

Demonstration Projects of the National Hospital Care Survey: Inpatient Hospitalizations for Stroke

Presented by Geoff Jackson

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Webinar Essentials

- To preserve confidentiality of hospitals in the sample, please use your first name only when identifying yourself in the webinar discussion today.
- When you are not speaking, please mute your phone to keep background noise to a minimum.





Webinar Overview

1. The National Center for Health Statistics
2. Overview of the National Hospital Care Survey (NHCS)
3. Highlights from a CDC Report on Stroke Hospitalizations
4. Participation Benefits
5. How to Participate





The National Center for Health Statistics



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What is the National Center for Health Statistics (NCHS) ?

- NCHS is part of the Centers for Disease Control and Prevention (CDC).
- NCHS monitors the health of the Nation by providing data on:
 - Health care trends
 - Health status of the population
 - Impact of health policy decisions on programs
- NCHS collects data from health care settings, including:
 - Ambulatory care
 - Hospital-based care
 - Long-term care





Confidentiality

- NCHS and its contractors take the protection of your hospital's data very seriously. All survey staff must complete confidentiality training annually and are governed by the rules listed on this slide. Willful unauthorized disclosure can result in fines or imprisonment.
- We will not release the name of your hospital to anyone nor will we release any data that could identify your hospital or your patients. Any data released in a public use file will only include de-identified data.
- For more information, please visit our Confidentiality page:
 - <https://www.cdc.gov/nchs/nhcs/confidentiality.htm>





Overview of the National Hospital Care Survey (NHCS)



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Goal and Objectives of the NHCS

- Goal:
 - Provide reliable and timely healthcare utilization data for hospital-based settings.
- Objectives:
 - Move toward electronic data collection.
 - Provide benchmark data for comparison to national data.
 - Link episodes of care across hospital units as well as link to other data sources such as the National Death Index (NDI).





NHCS Sample Design

- Hospitals are randomly selected to provide nationally representative data on hospital utilization.
- Each hospital selected for the survey uniquely represents facilities of similar size, service type, and/or geographic location and cannot be replaced.
- The 2019 NHCS sample consist of 598 non-institutional, non-federal hospitals with six or more staffed inpatient beds.
- Participation is voluntary, and there is no penalty for not participating.
- The success of the study depends on the willingness of health care professionals to provide information on current health care services in the United States.





NHCS Data Coverage and Sources

Data coverage:

- All inpatient discharges and emergency department (ED) visits for up to a 12-month period.
- Outpatient department (OPD) data may be requested in future years.

Data sources:

- UB-04 administrative claims
- Electronic health record (EHR) data
- State files



Data Elements by Source

UB-04:

- Personally identifiable information (PII)
- Demographic information
- Encounter dates
- Diagnoses and procedures
- Revenue codes

EHR:

- Personally identifiable information (PII)
- Demographic information
- Encounter dates
- Diagnoses and procedures
- Procedure outcomes
- Lab tests and results
- Medications
- Vital signs
- Clinical notes (for ED visits only)





Features of NHCS Data

Data volume

- NHCS collects all patient encounters at the sampled hospital resulting in a large volume of data collected.
- In 2016, the volume of records collected was 2.5M inpatient discharges, 7M ED visits, and 36M OPD visits.
- Allows for the study of rare conditions and new procedures.

Data Linkage

- The records are at the encounter-level and contain PII.
- The inclusion of PII allows researchers to:
 - Follow episodes of care across hospital settings;
 - Measure repeat visits; and
 - Link to external data sources, including the NDI.



Highlights from a CDC Stroke Report

Unweighted data; not nationally representative

National Health Statistics Reports

Number 132 ■ November 13, 2019

National Hospital Care Survey Demonstration Projects: Stroke Inpatient Hospitalizations

by Geoff Jackson, M.S., and Karishma Chari, M.P.H.

Abstract

Objective—This report shows the analytical potential of the National Hospital Care Survey (NHCS) through a demonstration of the use of its data to examine inpatient (IP) discharges and ambulatory visits for stroke. Unweighted data of IP and ambulatory encounters from the 2014 NHCS are linked to records from the 2014 and 2015 National Death Index (NDI).

Methods—For the 2014 NHCS, 94 hospitals provided IP administrative claims data and 88 provided ambulatory (emergency and outpatient department) claims data. Although these data are not nationally representative, the survey provides unique opportunities to study health conditions such as stroke, because all IP discharges and ambulatory encounters from participating hospitals are collected for a 12-month period. The collection of patient identifiers (e.g., patient name, Social Security number, and date of birth) allows for linkage to outside data sources such as NDI, providing information on patient mortality after hospital discharge. Analyses examined stroke encounters across various hospital settings.

Results—Approximately two-thirds of stroke IP discharges originated from hospital emergency departments. IP visits for stroke tended to originate from the IP department among younger patients, and from the emergency department for older patients. The likelihood of postdischarge mortality was higher for stroke patients aged 85 and over. Thirteen percent of stroke patients aged 85 and over died within 30 days of an IP discharge compared with almost 0% of stroke patients aged 75–84. This study highlights the unique analytical capabilities of NHCS.

Keywords: cerebrovascular accident • health care • mortality • National Death Index

Introduction

Cerebrovascular disease, or stroke,

Stroke is a leading cause of death and kills approximately 140,000 Americans annually (1, 2). Those suffering from

economic burden, with an estimated \$33 billion spent each year on stroke-related health care services, medicines, and missed days of work in the 50 states and District of Columbia (D.C.) (3).

The National Hospital Care Survey (NHCS) presents unique opportunities to detail how strokes are treated within the inpatient (IP) and emergency department settings and mortality after the hospital visit. Specifically, this report demonstrates how NHCS may be used to analyze hospital care outcomes, such as time spent in an intensive care unit (ICU) and mortality at the hospital and postdischarge. Through the collection of personally identifiable information, patients can be tracked through settings within the same hospital in the sample and linked to outside sources like the National Death Index (NDI). Linking hospital patient data to NDI allows for the reporting of mortality after hospital discharge. Although the NHCS data used in this report are unweighted and not nationally representative, the results offer examples of how researchers can use the unweighted detailed data to provide



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Demonstration of NHCS - Stroke

- *National Hospital Care Survey Demonstration Projects: Stroke Inpatient Hospitalizations*
- Report published November 2019
- Authors: Geoff Jackson, MS and Karishma Chari, MPH
- <https://www.cdc.gov/nchs/data/nhsr/nhsr132-508.pdf>





Background

- Cerebrovascular disease or stroke:
 - Occurs when a blood vessel leading to the brain either ruptures or is blocked
- One of the leading causes of death
 - Kills approximately 140,000 Americans annually
- Stroke patients need immediate medical attention:
 - In 2014, hospitalizations for stroke totaled 94,695
- The NHCS dataset presents unique opportunities to study stroke-related hospitalizations, including detailing:
 - Hospital care experience, such as time spent in an intensive care unit (ICU); and
 - Mortality at the hospital and post discharge.





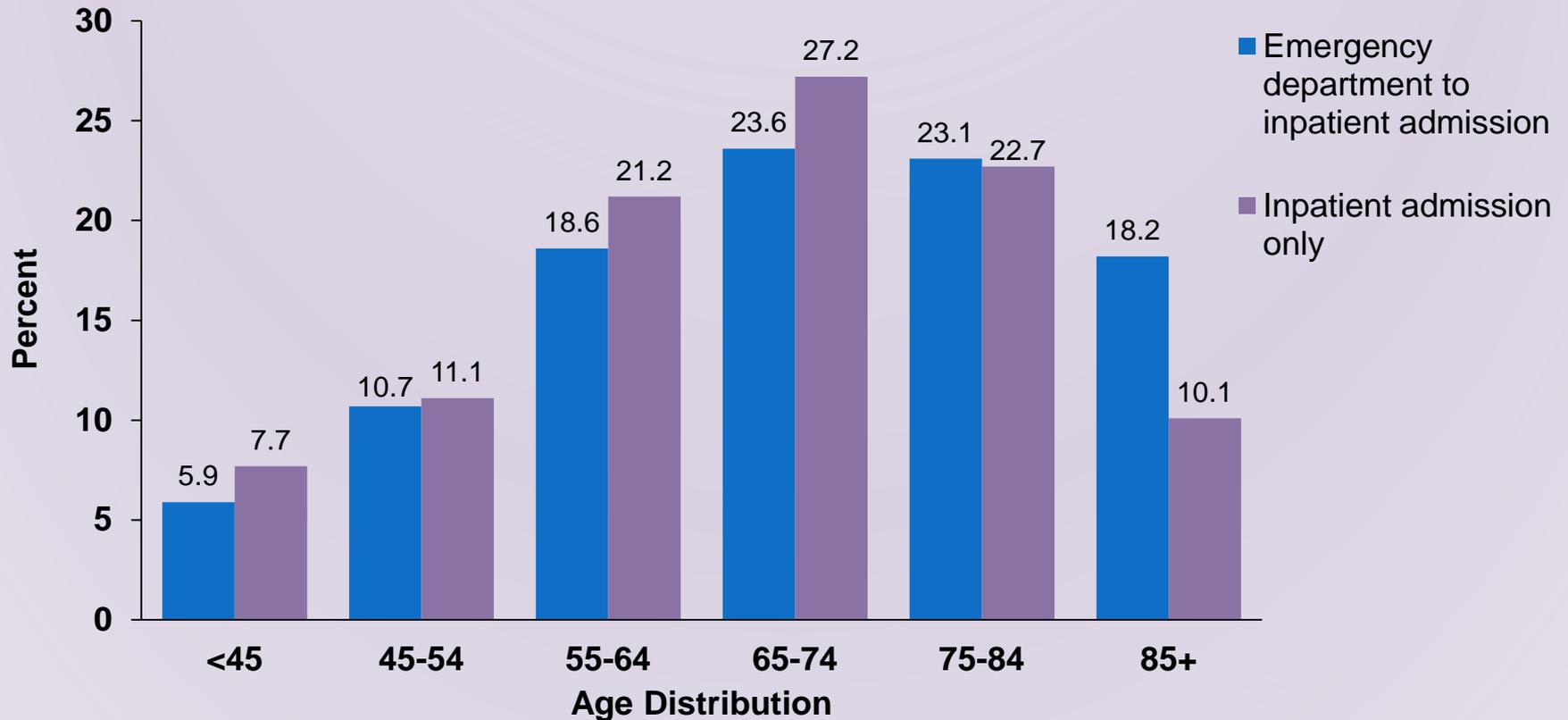
Methods

- 2014 NHCS dataset, which includes:
 - 94 hospitals provided inpatient claims data
 - 88 of the 94 hospitals also provided ambulatory claims data
- The unweighted total number of encounters:
 - 1.7 million inpatient discharges
 - 4.5 million ED visits
- First-listed diagnosis of stroke (cerebrovascular disease)
 - International Classification of Diseases, Ninth Revision, Clinical Modification value of 430–438
- The number of inpatient discharges with a first-listed diagnosis of stroke was 38,865 from 36,519 unique patients





Age distribution of first-listed diagnosis of stroke, by originating setting: NHCS 2014



NOTE: n=26,193 emergency department to inpatient admission; n=12,672 inpatient admission only. Data are not nationally representative.

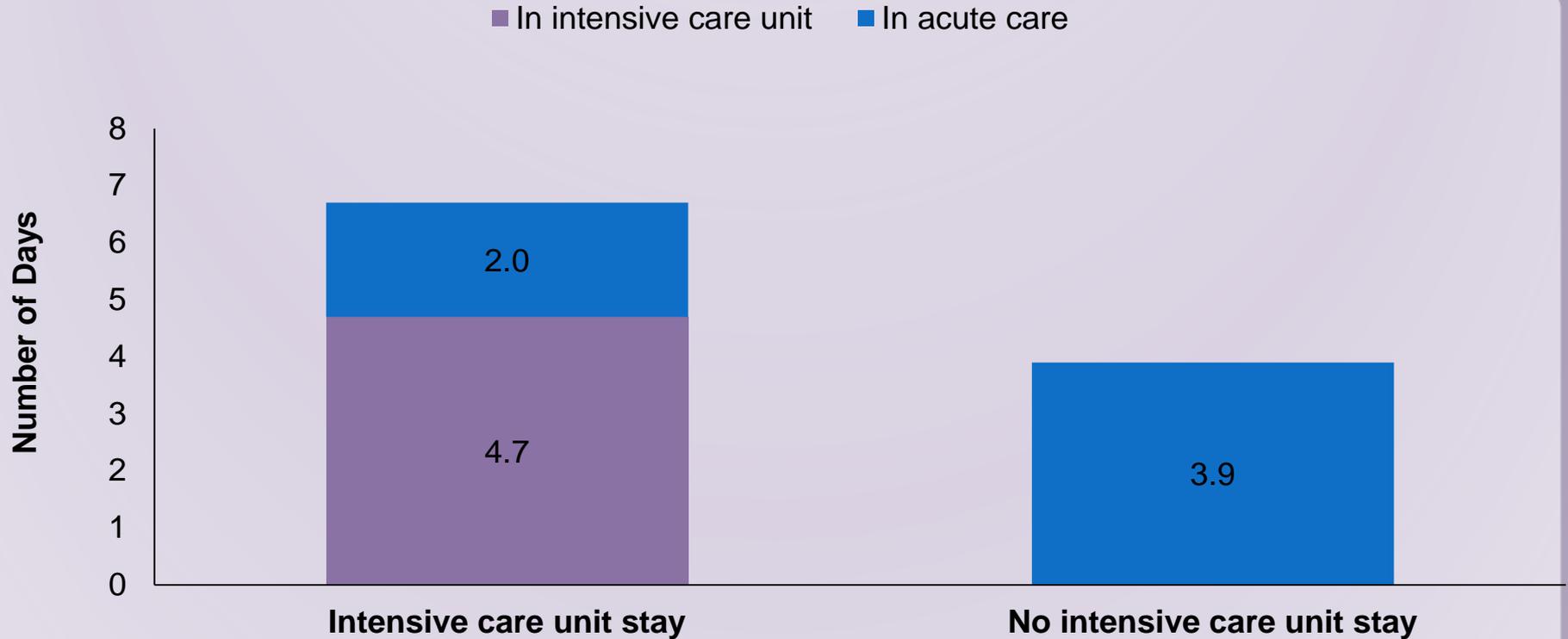
SOURCE: NCHS, National Hospital Care Survey, 2014



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Average length of stay for first-listed diagnosis of stroke inpatient discharges, by intensive care unit status: NHCS 2014



NOTE: n=20,888 intensive care unit stay; n=17,977 No intensive care unit stay. Data are not nationally representative.

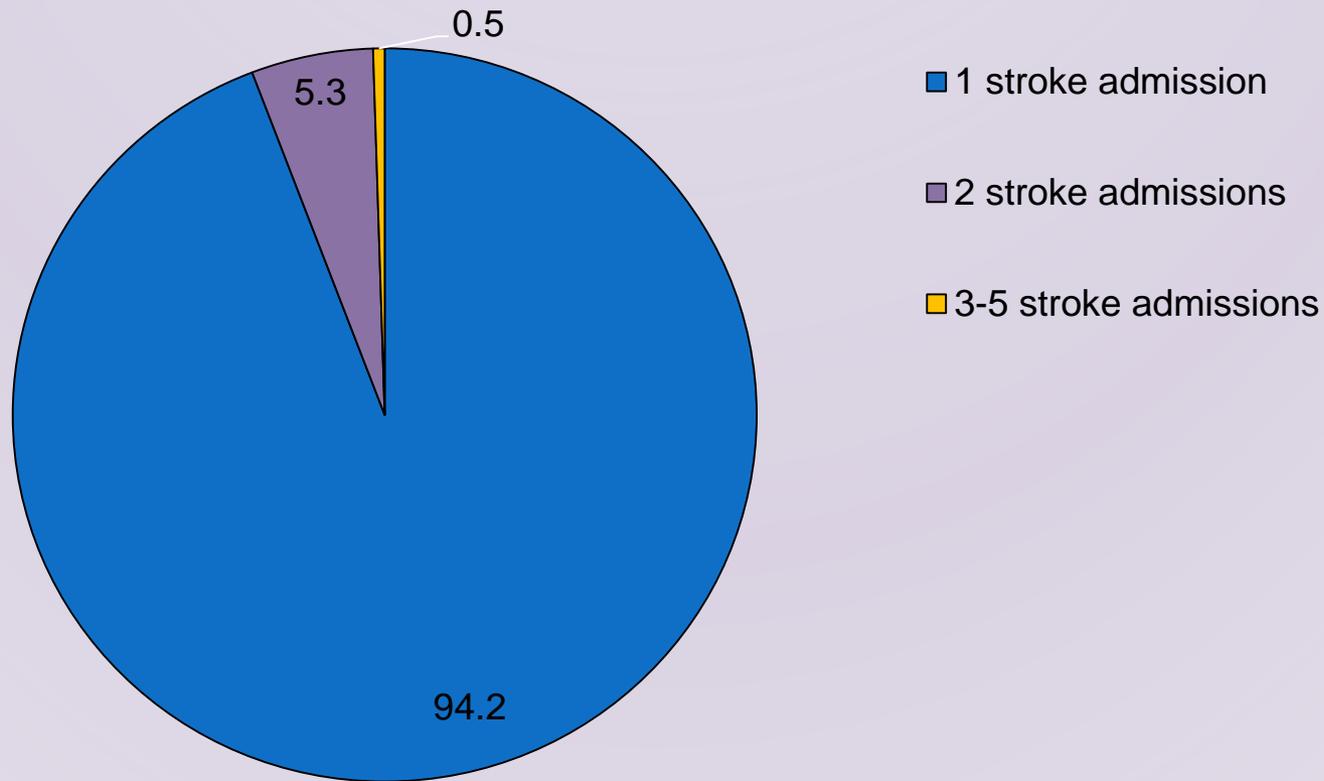
SOURCE: NCHS, National Hospital Care Survey, 2014



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Number of inpatient stroke admissions by patients: NHCS 2014



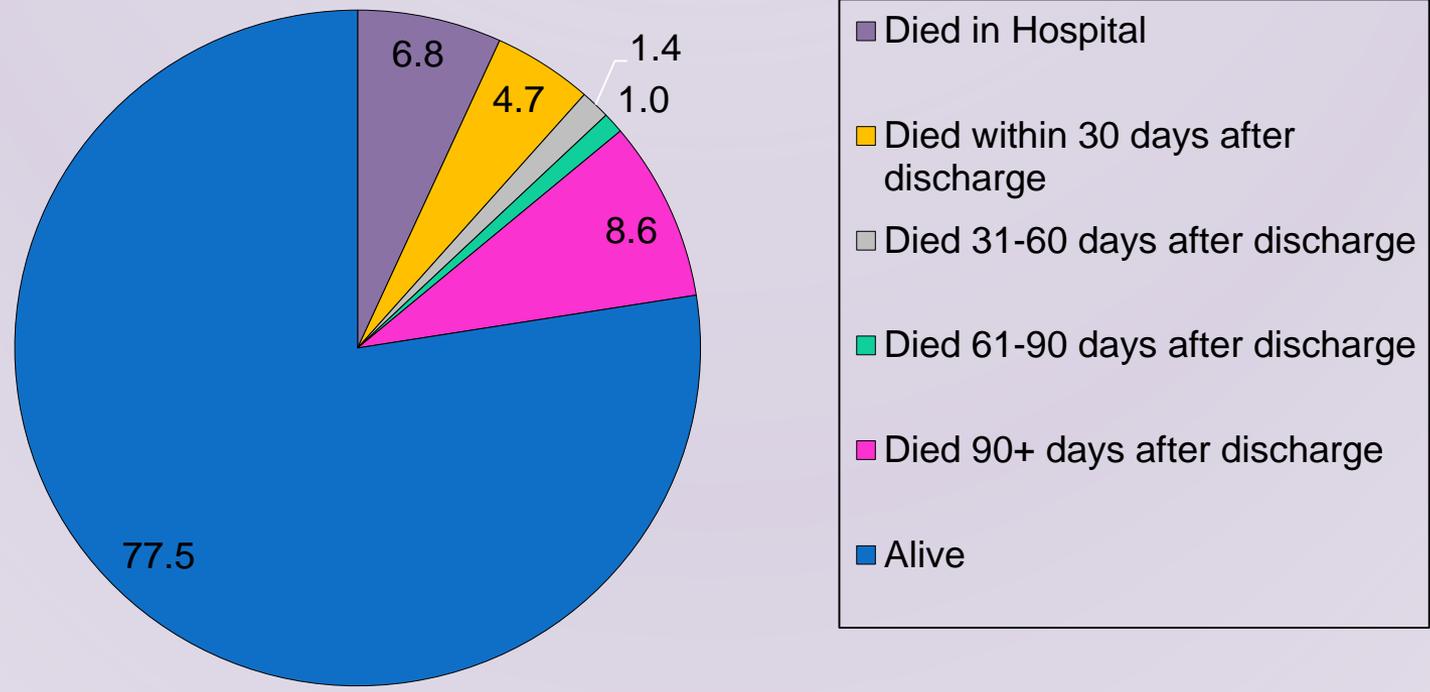
NOTE: n=36,519 patients. Data are not nationally representative.

SOURCE: NCHS, National Hospital Care Survey, 2014





Percentage of deaths for inpatient admissions with a first-listed diagnosis of stroke, by number of days after the last discharge: NHCS 2014 linked to the NDI, 2014 and 2015



NOTE: n=36,519 patients. Data are not nationally representative.

SOURCE: NCHS, National Hospital Care Survey, 2014 linked to the National Death Index, 2014 and 2015



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Discussion and Conclusions

- Although the NHCS data used were not nationally representative, this report shows the type of analyses that are now possible with NHCS data.
- Collection of PII allows for linkage across hospital settings and to outside data sources, particularly the NDI.
- As NHCS continues to collect data from more hospitals and moves toward the collection of electronic health records, the benefits to researchers and the public of NHCS data and its linkage capability will continue to grow.





Participation Benefits





Participation Benefits

- Improve quality of care and other health benchmarks
- Access to your data via the Hospital Data Reporting Portal (coming soon)
- Promoting Interoperability (formerly MU) credit
- Community Health Benefit
- Continuing Education Units credits
- Access to NCHS created reports and analytic papers
- Payment of \$500 for a test file and \$500 for 12 months of data
- For more information on these benefits, please visit:
https://www.cdc.gov/nchs/nhcs/why_participate.htm





How to Participate





What does participation in the NHCS involve?

- Brief interview to determine eligibility
- Electronic submission of data
 - EHR, UB-04 administrative claims, or state files
- Annual Hospital Interview
- When you agree to participate, login credentials will be provided to you to facilitate submitting your data to the secure network.





Future webinars and data availability

Future Webinars

- Please stay tuned for additional webinars on demonstration cases of NHCS data
- Email blast invitation with call-in information will be sent.

Data Availability

- NHCS data (and files linked to NDI data) are available in the NCHS Research Data Center.
- For more information on how to submit a proposal, please visit:
 - https://www.cdc.gov/nchs/nhcs/nhcs_questionnaires.htm





Stay updated

- NHCS has a listserv (NHCS-DATA@cdc.gov) for those interested in receiving updates on the availability of data files and the release of reports and presentations. To join the listserv, please visit:
 - https://www.cdc.gov/nchs/dhcs/hdas_listserv.htm
- You can also stay updated via our Data Uses page:
 - https://www.cdc.gov/nchs/nhcs/data_uses.htm





Questions?

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THANK YOU!



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