The Healthcare Cost and Utilization Project (HCUP)

Data and Tools to Support Health Services Research and Policy Analysis

Agency for Healthcare Research and Quality

AcademyHealth ♦ March 2006
Advancing Excellence in Health Care

HCUP Data Are Unique and Powerful

37 State Partners Representing 90% of U.S. Population
90% of Hospital Discharges in U.S.
Census of Hospital Care—NOT a Sample

HCUP Supports High Impact Research and Policy Analyses

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37 State Partners Representing 90% of U.S. Population
90% of Hospital Discharges in U.S.
Census of Hospital Care—NOT a Sample

HCUP Supports High Impact Research and Policy Analyses
Goals for This Presentation

- Describe the HCUP databases
- Illustrate uses of HCUP
- Examine HCUP features and capabilities
- Provide information about obtaining HCUP databases

Outline of Presentation

- Overview of HCUP Data
- 5 Types of HCUP Databases
- Software Tools and Reports
- HCUPnet
- User Support
Overview of HCUP Data

HCUP Data Mostly from Community Hospitals

Typically not included in HCUP data

Included in HCUP data

Source: American Hospital Association (AHA), 2003
What Are Community Hospitals?

AHA definition of community hospitals: Non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of other institutions (e.g., prisons)

<table>
<thead>
<tr>
<th>Include these hospitals</th>
<th>Exclude these hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB-GYN</td>
<td>Long-term care</td>
</tr>
<tr>
<td>ENT</td>
<td>Psychiatric</td>
</tr>
<tr>
<td>Orthopedic</td>
<td>Alcoholism/chemical</td>
</tr>
<tr>
<td>Pediatric</td>
<td>dependency</td>
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<tr>
<td>Public</td>
<td>Rehabilitation</td>
</tr>
<tr>
<td>Academic medical</td>
<td></td>
</tr>
<tr>
<td>Centers</td>
<td></td>
</tr>
<tr>
<td>Short-term rehabilitation</td>
<td></td>
</tr>
</tbody>
</table>

What Types of Care Does HCUP Capture [and Not]?

**Inpatient**
- State Inpatient Databases (SID)
- Nationwide Inpatient Sample (NIS)
- Kids’ Inpatient Database (KID)

**Outpatient**
- Emergency Room Visits
- State Emergency Department Database (SEDD)
- Ambulatory Surgeries
- State Ambulatory Surgery Database (SASD)
- [Office Visits]
- [Pharmacy/Lab/Radiology]
The Flow of Inpatient Admissions

Scheduled Admission

Transfer/ED Admit

Reception

Admit

Provide Care

Discharge

Patient Perspective

Data Perspective

Patient Record

Discharge Summary

Medical Coder

Billing Dept

Bill Generated

The Foundation of HCUP Data is Billing Data

Billing UB-92 Form

Demographic Data

Diagnoses

Procedures

Charges
**The Making of HCUP Data**

- **Patient enters hospital**
- **Billing record created**
- **AHRQ standardizes data to create uniform HCUP databases**
- **States store data in varying formats**
- **Hospital sends billing data and any additional data elements to Data Organizations**

**Why Do We Need Another Hospital Data Source?**

<table>
<thead>
<tr>
<th>Hospital Data Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Hospital Discharge Survey (NHDS) – Centers for Disease Control and Prevention (CDC)</td>
<td>Hospital inpatient sample</td>
</tr>
<tr>
<td>Medical Expenditure Panel Survey (MEPS) – Agency for Healthcare Research and Quality (AHRQ)</td>
<td>Health care surveys that provide information about health care use and costs</td>
</tr>
<tr>
<td>Medicare Provider Analysis and Review (MedPAR) – Centers for Medicare and Medicaid Services (CMS)</td>
<td>Collection of hospital Medicare claims</td>
</tr>
</tbody>
</table>
Hospital Billing Data Have Benefits and Limitations

**Benefits**
- Size
- Uniformity of codes
- Regularity of collection
- Ease of access
- All-payer

**Limitations**
- Sparse clinical detail
- Variable accuracy of coding
- No data on individuals outside hospital system

37 States Contribute Data

HCUP Process

HCUP Uniform Data
Current HCUP Partners

Arizona Department of Health Services
California Office of Statewide Health Planning & Development
Colorado Health & Hospital Association
Connecticut Chime, Inc.
Florida Agency for Health Care Administration
Georgia GHA An Association of Hospitals & Health Systems
Hawaii Health Information Corporation
Indiana Hospital&Health Association
Illinois Department of Public Health
Iowa Hospital Association
Kansas Hospital Association

Kentucky Department for Public Health
Maine Health Data Organization
Maryland Health Services Cost Review Commission
Massachusetts Division of Health Care Finance and Policy
Michigan Health & Hospital Association
Minnesota Hospital Association
Missouri Hospital Industry Data Institute
Nebraska Hospital Association
Nevada Department of Human Resources
New Hampshire Department of Health & Human Services
New Jersey Department of Health & Senior Services
Current HCUP Partners

**North Carolina** Department of Health and Human Services
**Ohio** Hospital Association
Office for **Oregon** Health Policy & Research
**Oregon** Association of Hospitals and Health Systems (1996 data and forward)
**Rhode Island** Department of Health
**South Carolina** State Budget and Control Board
**South Dakota** Association of Health Care Organizations
**Tennessee** Hospital Association

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Current HCUP Partners

**Texas** Department of State Health Services
**Utah** Department of Health
**Vermont** Association of Hospitals and Health Systems
**Virginia** Health Information
**Washington** State Department of Health
**West Virginia** Health Care Authority
**Wisconsin** Department of Health and Family Services
HCUP Has Five Databases

- State Inpatient Databases (SID)
- State Ambulatory Surgery Databases (SASD)
- State Emergency Department Databases (SEDD)
- Nationwide Inpatient Sample (NIS)
- Kids’ Inpatient Database (KID)
Outline of Presentation

Overview of HCUP Data

5 Types of HCUP Databases

Software Tools and Reports

HCUPnet

User Support
State Inpatient Databases (SID)

What are the State Inpatient Databases (SID)?

Comprehensive hospital discharge data from states
**What Is the Source for the SID?**

Inpatient hospital data: uniform billing data (UB-92)

- Data organization provides data to HCUP
- HCUP collects and standardizes data to create SID

**SID File Structure**

- **Range of file sizes**
  - ~ 56,000 to 3.9 million records per state

- **Core set of variables**
  - Patient demographics
  - Expected payment source
  - All listed diagnoses and procedures

- **State-specific variables**
  - Patient race/ethnicity
  - Encrypted patient identifier
  - Patient ZIP code
  - AHA hospital identifier
Unique attributes of the SID:
- Subset of data elements
- Value-added data elements
- Uniformly coded across the states
- Encrypted identifiers
- Standard data quality checks
- Developed for cross-state analysis

The SID Contains Three Types of Data Files

Level of Files

- Hospital-Level Files
  (One record per hospital)
- Discharge-Level Files
  (One observation per discharge)
Core File Contains Patient Information

Contains common data elements (the nucleus of the SID) and state-specific data elements

What Data Elements Are Included in the Core File?

Patient demographics (age, sex)
Diagnoses & procedures (ICD-9-CM, DRG)
Expected payer
Length of stay
Patient disposition
Admission source & type
Admission month
Weekend admission
Some Data Elements Vary by State

- Race/Ethnicity
- Patient county
- Patient ZIP Code
- Severity of illness
- Birthweight
- Procedure date (days from admission)
- Primary payer details
- Secondary payer
- Detailed charges
- Patient identifiers encrypted
- Physician identifiers encrypted
- Physician specialty
- Hospital identifier unencrypted

Charges File Contains Detailed Charge Information

Charges ≠ Costs
Charges ≠ Payments

Charges File (Detailed Charges)
Hospital File Allows Linking with AHA Survey of Hospitals

AHA Linkage File
(Hospital Characteristics)

Not all SID include AHA linkage data elements:
Individual states decide

State Participation in SID Continues to Grow

# of states

States Releasing SID through HCUP Central Distributor

1990 - 2003

- Arizona
- California
- Colorado
- Florida
- Iowa
- Kentucky (2000–)
- Maine (1999–)
- Maryland
- Massachusetts
- Michigan (1999–)
- Nebraska (2001–)
- New Jersey
- New York
- North Carolina (2001–)
- Oregon
- South Carolina
- Utah (1997–)
- Washington
- West Virginia (2000–)
- Wisconsin

SID: Availability and Prices

- SID available for 1990 - 2003
- Availability and prices vary by state and year
  ~ $20 per data-year to ~ $3,000 per data-year
The SID Supports Interesting Research Topics

- Enumeration of all hospitals and discharges within market areas or states
- Investigation of questions unique to one state
- Comparison of data from two or more states
- Research of market areas or small area variation analyses
- Identification of state-specific trends in inpatient care utilization, access, charges, and outcomes

Using the SID: A Research Example

Relation between Prepublication Release of Clinical Trial Results and the Practice of Carotid Endarterectomy

Gross CP, Steiner CA, Bass EB, Powe NR • 2000
Prepublication dissemination of CEA trial results with clinical alerts was associated with prompt and substantial changes in medical practice.
What Is the Nationwide Inpatient Sample (NIS)?

- State Inpatient Databases (SID)
- Comprehensive hospital discharge data from states
- Nationwide Inpatient Sample (NIS)
Purpose of the NIS

- Allows national and regional studies of inpatient hospital utilization and charges*

* Not recommended for state-level analyses

The NIS Is a Stratified Sample of Hospitals from the SID

5 NIS Strata
- U.S. Region
- Urban/Rural
- Teaching Status
- Ownership/Control
- Bed Size

2004 State Inpatient Databases
N = x Hospitals

2004 Nationwide Inpatient Sample
N = x Hospitals

47

48
Differences Between SID and NIS

- **State Inpatient Databases (SID)**
  - Census of hospitals
  - More data elements
  - Encrypted patient IDs in some states

- **Nationwide Inpatient Sample (NIS)**
  - Sample of hospitals
  - Fewer data elements, but all standardized
  - Many value-added data elements
    - Severity measures

Four Sets of Severity Measures

- **All Patient Refined Diagnosis Related Groups (APR-DRGs)** – 3M Health Information Systems
- **All-Payer Severity-Adjusted Diagnosis Related Groups (APS-DRGs)** – HSS, Inc.
- **Disease Staging** – Medstat
- **AHRQ comorbidity measures** – Elixhauser et al., Medical Care
The NIS Has Many Value-Added Variables

- Hospital characteristics
  - Region
  - Urban/rural
  - Teaching status
  - Ownership/control
  - Bed size
- Clinical Classification Software (CCS)
  - AHRQ clinical grouper for ICD-9-CM codes
- Median income for patient’s ZIP Code

The NIS Includes Some Specialty Hospitals

<table>
<thead>
<tr>
<th>Includes these specialty hospitals</th>
<th>Excludes these specialty hospitals*</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB-GYN</td>
<td>Long-term care</td>
</tr>
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<td>Academic medical centers</td>
<td></td>
</tr>
<tr>
<td>Short-term rehabilitation</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The NIS includes discharges for these types of care if the care was received at community hospitals.
## Key Differences Between the 1988, 1993, and 2003 NIS

<table>
<thead>
<tr>
<th></th>
<th>1988</th>
<th>1993</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td># HCUP states</td>
<td>8</td>
<td>17</td>
<td>37</td>
</tr>
<tr>
<td># Hospitals</td>
<td>759</td>
<td>913</td>
<td>xxx</td>
</tr>
<tr>
<td># Unweighted records</td>
<td>5,265,756</td>
<td>6,538,976</td>
<td>xxx</td>
</tr>
<tr>
<td># Weighted records</td>
<td>35,171,448</td>
<td>34,714,530</td>
<td>xxx</td>
</tr>
</tbody>
</table>

## Statewide Data Systems Participating in NIS

<table>
<thead>
<tr>
<th>Data Year</th>
<th># of States</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>8</td>
<td>CA, CO, FL, IA, IL, MA, NJ, WA</td>
</tr>
<tr>
<td>1989-1992</td>
<td>11</td>
<td>+ AZ, PA, WI</td>
</tr>
<tr>
<td>1993-1994</td>
<td>17</td>
<td>+ CT, KS, MD, NY, OR, SC</td>
</tr>
<tr>
<td>1995-1996</td>
<td>19</td>
<td>+ MO, TN</td>
</tr>
<tr>
<td>1997-1998</td>
<td>22</td>
<td>+ HI, UT, GA</td>
</tr>
<tr>
<td>1999</td>
<td>24</td>
<td>+ ME, VA</td>
</tr>
<tr>
<td>2000</td>
<td>28</td>
<td>+ KY, NC, TX, WV</td>
</tr>
<tr>
<td>2001</td>
<td>33</td>
<td>+ MI*, MN, NE, RI, VT</td>
</tr>
<tr>
<td>2002</td>
<td>35</td>
<td>+ NV, OH, SD [AZ not available]</td>
</tr>
<tr>
<td>2003</td>
<td>37</td>
<td>+ IN, NH [ME not available]</td>
</tr>
<tr>
<td>2004</td>
<td>37</td>
<td>xxx</td>
</tr>
</tbody>
</table>

*MI entered HCUP partnership in 1999.*
NIS: Availability and Prices

- 2000 - 2004: $200 per data-year
- 1993 - 1999: $160 per data-year
- Student Price (All Years): $20 per data-year

The NIS Can Be Used to Study Many Topics

- Use of and charges for hospital services
- Medical practice variation
- Medical treatment effectiveness
- Quality of care and patient safety
- Impact of health policy changes
- Diffusion of medical technology
Spinal-Fusion Surgery –
The Case for Restraint

Deyo RA, Nachemson A, Mirza SK • 2004

Findings

Spinal-fusion surgery is undoubtedly effective for some conditions in some patients; however, there is concern that the procedure may be overused.

Figure 1. Annual Number of Knee-Arthroplasty, Hip-Replacement, and Spinal-Fusion Operations in the United States, on the Basis of the National Inpatient Sample.

Data are from the Agency for Healthcare Research and Quality.¹
The Nationwide Inpatient Sample (NIS)

The Nationwide Inpatient Sample (NIS) is the largest all-payer inpatient care database in the United States, containing data on more than seven million hospital stays from approximately 1,000 hospitals. Its large sample size is ideal for developing national and regional estimates and enables analyses of rare conditions, uncommon treatments, and special populations. The following links provide detailed documentation for the NIS.

Some documents are provided in Adobe® Acrobat® (PDF) format. The amount of time needed to access a document depends on your machine, browser, and Internet connection. PDF files require the Adobe® Acrobat® Reader™, which can be downloaded free of charge from Adobe®. PDF Help provides instructions on how to work with PDF files.

- Introduction to the NIS:
  o 2000 (PDF file, 422 KB)
  o 2001 (PDF file, 293 KB)
  o 2002 (PDF file, 177 KB)
  o 2003 (PDF file, 94 KB)
  o 2004 (PDF file, 92 KB)

- Kids’ Inpatient Database

- NIS Severity Measures:
  o Overview of Severity Measures (PDF file, 73 KB)
  o AHRQ-SSG Methodology Overview (PDF file, 46 KB)
  o AHRQ-SSG Definition Manual (PDF file, 160 KB)
  o AHRQ-SSG Weight Manual (PDF file, 225 KB)
  o Disease Staging Reference Guide (PDF file, 335 KB)
  o Disease Staging Diagnostic Categories (PDF file, 2,293 KB)

- File Specifications
- Description of Data Elements
- Summary Statistics
- SPSS User’s Guide
- HCUP Tools: Labels and Packages
What Is the Kids’ Inpatient Database (KID)?

State Inpatient Databases (SID)

Comprehensive hospital discharge data from states

Kids’ Inpatient Database (KID)

Purpose of the KID

- Allows national and regional studies of inpatient hospital utilization and charges for children and adolescents*

* Not recommended for state-level analyses
The KID Is a Stratified Sample of Discharges from the SID

3 Strata

2003 State Inpatient Databases
N = xxx
Pediatric Discharges from xxx Hospitals

2003 Kids’ Inpatient Database
N = 2,984,129
Pediatric Discharges from 3,438 Hospitals

Differences Between NIS and KID

State Inpatient Databases (SID)

Stratified sample of hospitals

NIS

Stratified sample of pediatric discharges

KID
### Key Differences Between the 1997, 2000, and 2003 KID

<table>
<thead>
<tr>
<th></th>
<th>1997</th>
<th>2000</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td># HCUP states</td>
<td>22</td>
<td>27</td>
<td>36</td>
</tr>
<tr>
<td># Hospitals</td>
<td>2,521</td>
<td>2,784</td>
<td>3,438</td>
</tr>
<tr>
<td># Unweighted records</td>
<td>1.9 million</td>
<td>2.5 million</td>
<td>3.0 million</td>
</tr>
<tr>
<td># Weighted discharges</td>
<td>6.7 million</td>
<td>7.3 million</td>
<td>7.4 million</td>
</tr>
<tr>
<td>Age inclusion criteria</td>
<td>≤ 18 years</td>
<td>≤ 20 years</td>
<td>≤ 20 years</td>
</tr>
</tbody>
</table>

### Statewide Data Systems Participating in KID

<table>
<thead>
<tr>
<th>Data Year</th>
<th># of States</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>22</td>
<td>AZ, CA, CO, CT, FL, GA, HI, IL, IA, KS, MD, MA, MO, NJ, NY, OR, PA, SC, TN, UT, WA, WI</td>
</tr>
<tr>
<td>2000</td>
<td>27</td>
<td>+ KY, ME, NC, TX, VA, WV [IL not included]</td>
</tr>
<tr>
<td>2003</td>
<td>36</td>
<td>+IL, IN, MI, MN, NE, NH, NV, OH, RI, SD, VT (ME and PA not included)</td>
</tr>
</tbody>
</table>
**KID: Availability and Prices**

- Student price: $20 per data-year

**The KID Can Enable Child-Related Research**

- Enables studies of common and rare pediatric conditions
- Permits exploration of the economic burden associated with specific child-related conditions
- Allows comparisons between pediatric and adult inpatient services in conjunction with the NIS
Pediatric Patient Safety in Hospitals:
A National Picture in 2000

Miller MR, Zhan C • 2004

Patient safety events for hospitalized children have significant associations with increased LOS, total charges, and risk of in-hospital mortality.

Table 3. Regression Analysis of Impact of Experiencing a PSI Event

<table>
<thead>
<tr>
<th>Patient Safety Event</th>
<th>Increased LOS (Days [SE])</th>
<th>Increased Charges (Dollars [SE])</th>
<th>Increased In-Hospital Mortality, OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia complication</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Death in low-mortality DRG</td>
<td>4.0 (0.5)</td>
<td>97,360 (13,069)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Dehydration, iv world</td>
<td>16 (0.6)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Failure to rescue before procedure</td>
<td>3 (0.4)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Foreign body left after procedure</td>
<td>5.0 (0.5)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Hypoglycemia postpartum</td>
<td>11.0 (0.6)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Infection as a result of medical care</td>
<td>30.0 (0.2)</td>
<td>131,059 (4,838)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>In-hospital postoperative hip fracture</td>
<td>7.9 (0.5)</td>
<td>74,932 (2,250)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Postoperative hemorrhage/infarction</td>
<td>16.3 (1.1)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Postoperative respiratory failure</td>
<td>24.4 (0.6)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Postoperative pulmonary embolism/DVT</td>
<td>20.0 (0.6)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Postoperative organ failure</td>
<td>20.0 (0.6)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Postoperative renal failure</td>
<td>28.1 (1.4)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Technical difficulty with care</td>
<td>7.7 (0.5)</td>
<td>95,344 (22,526)</td>
<td>3.5 (2.4, 5.1)</td>
</tr>
<tr>
<td>Transfusion reaction</td>
<td>0.7 (0.5)</td>
<td>NS</td>
<td>1.3 (1.1, 1.6)</td>
</tr>
<tr>
<td>Birth trauma</td>
<td>0.7 (0.5)</td>
<td>NS</td>
<td>1.3 (1.1, 1.6)</td>
</tr>
<tr>
<td>Obstetric trauma — vaginal with instrumentation</td>
<td>0.1 (0.5)</td>
<td>NS</td>
<td>1.3 (1.1, 1.6)</td>
</tr>
<tr>
<td>Obstetric trauma — vaginal without instrumentation</td>
<td>NS</td>
<td>NS</td>
<td>1.3 (1.1, 1.6)</td>
</tr>
<tr>
<td>Obstetric trauma — cesarean section</td>
<td>NS</td>
<td>NS</td>
<td>1.3 (1.1, 1.6)</td>
</tr>
</tbody>
</table>

SE indicates standard error, NS, not significant; NA, not applicable.

* This PSI event had too few cases to permit regression analysis.
State Ambulatory Surgery Databases (SASD)
What are the State Ambulatory Surgery Databases (SASD)?

State Ambulatory Surgery Databases (SASD)

Ambulatory surgery data from the states

What Is the Source for the SASD?

Ambulatory surgery data:
Designated hospital beds; separate facilities with hospital affiliation included
Some data from free-standing centers

- Data organizations provide data to HCUP—collection varies by state
- HCUP collects and standardizes data to create SASD
SASD File Structure

- Range of file sizes
  - ~105,000 to 2.7 million records per state

- Core set of variables
  - Patient demographics
  - Expected payment source
  - All listed diagnoses and procedures

- State-specific variables
  - Patient race/ethnicity
  - Encrypted patient identifier
  - CPT codes

The SASD and SID Can Provide a More Complete Picture of Care

The SASD can be linked to the SID for selected states

SASD

SID

Encrypted Patient ID
States with Ambulatory Surgery Databases

- Colorado
- Connecticut
- Florida
- Georgia
- Kentucky
- Maine
- Maryland
- Minnesota
- Missouri
- Nebraska
- New Jersey
- New York
- North Carolina
- Pennsylvania
- South Carolina
- Tennessee
- Utah
- Vermont
- Wisconsin

SASD: Availability and Prices

- SASD available for 1997 - 2004
- Availability and prices vary by state and year
  ~ $20 per data-year to ~ $3,000 per data-year
Many Potential Applications of the SASD

- Identify state-specific trends in ambulatory surgery utilization, access, charges, and outcomes
- Conduct market area research
- Compare inpatient surgery data with ambulatory surgery data
- Examine complications for ambulatory surgeries

Using the SASD: A Research Example

The Impact of Endometrial Ablation on Hysterectomy Rates in Women with Benign Uterine Conditions in the United States

Farquhar CM, Naoom S, Steiner CA • 2002
**Findings**

Endometrial ablation has not replaced hysterectomy, rather the combined procedure rates for benign uterine conditions have increased.

**Combined Rate of Hysterectomy and Ablation**

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State Ambulatory Surgery Databases (SASD)

The SASD are State-specific files that capture surgery records in which patients are admitted and discharged in the same day from ambulatory surgery sites. The uniform format of the SASD helps facilitate cross-state comparisons. In addition, the SASD are well suited for research that require complete enumeration of hospital-based ambulatory surgeries within geographic areas or states. The following links provide detailed database documentation for the SASD:

Some documents are provided in Adobe® Acrobat® (PDF) format. The amount of time needed to access a document depends on your machine, browser, and Internet connection. PDF files require the Adobe® Acrobat® Reader, which can be downloaded free of charge from Adobe®. PDF Help provides instructions on how to work with PDF files.

**Restrictions on the Use of the SASD**

- SAS Data Use Agreement (PDF file, 47 KB)

**Description of SASD Files**

- Introduction to the SASD (PDF file, 184 KB)
- HCUP Quality Control Procedures (PDF file, 104 KB)
  - Describes procedures used to assess data quality
- File Composition (PDF file, 114 KB)
  - Describes types of hospitals and types of records included in each SASD

**HCUP Tools: Labels and Formats**

- Clinical Classifications Software (CCS)

**Availability of Data Elements by State**

- 1996-2002 (PDF file, 98 KB)
- 1991 (PDF file, 60 KB)

**Description of Data Elements in the SASD**

- HCUP Coding Practices (PDF file, 16 KB)
  - Describes how HCUP data elements are coded
- HCUP Hospital Identifiers (PDF file, 97 KB)
  - Describes data elements that characterize individual hospitals
- Data Elements (PDF file, 97 KB)
State Emergency Department Databases (SEDD)

What are the State Emergency Department Databases (SEDD)?
What is the Source for the SEDD?

Emergency department data: uniform billing data (UB-92), plus additional data elements, from hospital-affiliated emergency department sites

- Data organization provides data to HCUP
- HCUP collects and standardizes data to create SEDD

The Flow of Emergency Department Visits

Intake → Clinician → Treatment → Emergency Care Complete

- Released Home/Community
- Transferred to Inpatient Hospital
Range of file sizes
- ~ 133,000 to 2.7 million records per state

Core set of variables
- Patient demographics
- Expected payment source
- All listed diagnoses and procedures

State-specific variables
- Patient race/ethnicity
- AHA hospital identifier
- CPT codes
- Encrypted patient identifier

The SEDD Can Provide a More Complete Picture of Care

The SEDD can be linked to the SID for selected states
How Do the SEDD Compare to Other Databases?

- Number of visits benchmarks well against American Hospital Association (AHA) Annual Survey
- Percent of visits related to injury is similar to the National Hospital Ambulatory Medical Care Survey (NHAMCS)

Some Interesting Ways to Use the SEDD for Research

- Injury surveillance
- Trends in ED use
- Correlations between ED use and environmental events
- Emerging infectious diseases
- Occurrence of non-fatal, preventable illness
- ED visits and re-visits for some states
States with Emergency Department Databases

- Connecticut
- Georgia
- Hawaii
- Indiana
- Iowa
- Maine
- Maryland
- Massachusetts
- Minnesota
- Missouri
- Nebraska
- New Hampshire
- New Jersey
- South Carolina
- Tennessee
- Utah
- Vermont

SEDD: Availability and Prices

- SEDD available for 1999 - 2004

- Availability and prices vary by state and year
  ~ $20 per data-year to ~ $3,200 per data-year
Interesting Research in Progress with the SEDD

A Joint Study by AHRQ and SAMHSA

This study links the 2002 SEDD and the SID for Missouri and South Carolina to capture visits and revisits for mental illness and substance use disorders—ED visits and inpatient admissions.

HCUP SEDD Documentation

State Emergency Department Databases (SEDD)

The SEDD are a set of longitudinal state-specific emergency department (ED) databases included in the HCUP family. The SEDD capture discharge information for all emergency department visits that do not result in an admission. Information on patients seen in the emergency room and then admitted to the hospital is included in the State Inpatient Databases (SID). The following links provide detailed database documentation for the SEDD:

Restrictions on the Use of the SEDD

- SEDD Data Use Agreement (PDF, 47 KB)

Description of SEDD Files

- Introduction to the SEDD (PDF, 107 KB)
- HCUP Quality Control Procedure (PDF, 164 KB)
- Describes procedures used to assess data quality
- Data Description (PDF, 81 KB)
- Describes types of hospitals and types of records included in each SEDD

HCUP Tools: Labels and Formats

- HCUP Crosswalk Software (CXS)

Availability of Data Elements by State

- 1995-2002 (PDF, 65 KB)

Description of Data Elements in the SEDD

- HCUP Coding Practices (PDF, 16 KB)
- Describes how HCUP data elements are coded
- HCUP Hospital Identifier (PDF, 62 KB)
- Describes data elements that characterize hospitals and data elements that characterize individual hospitals
HCUP Has Five Types of Databases

State Inpatient Databases  Nationwide Inpatient Sample  Kids’ Inpatient Database
State Ambulatory Surgery Databases  State Emergency Department Databases

Choosing the Right Database

- What is my research question?
- Can my question be addressed by hospital administrative data?
- Should I look at inpatient and/or outpatient data?
- What variables do I need for my analysis?
- Do I want national estimates?
- Is my research limited to children?
Example: Choosing the Right Database

Research Topic: Are there racial differences in C-section rates in Maryland?

- Can my question be addressed by hospital administrative data?
- Should I look at inpatient and/or outpatient data?
- What variables do I need for my analysis?
  - Race
- Do I need national, state, or local data?
- Is my research limited to children?

Strengths of HCUP Data

- Represent largest source of longitudinal, all-payer encounter-level health care data
- Includes information on charges
- Protect individual and institutional confidentiality
- Have been benchmarked
- Permit trend analysis
  - SID (1990-2004)
  - SASD (1997-2004)
  - SEDD (1999-2004)
- Link to other databases
**HCUP Links to Other Databases**

- HCUP Databases
  - SASD
  - SEDD
  - SID
  - KID

- Links to Other Databases
  - American Hospital Association (AHA) Annual Survey
  - Health Resources and Services Administration’s (HRSA) Area Resource File (ARF)
  - ZIP Code files from Census or Vendor
  - Medicare Cost Reports

**Limitations of HCUP Data**

- Cannot show complete episode of care
- Do not include all hospitals
- Lack revenue or cost information
- Contain varying data elements, depending on state
Outline of Presentation

Overview of HCUP Data

5 HCUP Databases

Software Tools and Reports

HCUPnet

User Support

Current HCUP Tools

Clinical Classifications Software (CCS)

Comorbidity Software

Procedure Classes

Cost-to-Charge Ratios

AHRQ Quality Indicators (QI)
Current HCUP Tools

Clinical Classifications Software (CCS)

- Comorbidity Software
- Procedure Classes
- Cost-to-Charge Ratios
- AHRQ Quality Indicators (QI)

Current HCUP Tools

Clinical Classifications Beta Software (CCS) for CPT Codes (CCS-CPT)

- Chronic/Non-Chronic Indicator
- Mental Health and Substance Abuse Categories
**HCUP Provides Many Research Products**

**HCUP Research Products**

Products include:

- Research studies
- Statistics and Fact Books on HCUP Data

**Hospitalization Fact Book**

Largest Increase in Aggregate Charges – Medicaid, 47% Increase from 1997 to 2002
Advancing Excellence in Health Care

National Healthcare Quality and Disparities Reports

Hospital Admissions for Complications Associated with Diabetes

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>40.7</td>
</tr>
<tr>
<td>2000</td>
<td>28.5</td>
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</tbody>
</table>

Significant decrease in the number of hospital admissions for complications associated with diabetes from 1994 to 2000.

Outline of Presentation

Overview of HCUP Data

5 HCUP Databases

Software Tools and Reports

HCUPnet

User Support
HCUPnet: Quick, Free Access to HCUP Data

- Free, interactive online query system
- Users generate tables of outcomes by diagnoses and procedures
- Data can be cross-classified by patient and hospital characteristics

http://hcup.ahrq.gov/hcupnet

HCUPnet Can Answer a Variety of Questions

- What percentage of hospitalizations for children are uninsured, by state?
- What are the most expensive conditions treated in U.S. hospitals?
- What is the trend in admissions for depression?
- Will there be sufficient cases to do my analysis?
- How do my estimates compare with HCUPnet (validation)?
HCUPnet provides trend information for the 11 year period: 1993-2003

Number of discharges

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>288 O.R. procedures for obesity</td>
<td>11,527</td>
<td>12,517</td>
<td>15,964</td>
<td>12,472</td>
<td>16,042</td>
<td>18,395</td>
<td>23,431</td>
<td>38,024</td>
<td>59,672</td>
<td>77,335</td>
<td>119,443</td>
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</tbody>
</table>

Number of discharges - Standard Errors

|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|
Advancing Excellence in Health Care

Results

Display a printer-friendly version (Try printing in landscape for best results)

Save as an Excel spreadsheet

How to Graphs of Trend Data

on a new query on this database - keep all previous selections

UPnet home - keep all previous selections

UPnet home - clear all previous selections

Trends

UPnet provides trend information for the 11 year period: 1993-2003

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Outline of Presentation

- Overview of HCUP Data
- 5 HCUP Databases
- Software Tools and Reports
- HCUPnet
- User Support

HCUP User Support Website

- Find detailed information on HCUP databases, tools, and products
- Access HCUPnet
- Find comprehensive listing of HCUP-related publications, database reports, and fact books
- Access technical assistance

http://www.hcup-us.ahrq.gov
How to Obtain HCUP Data through the HCUP Central Distributor

- **Step 1:** Request application kit:
  
  [http://www.hcup-us.ahrq.gov/tech_assist/centdist.jsp](http://www.hcup-us.ahrq.gov/tech_assist/centdist.jsp)

- **Step 2:** Obtain more information (if needed):
  
  Phone: 866-556-HCUP (4287) toll free
  
  E-mail: [HCUPDistributor@ahrq.gov](mailto:HCUPDistributor@ahrq.gov)

- **Step 3:** Read and sign the Data Use Agreement (DUA)

- **Step 4:** Send order form, DUA, and payment to HCUP Central Distributor

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**Software Requirements**

- SAS
- SUDAAN
- STATA
- SPSS
Programming Files Available

Load Programs  Format Programs  Example Statistical Coding Statements  HCUP Tools Programs

Using HCUP Technical Assistance

Active Technical Assistance

- Responds to inquiries about HCUP data, products, and tools
- Collects user feedback and suggestions for improvement

E-mail: hcup@ahrq.gov
Phone: (866) 290-HCUP
How to Learn More About HCUP

- General Information (or suggestions)
  - [http://www.hcup-us.ahrq.gov/home.jsp](http://www.hcup-us.ahrq.gov/home.jsp)

- HCUP Central Distributor
  - E-mail: HCUPDistributor@ahrq.gov
  - Phone: 1-866-556-HCUP (4287)

- HCUPnet
  - [http://hcup.ahrq.gov/HCUPnet.asp](http://hcup.ahrq.gov/HCUPnet.asp)

- Technical Assistance—HCUP User Support
  - E-mail: hcup@ahrq.gov
  - Phone: 1-866-290-HCUP (4287)