

Association between virtual primary care and emergency department use

Preliminary Results

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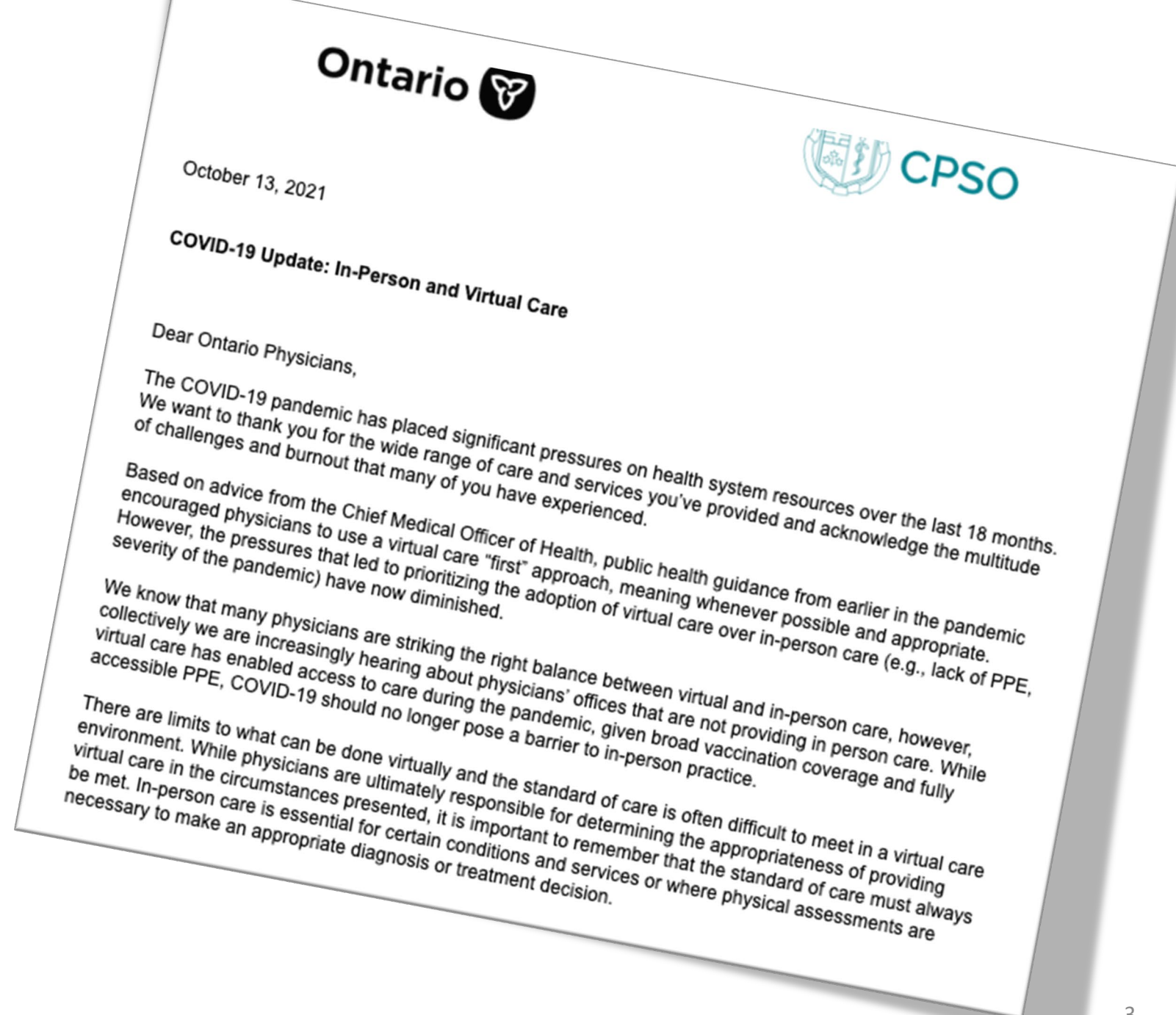
Funder: Ontario Health, CIHR, INSPIRE-PHC

Key Findings

- In Ontario, emergency department visit volumes during the pandemic (March 2020 to July 2021) were lower than volumes in 2019
- There is no crude ecological association between % of virtual visits in primary care and overall emergency department visit volumes in Ontario
- ~500 primary care physicians provided 100% virtual care between February 2021 and July 2021. A higher % were in fee-for-service care models and age >75
- Patients of primary care physicians providing a high proportion of virtual visits (80-100%) did not have meaningfully different emergency department visits

Background

- Primary care asked to take a virtual-first approach (until end of Jul '21)
- Anecdotal reports of family physicians being 'closed' to in-person visits
- Concerns that some family doctors not seeing people in person was leading to an increase in emergency department use





Methods

Primary question: Does more virtual care in the primary care (PC) setting correspond with more emergency department (ED) visits?

Study population:

- All physicians with OHIP home/office/virtual claims between Feb & July 2021 associated with specialty of '00', designated for family general practice
 - Categorized into groups based on the percentage of total visits that were virtual between February and July 2021
 - We did not exclude focused practice physicians (e.g. palliative, sports medicine)
- All patients living in Ontario alive and eligible for OHIP as of March 31, 2021
 - Patients attached to physicians based on enrolment and virtual rostering as of April 2021

Methods

Data Sources

Registered Person's Database (RPDB)

- Identification of Ontario population
- Patient-level characteristics

OHIP claims database

- Primary care physician visits

Primary Care Population (PCPOP) dataset

- Identification of physician models of care
- Physician panel size

Corporate Provider Database (CPDB)

- Physician-level characteristics

Postal Code Conversion File (PCCF)

- Rurality Index of Ontario (RIO)

National Ambulatory Care Reporting System (NACRS)

- Emergency department visits

Methods

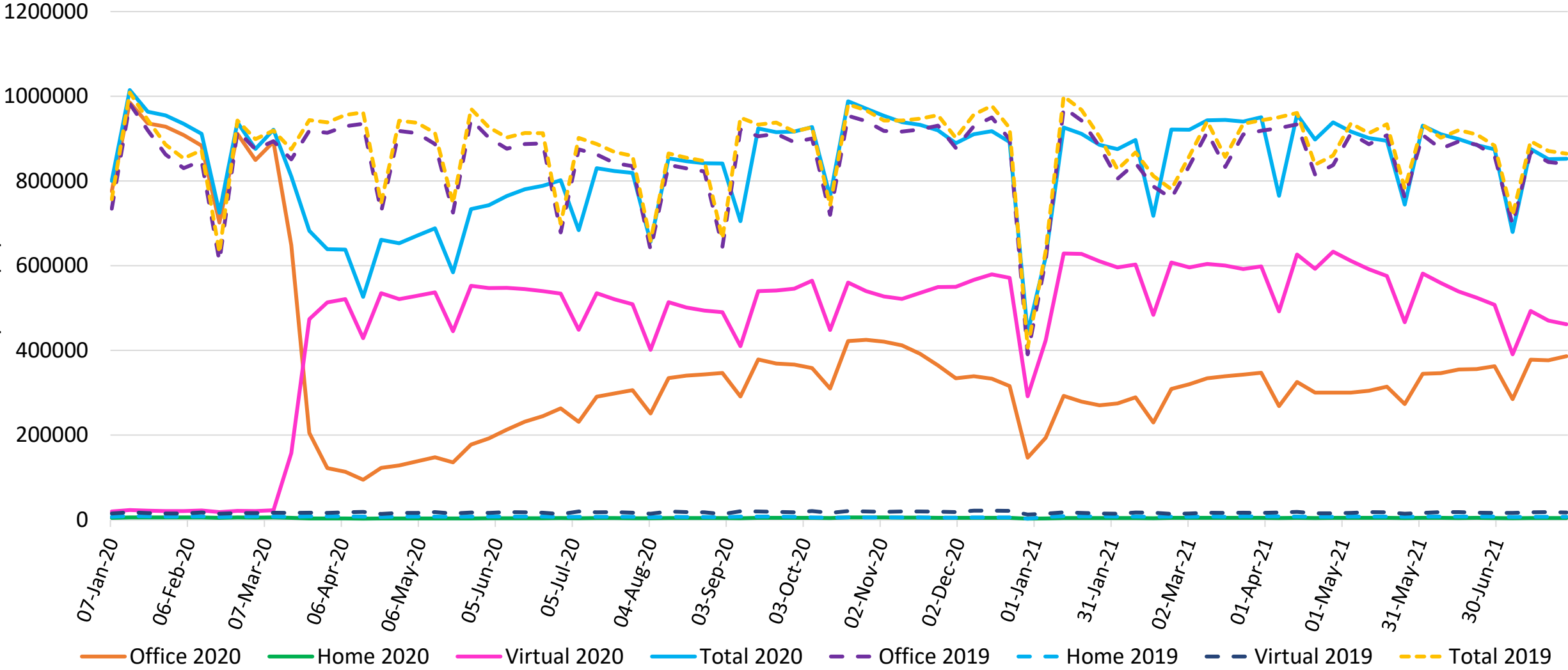
Analysis:

- Trends of primary care and ED visits between January 2019 and July 2021
- Histogram of physicians by the percentage of all visits that were virtual
- Characteristics of i) primary care physicians and ii) patients attached to them, stratified by the percent of virtual care delivered by the primary care physician
- Calculation of the mean number of ED visits for each patient between February and July 2021. Patients attached to a physician and physicians stratified based on the percent of virtual care delivered by the physician during that time period

Trends in primary care & emergency department visits

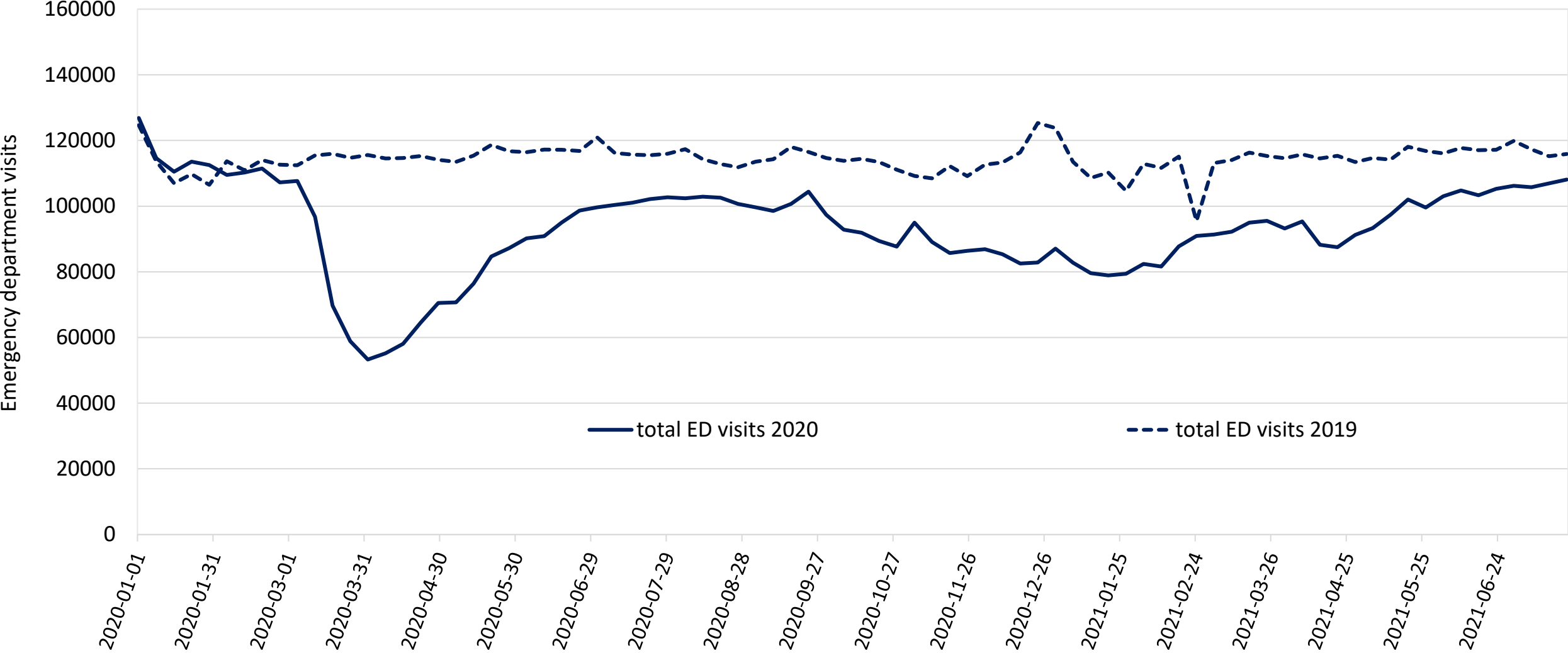
Total visit volumes to primary care decreased early in the pandemic but reached pre-pandemic levels by Fall 2020

Primary care visits, by type, January 2019 to July 2021



Emergency department visits decreased notably at the onset of the pandemic, though are slowly approaching pre-pandemic levels

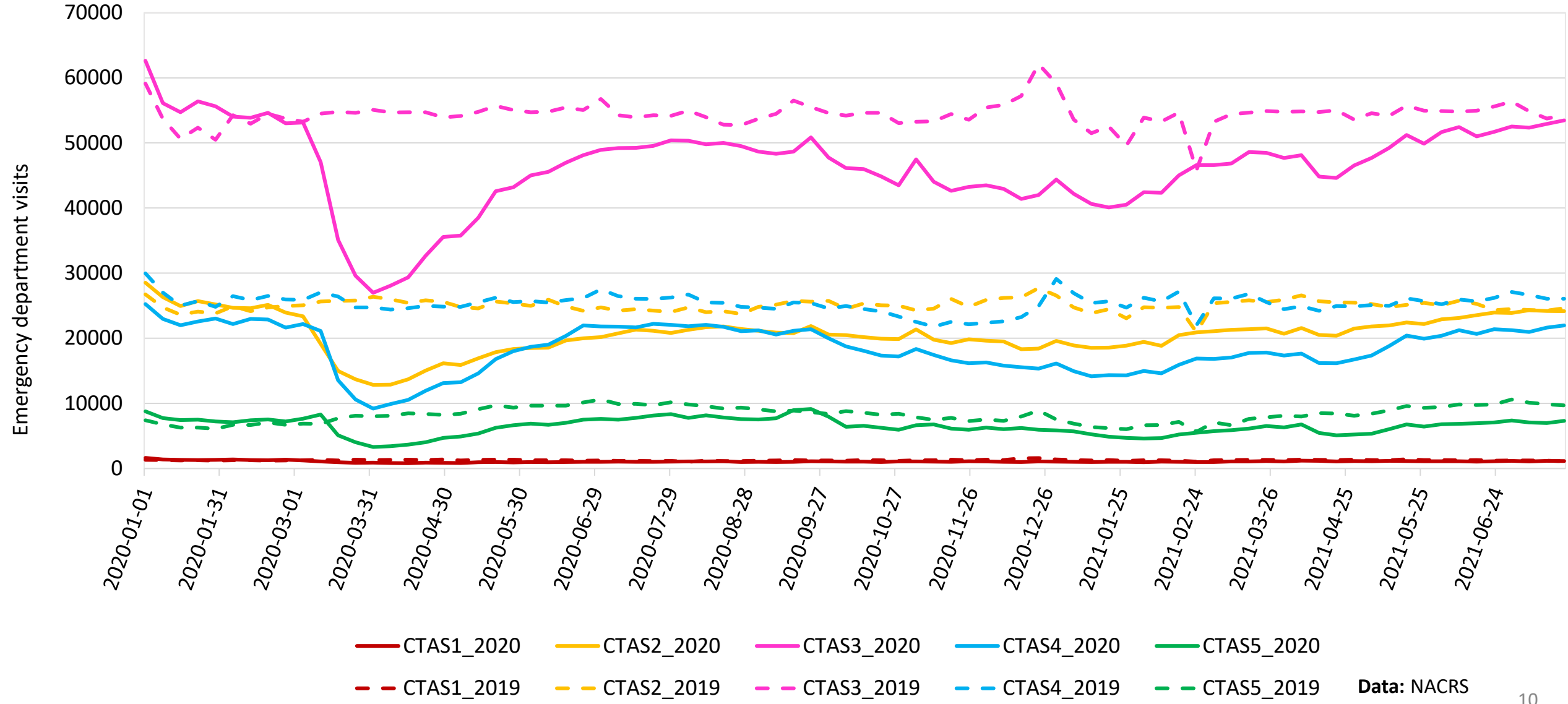
Emergency department visits, January 2019 to July 2021





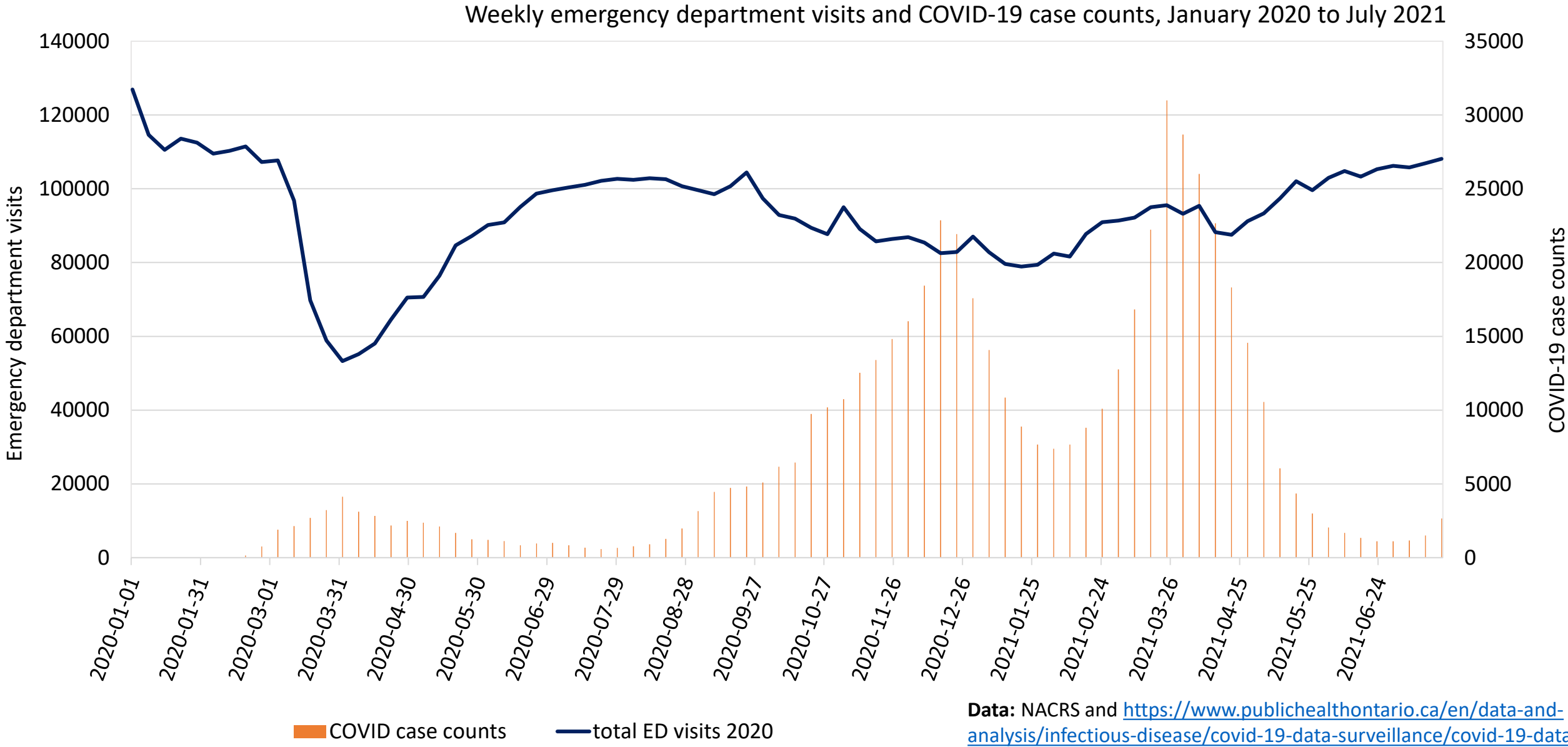
Canadian Triage and Acuity Scale (CTAS) 2, 3 and 4-level emergency department visits decreased notably at the onset of the pandemic and are slowly approaching pre-pandemic levels.

Weekly emergency department visits by CTAS level, January 2019 to July 2021

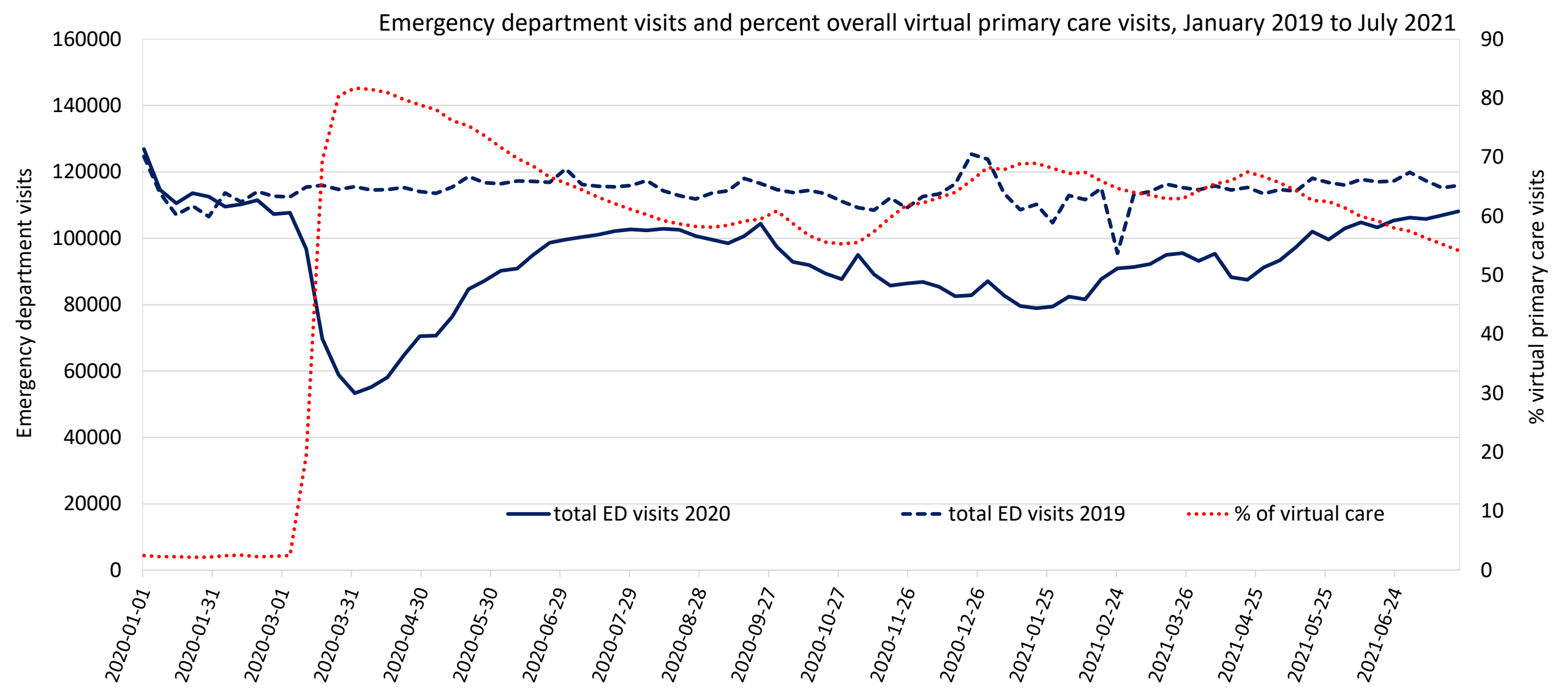


Data: NACRS
Analysis: ICES

Not surprisingly, ED visit volumes decreased during COVID waves



There appears to be an inverse association between the percentage of virtual visits in primary care and the number of emergency department visits

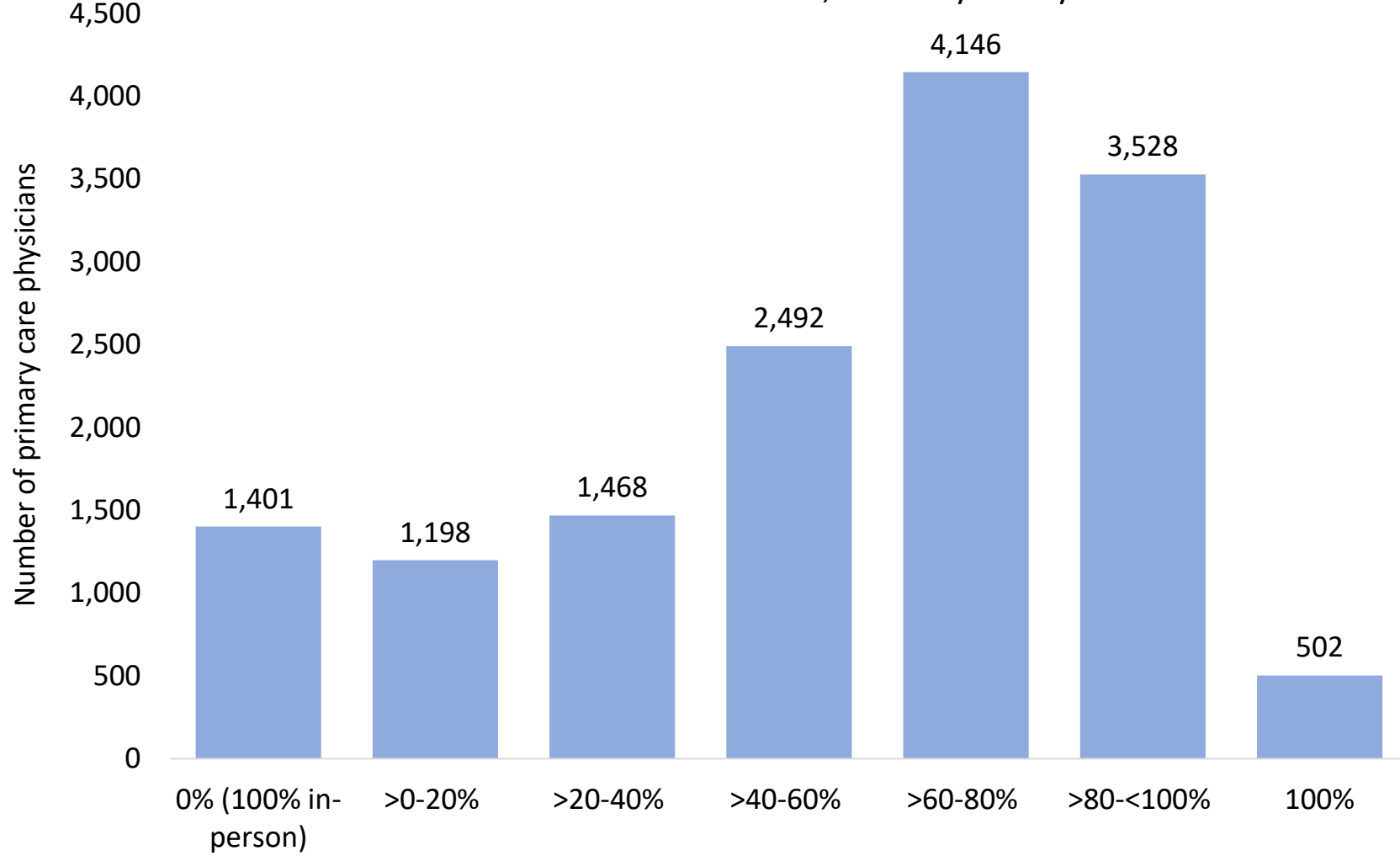


Physician and patient characteristics by the percent of visits provided virtually by primary care physicians

Most primary care physicians provided greater than 40% to less than 100% of care virtually

- Between February and July 2021:
 - The largest proportion of primary care physicians (28.1%, 4,146/14,735) provided >60-80% of all visits virtually
 - 9.5% (1,401/14,735) of primary care physicians provided 100% in-person visits
 - 3.4% (502/14,735) of primary care physicians provided 100% virtual visits

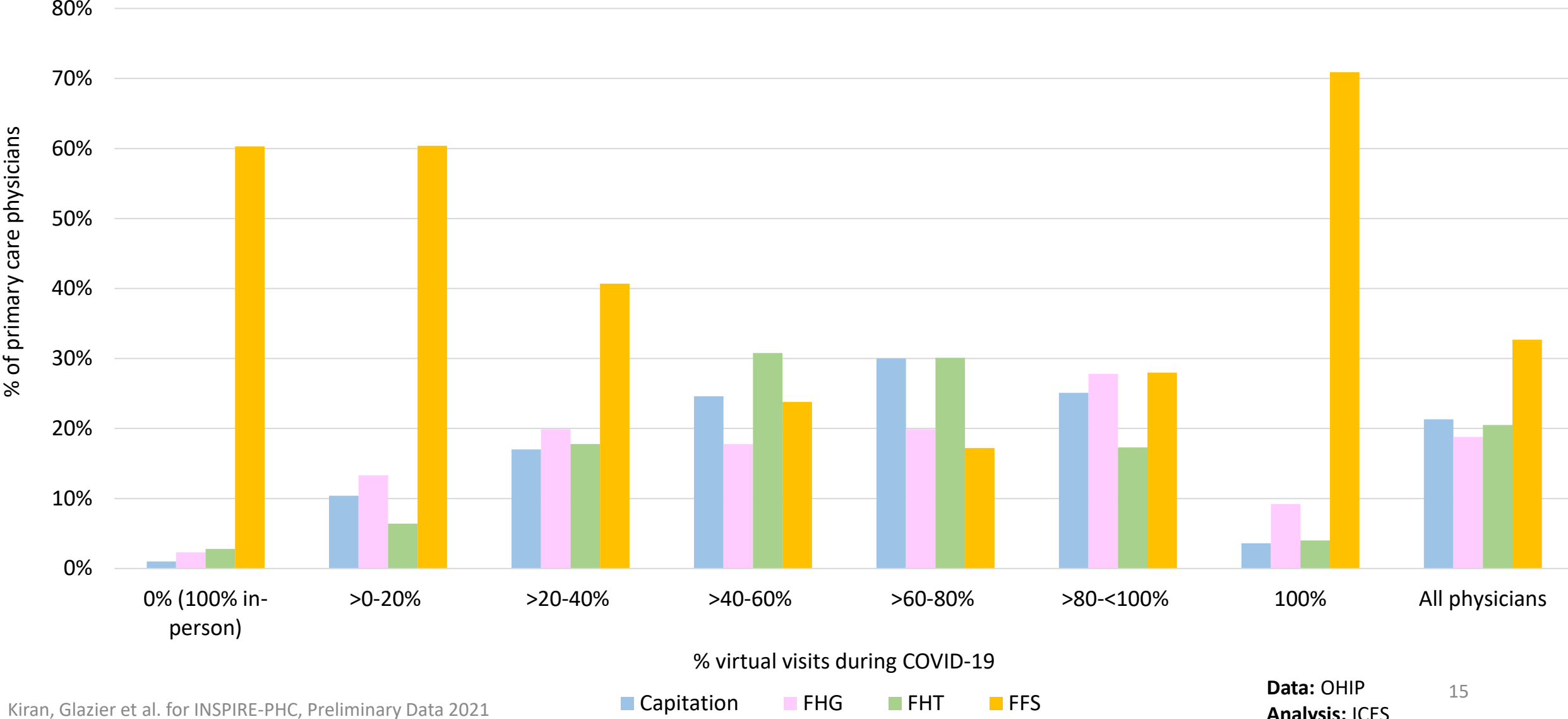
Histogram showing number of primary care physicians by the percentage of total visits that are virtual, February to July 2021





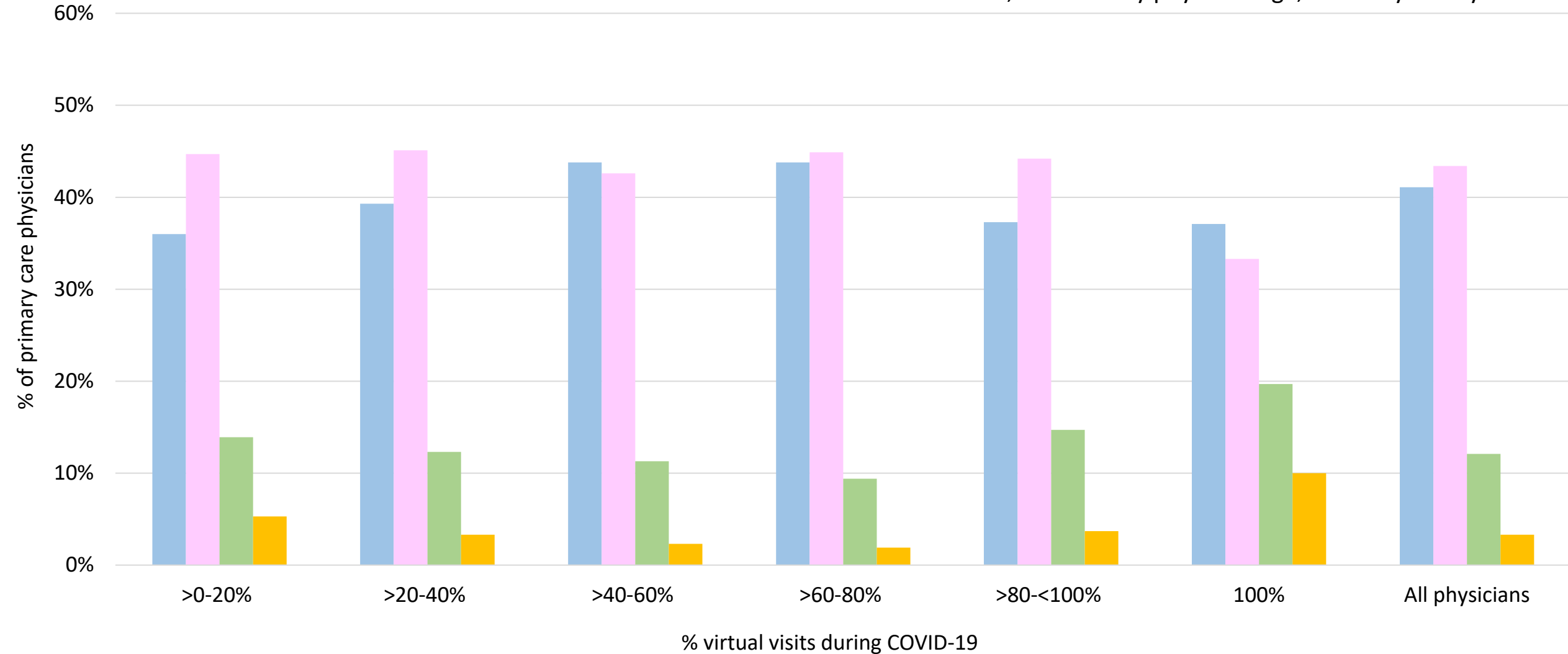
Most primary care physicians that provided 100% in-person care (60.3%) and 100% virtual care (70.9%) belonged to fee-for-service models of care

Percent of total visits that are virtual, stratified by model of care, February to July 2021



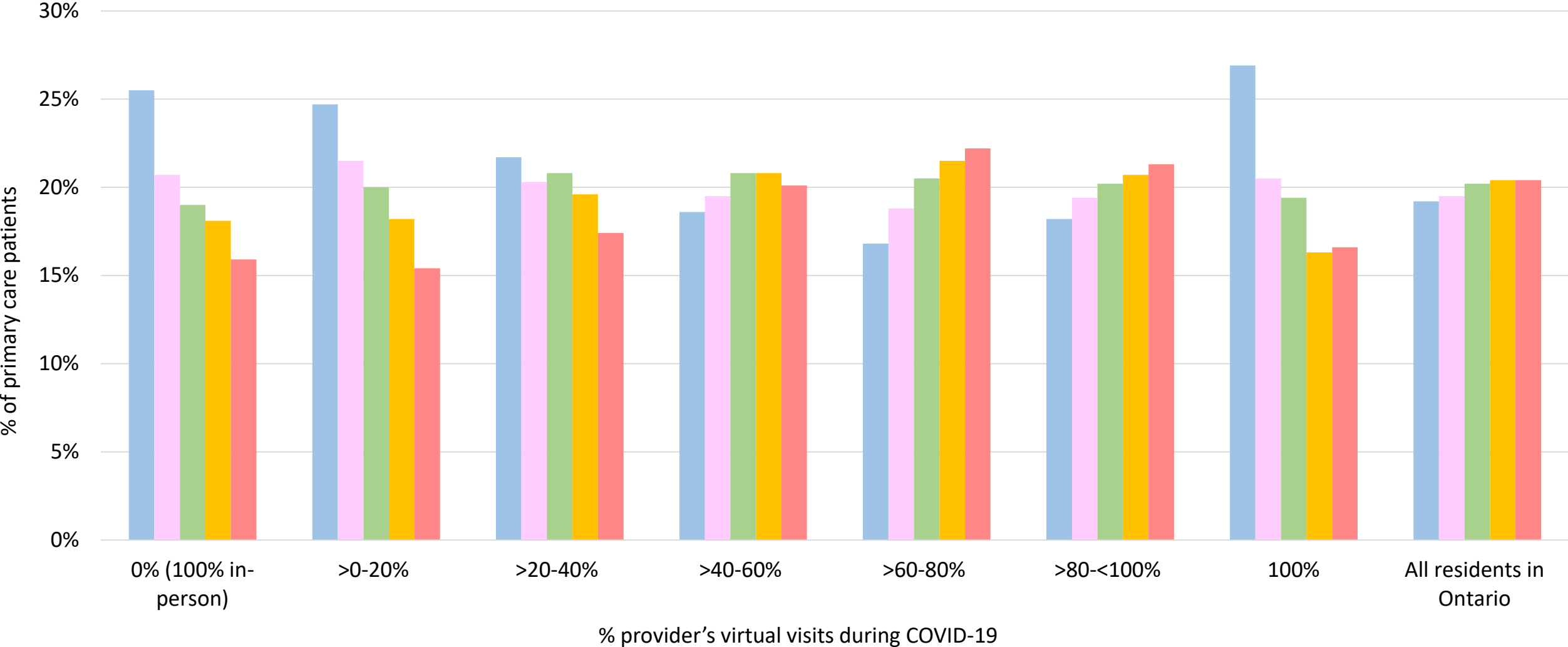
A higher proportion of primary care physicians providing 100% virtual care were age 75 or older compared to those providing less virtual care

Percent of total visits that are virtual, stratified by physician age, February to July 2021



A higher proportion of patients seen by primary care physicians providing 0-20% virtual care and 100% virtual care lived in neighbourhoods associated with lower income quintiles

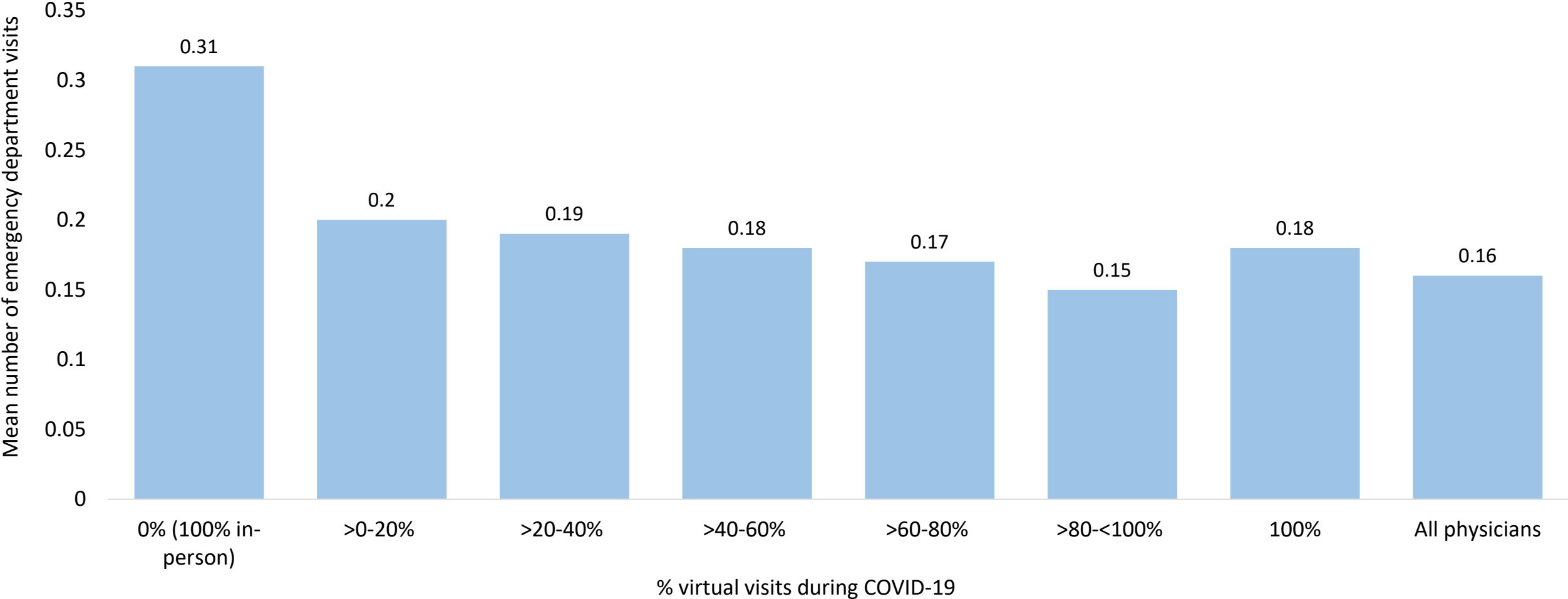
Percent of total visits that are virtual, stratified by patient income quintile, February to July 2021



Emergency department visits stratified
by the percent of visits provided
virtually by primary care physicians

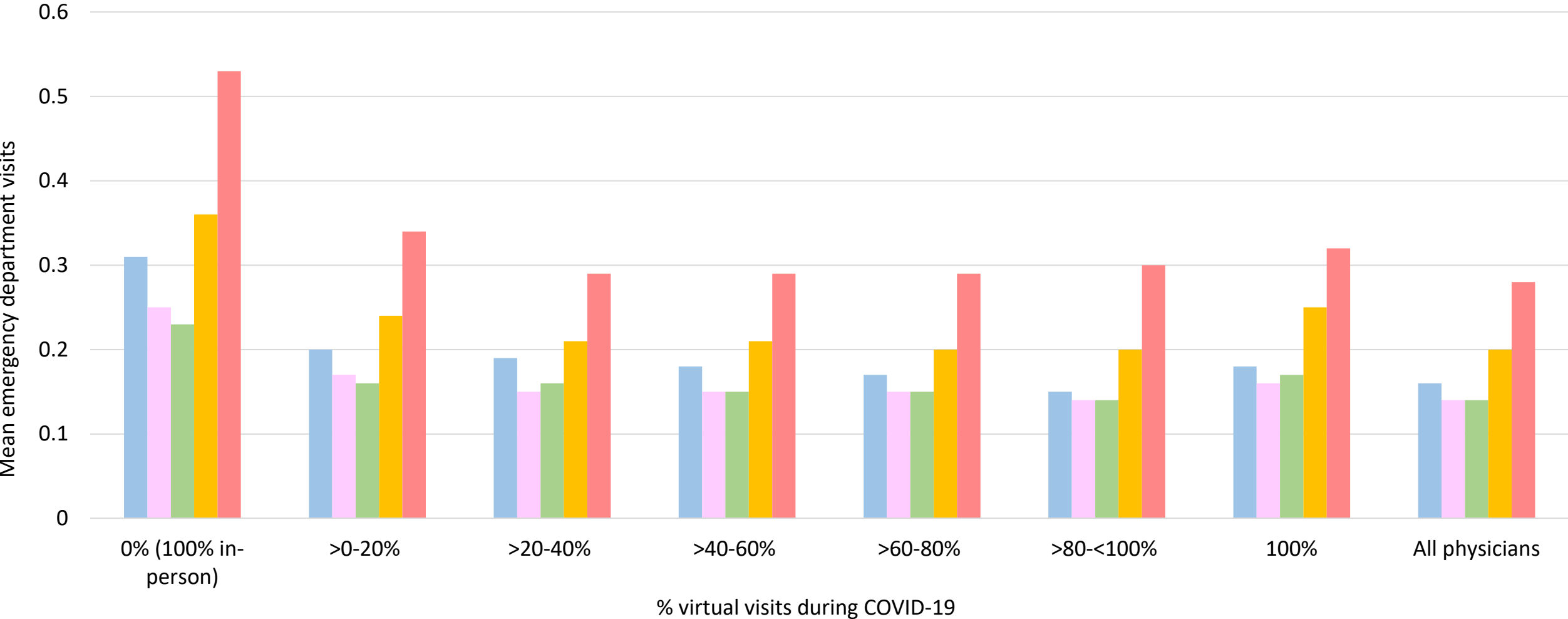
Patients whose primary care physician provided 100% of visits in-person had the highest mean number of emergency department visits. Patients of primary care physicians providing a high proportion of virtual visits (80-100%) did not have meaningfully different emergency department visits.

Mean emergency department visits by percent virtual care for given physician, February to July 2021



Rural areas had the highest mean number of emergency department visits compared with more urban areas. The relationship between proportion of virtual care and mean emergency department visits for patients was fairly consistent across rurality strata.

Mean emergency department visits by percent virtual care for given physician, stratified by rurality, February to July 2021



Key Findings

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Limitations

- Did not identify primary care physicians practicing comprehensive office-based care
- Cross-sectional, unclear if differences between strata predated pandemic
- Unadjusted comparisons
- Primary care visits were based on physician billing; virtual visits includes phone and video but not email
- We did not look at reason for visit and cannot judge appropriateness
- Current to most complete available data (July 2021)

Next steps

- Further analysis to understand associations including
 - whether observed associations between proportion of virtual care and mean ED visits predate the pandemic
 - Whether associations change when the analysis is limited to comprehensive physicians
 - Whether there are associations between proportion of virtual care and other aspects of utilization such as outside use and specialist referrals

Interpretation

Data from February to July 2021 do not support the narrative that family physicians seeing too few people in-person is driving up emergency department visit volumes.

Total emergency department volumes were lower during this period. Family physicians delivering a high proportion of care virtually did not have many more patients visiting the emergency department.

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