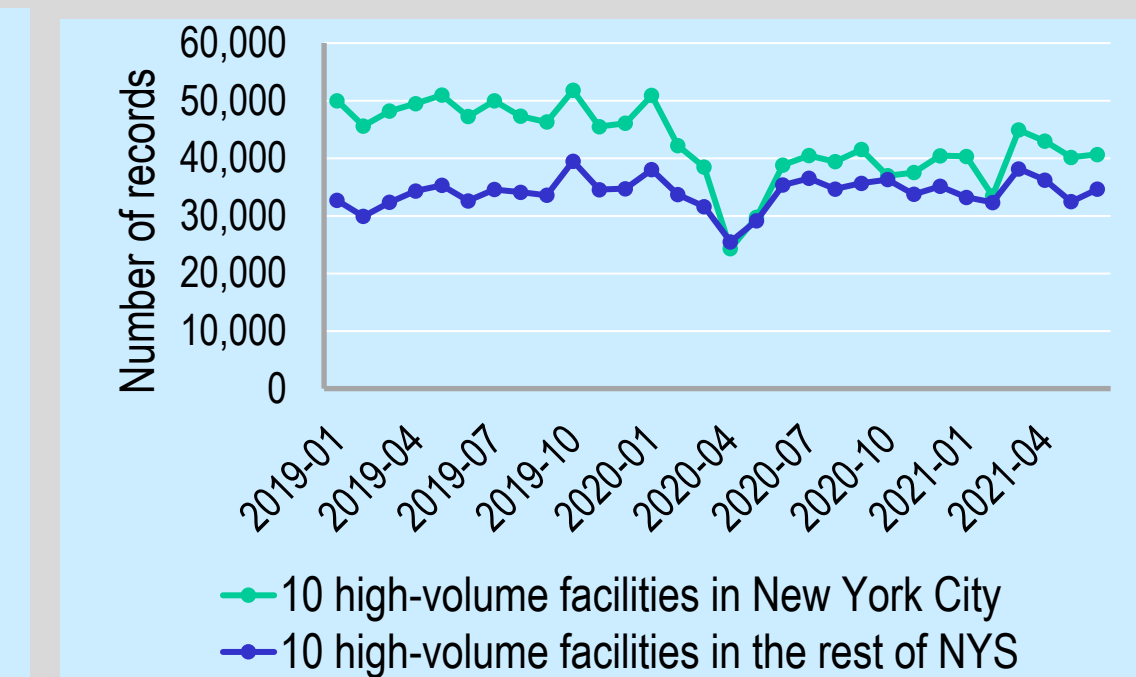


Fig 6e. Outpatient encounters



Limitations

- This analysis excludes encounters from laboratories, other states, and some physicians' offices and radiation treatment centers. It therefore provides an incomplete estimate of total 2020 cancer-related health encounters among New York State residents.
- Because these claims were not de-duplicated by person or by diagnosis, direct comparison to incidence counts is not possible.

Conclusions

- Although SPARCS data do not provide definitive evidence of incident cancer diagnoses, circumstantial evidence indicates that there were fewer cancer cases diagnosed among New York State residents in 2020. New York City experienced a larger and more sustained deficit in cancer-related encounters than the rest of the state. Additional analyses are needed to assess the impacts on stage at diagnosis and outcomes associated with delays in cancer diagnosis and treatment because of COVID-19.

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