

**Proceedings of Statistics Canada Symposium 2021
Adopting Data Science in Official Statistics to Meet Society's Emerging Needs**

**Physician experiences during the
COVID-19 pandemic in the United States:
Adapting an annual survey to assess
pandemic-related challenges**

by Zachary J. Peters and Danielle Davis

Release date: November 05, 2021



Physician experiences during the COVID-19 pandemic in the United States: Adapting an annual survey to assess pandemic-related challenges

Zachary J. Peters, MPH; Danielle Davis, MPH¹

Abstract

The National Center for Health Statistics (NCHS) annually administers the National Ambulatory Medical Care Survey (NAMCS) to assess practice characteristics and ambulatory care provided by office-based physicians in the United States, including interviews with sampled physicians. After the onset of the COVID-19 pandemic, NCHS adapted NAMCS methodology to assess the impacts of COVID-19 on office-based physicians, including: shortages of personal protective equipment; COVID-19 testing in physician offices; providers testing positive for COVID-19; and telemedicine use during the pandemic. This paper describes challenges and opportunities in administering the 2020 NAMCS and presents key findings regarding physician experiences during the COVID-19 pandemic.

Key Words: National Ambulatory Medical Care Survey (NAMCS); Office-based physicians; Telemedicine; Personal protective equipment.

1. Introduction

1.1 Physicians' experiences related to the COVID-19 pandemic

Numerous studies have assessed the impact that the COVID-19 pandemic has had on a wide range of physicians and other health care workers in the United States, including outcomes of provider wellness, mental health, and burn-out (Busch, 2021; Bansal, 2020; Comfort, 2021; Kelker, 2021; Rodriguez, 2021; Werner, 2020). The Division of Health Care Statistics within the National Center for Health Statistics leveraged its existing National Ambulatory Medical Care Survey to produce nationally representative estimates of physicians' experiences related to the COVID-19 pandemic in office-based settings. Areas of interest included shortages of personal protective equipment, COVID-19 testing, and telemedicine use in physician offices in the United States. This paper describes efforts to adapt this annual survey to better provide insight into this emerging public health threat.

1.2 National Center for Health Statistics

The National Center for Health Statistics (NCHS) is the United States' principal health statistics agency, with a mission to collect, analyze, and disseminate timely, relevant, and accurate health and health care data. NCHS manages numerous surveys and data systems, including the National Health Care Surveys such as the National Ambulatory Medical Care Survey, the National Hospital Ambulatory Medical Care Survey, the National Hospital Care Survey, and the National Post-acute and Long-term Care Study; population health surveys such as the National Health Interview Survey and the National Health and Nutrition Examination Survey; and vital records systems such as the National Vital Statistics System and the National Death Index. With these surveys and systems, NCHS publishes nationally representative estimates related to health and health care in the United States and develops and disseminates publicly available data files for external researchers.

¹Zachary J. Peters, MPH, National Center for Health Statistics, Division of Health Care Statistics, 3311 Toledo Rd., Hyattsville, MD, United States, 20781, zpeters@cdc.gov; Danielle Davis, MPH, National Center for Health Statistics, Division of Health Care Statistics, 3311 Toledo Rd., Hyattsville, MD, United States, 20781

1.3 National Ambulatory Medical Care Survey

The National Ambulatory Medical Care Survey (NAMCS) is an annual survey of physicians who provide ambulatory care in office-based settings in the United States and is meant to be a source of nationally representative data on ambulatory care provided in these settings. NAMCS consists of two main parts: 1) an in-person Physician Induction Interview conducted by a field representative, and 2) an abstraction of eligible physicians' patient visit records from a predetermined timeframe during the survey year, which is typically conducted in-person at the physician's office.

2. Challenges and Changes

2.1 Challenges related to COVID-19

The onset of the COVID-19 pandemic introduced many challenges to the administration of NAMCS in 2020 due to the increased burden of the pandemic on health care professionals and facilities. NAMCS survey respondents were physicians who were often on the front lines of the pandemic, at times testing and treating patients for COVID-19. Many offices were only open to staff and patients, and with NAMCS being an in-person survey, this posed access challenges for field representatives. Additionally, for offices that were open to visitors, there was often no available space for the field representatives to abstract patient visit records.

2.2 Changes to 2020 NAMCS

As a result of these challenges, much thought and effort went into adapting the 2020 NAMCS to protect respondents, their patients, and the survey team. Beginning in March 2020, field representatives conducted all Physician Induction Interviews by telephone, and all patient visit abstractions scheduled after March 2020 were cancelled. As a consequence of these adaptations, data collection was delayed for all physicians sampled in the 2020 NAMCS.

While these adaptations to data collection were being discussed and implemented, NCHS also worked to develop a new set of questions for the Physician Induction Interview that assessed experiences related to COVID-19 in physician offices. These questions were approved for inclusion partway through 2020 NAMCS data collection. Additional information on challenges and adaptations to the 2020 NAMCS is available (Kresin, 2021).

3. Methods and methodological adjustments

3.1 NAMCS survey design and sampling

NAMCS is an annual survey of 3,000 physicians working in office-based settings in the 50 U.S. states or Washington D.C. Physicians are not eligible to be sampled if they only worked in federal settings or were practicing in specialties of anesthesiology, radiology, or pathology. Physicians are prescreened and determined ineligible to complete NAMCS if they had retired, were 85 years or over, were a resident, intern, or fellow, were not principally engaged in patient care activities in an office-based setting at the time of the interview, or could not be reached. Sampled physicians are divided into 52 subsamples, which are then randomly assigned to the 52 weeks of the year. These assigned reporting weeks correspond to the week of the year in which sampled physicians will provide a sample of their patient visit records. These weekly subsamples are also grouped into four interview periods, and physicians are contacted by field representatives to complete the Physician Induction Interview within a specified date range for their interview period. Further details on NAMCS methodology are available (AHCSB, 2020).

3.2 COVID-19-related interview questions

A series of questions was added to the 2020 NAMCS Physician Induction Interview that assessed physicians' experiences during and due to the COVID-19 pandemic. New questions on the 2020 NAMCS asked physicians about a few main topics, including:

- Shortages of personal protective equipment (PPE) at their office in the three months prior to their interview.
- Experiences with COVID-19 testing, including if they had the ability to test for COVID-19 at their office in the past three months.
- Needing to turn away or refer elsewhere patients with confirmed or suspected COVID-19 in the past three months.
- Providers in their office who tested positive for COVID-19 in the past three months.
- Use of telemedicine technology for patient care before and after March 2020.

These additional questions gained approval for inclusion partway through 2020 NAMCS data collection, and consequently were only asked of physicians sampled in interview periods 3 and 4. As a result of delays in data collection for the 2020 NAMCS, physicians who were asked these COVID-19-related questions were interviewed between December 15, 2020, and May 5, 2021. Therefore, results from questions that referenced experiences in the past three months reflect physician experiences between September 2020 and May 2021. Of the 774 eligible physicians in periods 3 and 4, 422 (54.5%) responded to the Physician Induction Interview.

3.2 Preliminary estimates using redesigned weights

NCHS has historically produced and published annual estimates of patient visits and physician characteristics using NAMCS data (Santo, 2020; Hing, 2017). However, to enhance the timeliness of these COVID-19-related data, period-specific nationally representative estimates were developed for 2020 NAMCS, which required a new weighting scheme.

As in past years, physicians in the 2020 NAMCS were weighted according to their specialty and region. However, for the 2020 NAMCS, weights were adjusted using multipurpose iterative proportional fitting, a method that simultaneously calibrates and trims weights while adjusting for nonresponse. To produce nationally representative estimates for only the portion of 2020 in which physicians were interviewed about COVID-19-related experiences, a weight was developed specifically for physicians sampled in periods 3 and 4 of the 2020 NAMCS. Estimates in this report were conducted using preliminary data, and may differ from estimates derived from the final 2020 NAMCS data.

4. Data Dissemination

4.1 COVID-19 Data Dashboards

Many of NCHS' surveys and data systems began collecting or already collected information related to COVID-19. To centralize findings from these data sources, NCHS created a website dedicated to COVID-19 data that includes data dashboards on various topics, such as: deaths due to COVID-19; cases among pregnant women and newborns; hospitalizations related to COVID-19; and cases among residents and staff in long-term care settings.

When 2020 NAMCS data became available, NCHS also developed a page on their COVID-19 website dedicated to estimates of physicians' experiences due to COVID-19 (NCHS, 2021b). This NAMCS page includes three data

dashboards covering different topic areas. The first dashboard shows estimates of physicians experiencing PPE shortages, the second includes estimates of physician experiences related to COVID-19, and the third highlights telemedicine use in physicians' offices before and after pandemic onset. The following section highlights findings from these dashboards.

5. Preliminary Findings

5.1 Nationally Representative Estimates of Physician Experiences

In periods 3 and 4 of the 2020 NAMCS, physicians were asked if they experienced shortages of PPE in the past three months due to COVID-19, including shortages of N95 or other approved facemasks and shortages of eye protection, isolation gowns, or gloves. Preliminary weighted estimates show that nearly one-third of physicians in the United States experienced any PPE shortages at their office, and one in five physicians specifically experienced N95 mask shortages (Table 5.1-1).

Table 5.1-1
Shortages of personal protective equipment (PPE) at physician offices in the United States, September 2020-May 2021

Measures	Estimates	
	Percentage of Physicians	95% Confidence Interval
During the past 3 months, did your office experience...		
...shortages of any PPE?	30.5	23.9 – 37.7
...shortages of N95 masks?	20.7	15.2 – 27.1
...shortages of eye protection, isolation gowns, or gloves?	23.7	17.5 – 30.8

Sample: U.S. Physicians interviewed in periods 3 and 4 between 12/15/2020-5/5/2021, reflecting experiences between September 2020 and May 2021

Source: National Center for Health Statistics, 2020 National Ambulatory Medical Care Survey Physician Induction Interview

Physicians were also asked if any providers in their office tested positive for COVID-19 in the past three months, if their office had the ability to test patients for COVID-19 in the past three months, and if their office had to turn away or refer elsewhere patients with confirmed or suspected COVID-19 in the past three months.

Preliminary estimates show that less than half (42%) of office-based physicians in the United States had the ability to test for COVID-19 at their office, nearly 40% of office-based physicians had to turn away confirmed or suspected COVID-19 patients or refer them elsewhere for care, and about one-third of physicians had a provider at their office test positive for COVID-19 in the past 3 months (Table 5.1-2).

Table 5.1-2
Physician experiences related to COVID-19 in the United States, September 2020-May 2021

Measures	Estimates	
	Percentage of Physicians	95% Confidence Interval
During the past 3 months, did your office have...		
...the ability to test for COVID-19?	41.7	34.2 – 49.4
...to turn away or refer elsewhere COVID-19 patients?	38.5	30.8 – 46.6
...any providers test positive for COVID-19?	32.5	25.9 – 39.6

Sample: U.S. Physicians interviewed in periods 3 and 4 between 12/15/2020-5/5/2021, reflecting experiences between September 2020 and May 2021

Source: National Center for Health Statistics, 2020 National Ambulatory Medical Care Survey Physician Induction Interview

Lastly, physicians were asked about their use of telemedicine technology before and after pandemic onset, specifically regarding the use of audio with video or web videoconference to assess, diagnose, monitor, or treat patients. Preliminary estimates show that before March 2020, less than 45% of physicians in the United States were using telemedicine in their office. However, after March 2020, that percentage rose to nearly 90% of physicians using telemedicine for patient care in the United States (Table 5.1-3).

Table 5.1-3
Use of telemedicine technology for patient care at physician offices in the United States, before and after March 2020

Measures	Estimates	
	Percentage of Physicians	95% Confidence Interval
Did your office use telemedicine technologies...		
...before March 2020?	42.2	34.8 – 49.8
...during or after March 2020?	89.9	84.9 – 93.6

Sample: U.S. Physicians interviewed in periods 3 and 4, between 12/15/2020-5/5/2021

Source: National Center for Health Statistics, 2020 National Ambulatory Medical Care Survey Physician Induction Interview

The above estimates for periods 3 and 4 of the 2020 NAMCS were further stratified by physician office characteristics in data dashboards on the NCHS website (NCHS, 2021b), which will be updated as data from the 2021 NAMCS Physician Induction Interview become available.

6. Conclusion

The COVID-19 pandemic impacted and disrupted health care delivery in profound ways. To help understand the impacts on physician offices in the United States, NCHS adapted the 2020 NAMCS Physician Induction Interview mid-implementation to ask physicians about their work experiences related to the COVID-19 pandemic. Although questions were only added for physicians sampled in the last half of the survey year, they allowed NCHS to produce nationally representative estimates of physicians’ experiences, such as PPE shortages, the ability to test for COVID-19, and the use of telemedicine technology for patient care. Additionally, these adaptations provided a blueprint for NCHS to adapt future health care surveys to better assess providers’ experiences, as future public health threats emerge.

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