

Modernization of NCHS' National Health Care Surveys to Meet Continually Evolving Data Needs for the 21st Century

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2022 FCSM Research & Policy Conference

October 25, 2022

Overview of the National Health Care Surveys



NCHS Data Collections

NCHS fulfills its mission through various data collections



**National Vital
Statistics
System**



**National
Survey of
Family
Growth**

NSFG

**National
Health
Interview
Survey**



**National
Health and
Nutrition
Examination
Survey**



**National
Health Care
Surveys**

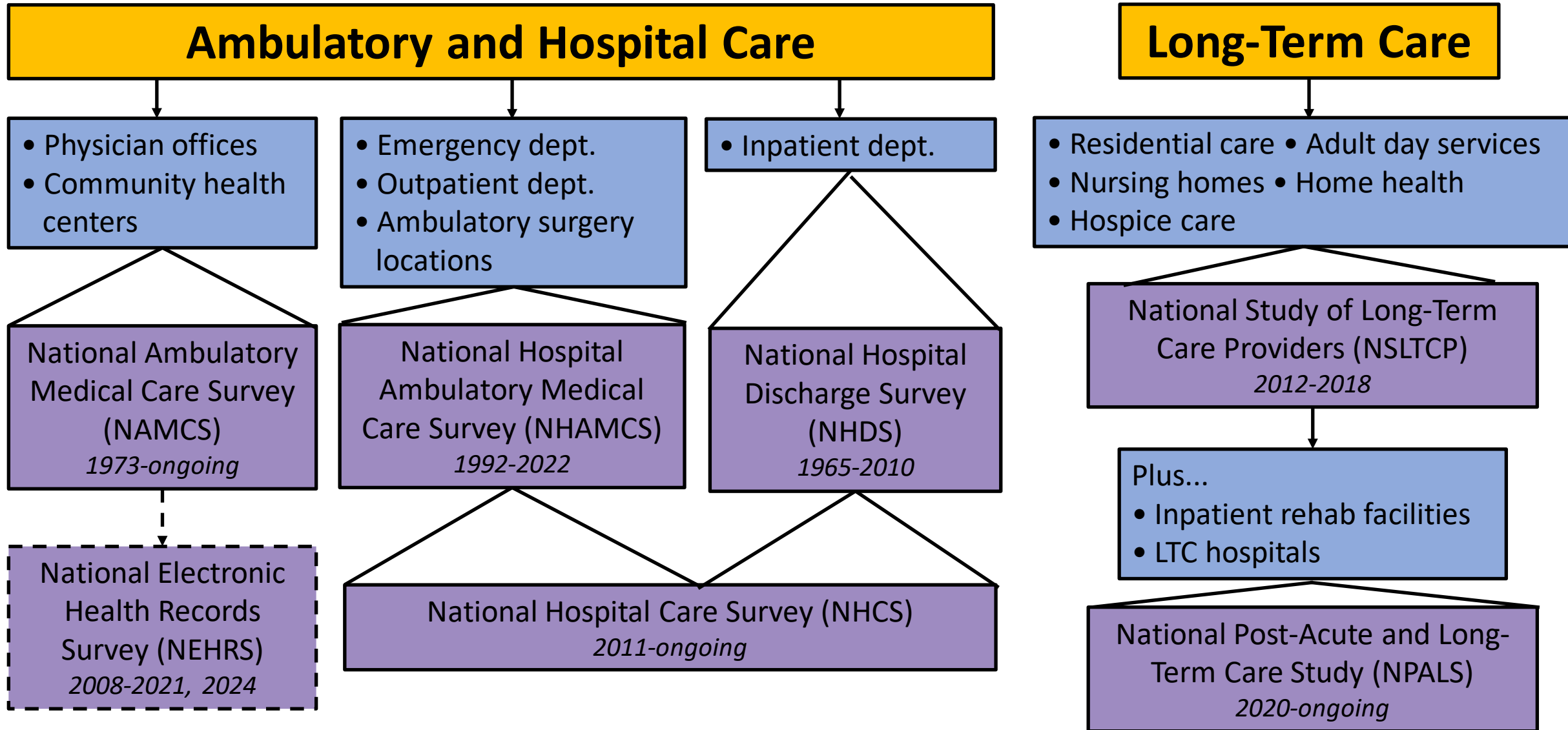




National Health Care Surveys

- Produce accurate objective, nationally-representative statistics on health care to inform health care policy and serve a variety of research needs.
- Are establishment surveys, not household surveys.
- Provide estimates about the universe of encounters with providers, not the population.
- Historically, patient-level data largely abstracted from medical or administrative data.
- Include health care provider surveys to understand this population's experience providing care.

National Health Care Surveys Spectrum of Care



Overview of Improvements and Modernization Strategies for the National Health Care Surveys

- Developing and leveraging EHR standards
- Moving to EHR data and modernizing NHCS, NAMCS, and NPALS
- Building cloud-based infrastructure for EHR data collection
- Utilizing new and timely manners of data dissemination

Developing and Leveraging EHR Standards



Leveraging Healthcare Data & Interoperability Standards to Enable EHR Data Collection

- **Consolidated Document Architecture (CDA): HL7 CDA National Health Care Surveys Implementation Guide (IG)**
 - Early releases aligned with older data element lists and added ***all*** medications, lab results, and procedures.
 - Latest Release is streamlined by dropping lower importance data elements but most EHRs already implemented earlier releases and are unable to move to latest release.
- **Fast Healthcare Interoperability Resources (FHIR): HL7 Health Care Surveys Content Implementation Guide (IG)**
 - Highly aligned with the United States Core Data for Interoperability (USCDI) standard.
 - This content IG uses the technical infrastructure of the [HL7 MedMorph Reference Architecture IG](#), most notably the [MedMorph app](#), which is also used in CDC elsewhere:
 - electronic Case Reporting (eCR)
 - Centralized Cancer Registry Reporting
 - Other public health and research use cases

National Health Care Surveys FHIR Application Pilot in 2022-2023

■ Pilot tasks:

- Select providers
 - 2 Ambulatory physician/provider groups
 - 1 Federally qualified health center (FQHC)
 - 1 Hospital
- With each Provider, co-implement
 - MedMorph Reference Architecture IG
 - MedMorph App inside provider's firewall
 - National Health Care Surveys Content IG
 - USCDI/17 HL7 FHIR US Core Profiles
- Build data lake to process and store EHR data collected.
- Build data governance structure to allow sharing of EHR data with other Centers throughout CDC.

Leveraging Healthcare Interoperability Regulations to Enable EHR Data Collection

- **CMS Promoting Interoperability (PI) Program**

- Provider participation (data submission via Certified EHR Technology) in the National Health Care Surveys fulfills a Public Health Reporting measure.
- Approximately 110,000 providers and 365 hospitals have registered their intent to send EHR data to NCHS in the National Health Care Surveys Registry.
- 100+ EHR products are certified to the PI health care surveys measure.

- **ONC's Cures Act Final Rule (2020)**

- **HL7 National Health Care Surveys CDA IG** – standard/format named as part of the EHR Certification Program Criteria in the rule.
- International collaboration among CDC Programs to name Public Health FHIR IGs, including the **Health Care Surveys (FHIR) Content IG**, in near-term future regulations for inclusion in PI.

Moving to EHR Data and Modernizing NHCS, NAMCS, and NPALS



National Hospital Care Survey (NHCS)

- **Purpose:** Provide reliable and timely health care utilization data for hospital-based settings.
- **Sample:** Non-federal, non-institutional hospitals with 6+ staffed inpatient beds.
- **Mode:** Administrative claims data and electronic health record (EHR) data transmitted electronically to NCHS or its data collection agent.
- **Questionnaire:** Annual Hospital Interview collects facility information needed for statistical weighting.
- **Data collection:** January-December annually, restricted-use files.
- **Sample size:** 608 hospitals in sample; all inpatient and ED encounters (i.e., entire calendar year) requested; 150-200 hospital respondents per year.
- **Linkage capability:** Personally-identifiable information (PII) is collected, which allows data linkage across hospital settings and to external data sources such as the NDI, CMS, and HUD data.

National Hospital Care Survey: Modernization

- **Purchase of data to supplement data collection**

- American College of Emergency Physicians (ACEP)
- Premier

- **Conducting new methodological work**

- Use data collected directly from hospitals and purchased data for modelling of national estimates.
- Explore use of synthetic data for public use and RDC files.

- **Data linkage work**

- NHCS data have been linked to the NDI, various CMS data sets, HUD data; and VA data is now in progress.

- **Natural Language Processing (NLP) Work**

- Using EHR clinical notes to identify opioid-involved hospitalizations.

National Ambulatory Medical Care Survey (NAMCS) - Health Center Component

- **Purpose:** Designed to meet the need for objective, reliable information about the provision and use of ambulatory medical care services in the United States.
- **Sample:** Federally qualified health centers (FQHCs) and FQHC look-alikes as classified by the Health Resources and Services Administration (HRSA).
- **Mode:** Electronic health record (EHR) data transmitted electronically to NCHS or its data collection agent.
- **Questionnaire:** Facility Interview collects HC information needed for statistical weighting.
- **Data collection:** January-December annually, restricted-use files.
- **Sample size:** 50 HCs in 2021; +50 HCs in 2022 (total of up to 100); +50 HCs in 2023 (total of up to 150).
- **Linkage capability:** PII is collected which allows linkage to NDI, HUD and Medicaid data.

NAMCS – Health Center Component: Modernization

- **Transition from abstraction to EHR data collection**
 - Working with HRSA to recruit up to 50 FQHCs or FQHC look-a-likes to transmit EHR data in HL7 CDA format or customized report to NCHS for 2021 and moving forward.
- **Additional recruitment and data availability**
 - Funding will be used for 2023 data collection to increase the sample for an additional 50 FQHCs or FQHC look-a-likes to bring total sample up to 150 and build interactive dashboard for preliminary and final national estimates.
- **Incentivize participation**
 - Provide up to \$10,000 for set-up to activate module on their system or have vendor send customized report to NCHS.
- **Data linkage work**
 - Assessment/exploration of linkage to the NDI and HUD administrative data beginning Fall 2022.

National Post-Acute Long-Term Care Study (NPALS)

- **Purpose:** Designed to estimate the supply, use, characteristics, and practices of paid, regulated post-acute and long-term care providers and services users in the United States.
- **Sample:** Residential care communities and adult day services centers that meet study definition.
- **Mode:** Multi-mode surveys using web and mail questionnaires with non-response follow-up by telephone.
- **Questionnaire:** Provider questionnaire collects information about providers and aggregated information about services users; alternate year services user questionnaire.
- **Data collection:** Biennial, restricted-use files.
- **Sample size:** About 11,600 residential care communities and 5,500 adult day services centers for state and national estimates; alternate years about 2,100 residential care communities and 1,700 adult day services centers for national estimates only.

NPALS: Modernization

■ Purpose

- Identify existing EHR platforms/systems that may serve as alternative sources of data on adult day services centers and residential care communities as well as their services users.
- Determine what information about providers and service users may be available on these EHR platforms:
 - Whether the data are available on a consistent basis across geographic areas and provider types.
 - Whether the data are aggregated, or do they have identifiable information that can be used to link these data to the NPALS respondents; and
 - Whether the data are collected on a regular basis and how often the data are collected/updated (including lag time).

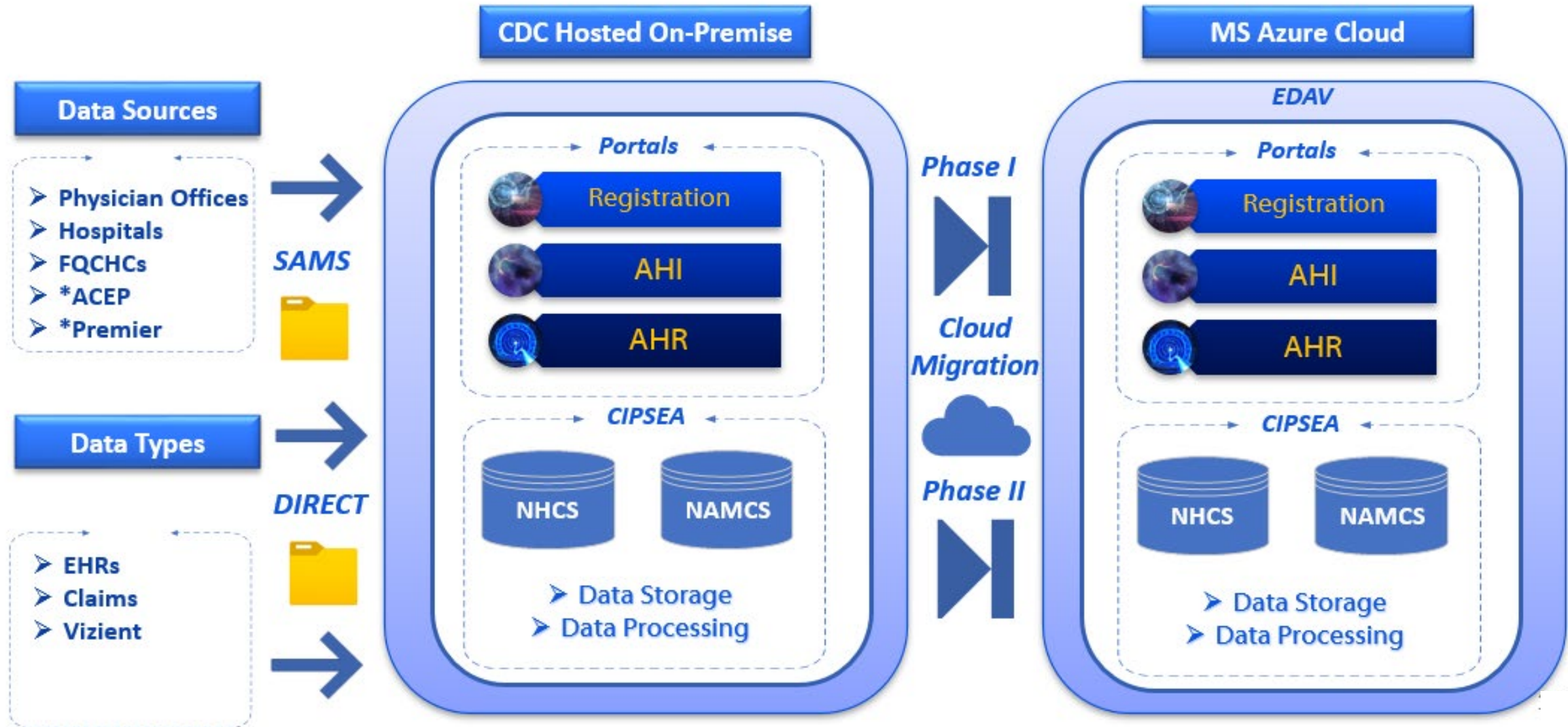
■ Mode

- Electronic search of EHR literature; interviews with subject matter experts.

Building Cloud-based Infrastructure for EHR Data Collection



HEHR Cloud Migration Overview



Utilizing New and Timely Manners of Data Dissemination



Traditional Data Dissemination: Data Files

- **Public use files and associated documentation**
 - Reviewed by NCHS Disclosure Review Board
 - Available for download on NCHS website
- **Restricted use files**
 - Available through the NCHS Research Data Center (RDC) Network



Traditional Data Dissemination: Reports and Articles

■ NCHS publications

- NCHS Data Briefs, National Health Statistics Reports, Vital and Health Statistics Series reports, MMWR QuickStats, web tables

■ Peer-reviewed journal articles

- Examples: JAMA, Health Affairs, AJPH, AJPM

■ Official government reports

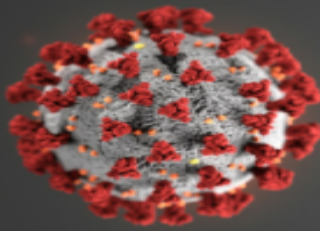

- CDC's Morbidity and Mortality Weekly Report (MMWR)
- NCHS' Health, United States
- AHRQ's National Healthcare Quality and Disparities Report



New Data Dissemination: Preliminary Release of COVID-19 Data

National Center for Health Statistics

CDC > NCHS

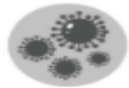


COVID-19 Data from the
National Center for Health
Statistics

NCHS collects, analyzes, and disseminates information on the health of the nation. In response to the COVID-19 pandemic, NCHS is providing the most recent data available on deaths, mental health, and access to health care, loss of work due to illness, and telemedicine from the vital statistics system, the NCHS Research and Development Survey, and through a partnership with the U.S. Census Bureau.


For general information including symptoms, testing, and community safety, visit <https://www.cdc.gov>.

[Articles on NCHS Response to Coronavirus Disease 2019 \(COVID-19\)](#)




Deaths

Access provisional death counts based on information obtained from death certificates.




Cause-of-Death Certification

Guidance for certifiers on how to report deaths due to COVID-19 on death certificates.




Births and Pregnancies

Access provisional data on births and COVID-19 cases among pregnant women and newborns.




Health Care Access, Telemedicine, and Mental Health

Data from NCHS' partnership with the U.S. Census Bureau on the Household Pulse Survey.




Health Care Access, Telemedicine, and Loss of Work Due to Illness

Data from NCHS' research survey RANDS during COVID-19.




Hospital Data

Data from NCHS' National Hospital Care Survey describing patient care in hospital-based settings.



Long-term Care and COVID-19

COVID-19-related data for residential care communities and adult day services centers.



Physician Experiences

Data from NCHS' National Ambulatory Medical Care Survey describing office-based physician experiences related to COVID-19.

Example: Long-term Care and COVID-19 Preliminary and Final Data

Long-term Care Settings



Residential Care Communities (RCC)

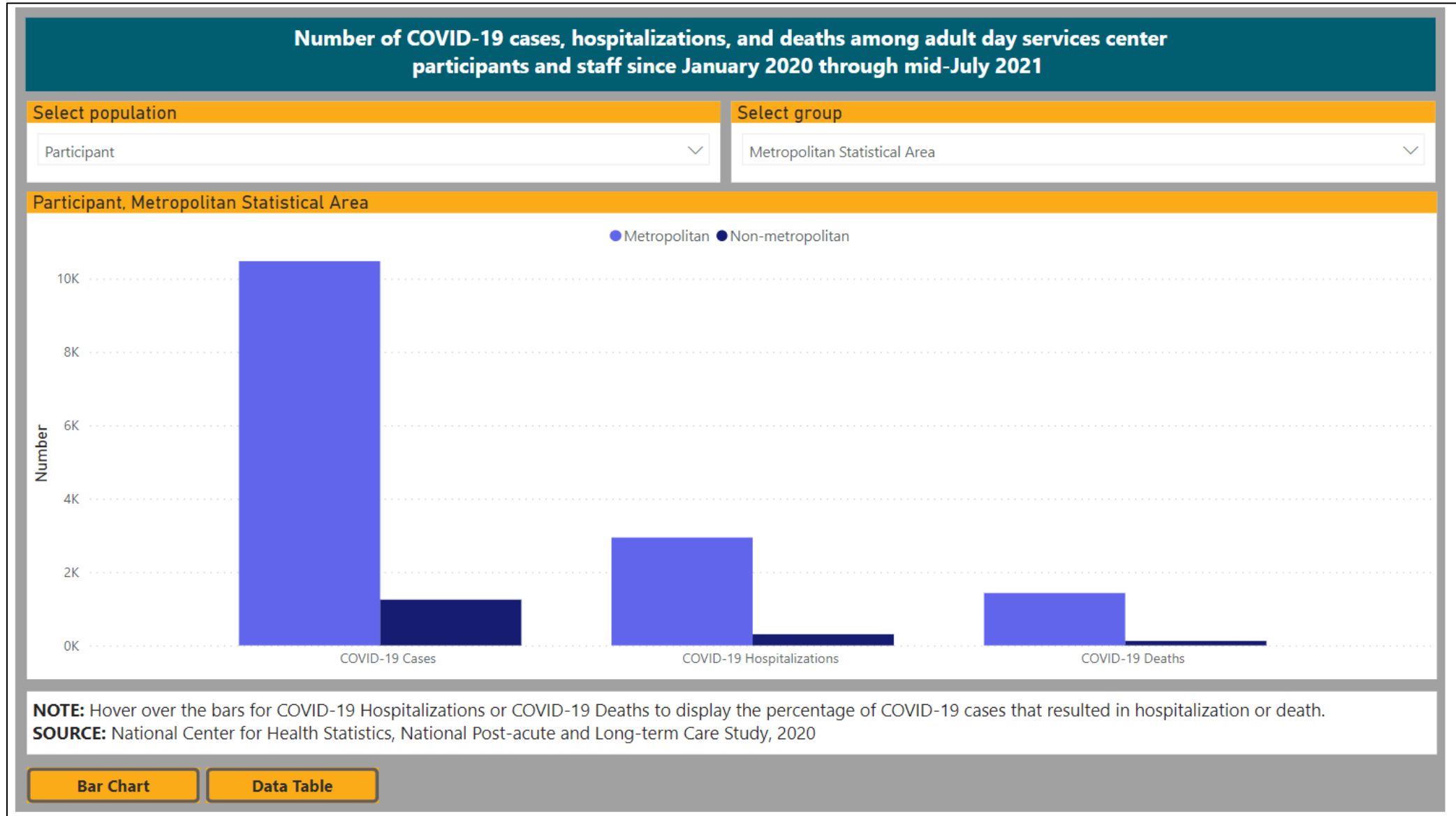
Topics covered in these figures include the number of COVID-19 cases, hospitalizations, and deaths among residents and staff, practices taken to reduce COVID-19 exposure and transmission, and personal protective equipment (PPE) shortages. The figures can display different groups depending on the measure of interest.



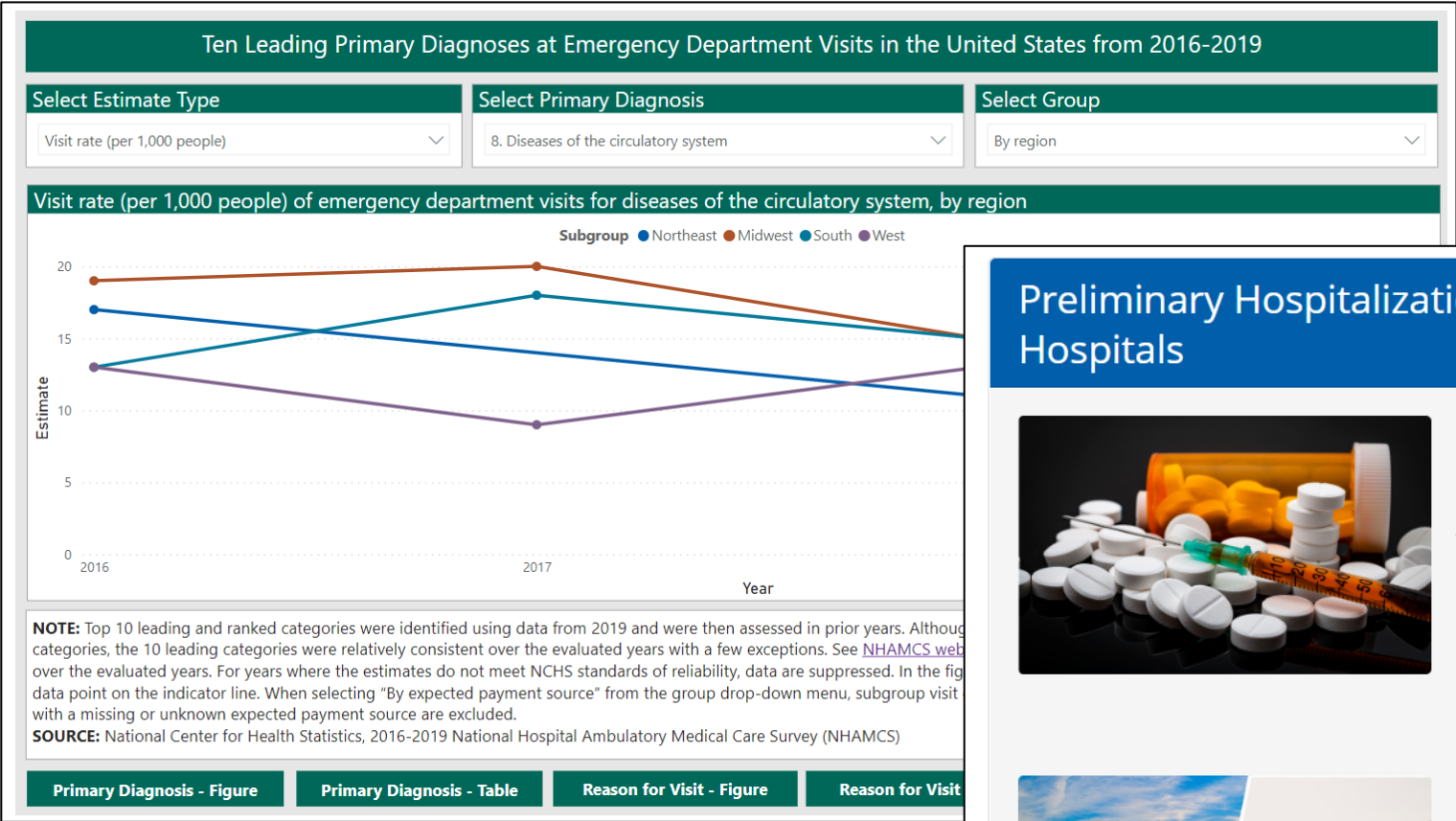
Adult Day Services Centers (ADSC)

Topics covered in these figures include the number of COVID-19 cases, hospitalizations, and deaths among participants and staff, practices taken to reduce COVID-19 exposure and transmission, and personal protective equipment (PPE) shortages. The figures can display different groups depending on the measure of interest.

Example of Preliminary NPALS Data




Expansion of Dashboard Releases: Preliminary and Final Data



Giving Data Back to Providers: Annual Hospital Report Portal

- Developed a data visualizations web portal for NHCS participating sampled hospitals to view transmitted data to NCHS, including aggregate 30-, 60-, 90-day post-acute mortality.



Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People™

National Center for Health Statistics



National Hospital Care Survey (NHCS)
Annual Hospital Reporting (AHR)

Log in to access charts and data for your hospital. If you do not have an account please contact AHR Support.

Email

Password 

Login

[Forgot Password?](#)

[New Account? Click here to set your password.](#)

Moving Forward...

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- **Develop and leverage EHR standards**
 - Have Health Care Surveys (FHIR) Content IG, included in Promoting Interoperability regulations
 - Conduct and build on the FHIR Pilot

- **Moving to EHR data and modernizing NHCS, NAMCS, and NPALS**
 - Continue to release NHCS preliminary data and supplement the data collected directly in the NHCS to make reliable national estimates.
 - Continue to expand the sample for FQHCs in NAMCS for collection of EHR data and produce preliminary and reliable national estimates.
 - Explore collection of EHR visit data for physicians and other advance care providers' visits in NAMCS, and residential care communities and adult day service centers in NPALS.

Moving Forward (cont.)

■ Building cloud-based infrastructure for EHR data collection

- Migrate infrastructure from an on-premises architecture to MS Azure cloud.
- Incorporate cloud-native capabilities.

■ Utilizing new and timely manners of data dissemination

- Explore additional means of disseminating preliminary and final data via Dashboards and new products
- Continue NDI, CMS, and HUD data linkages
- Explore other data set linkages (e.g., Veterans Affairs)
- Continue NLP and algorithm development work for opioid and other drug encounters, social determinants of health, and other medical conditions
- Explore development of synthetic data for public and restricted use files.

Thank you!

For questions:

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For more information on the National Health Care Surveys:

<https://www.cdc.gov/nchs/dhcs/index.htm>

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the NCHS or the Centers for Disease Control and Prevention.

For more information, contact CDC
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