

Using HCUP Data for State Health Policy Analysis A Case Study Examining the Impacts of an Early Medicaid Expansion

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ABOUT SHARE

State Health Access Reform Evaluation (SHARE) is a national program of the Robert Wood Johnson Foundation that supports rigorous research on issues surrounding state health reform. The SHARE program is managed by the State Health Access Data Assistance Center (SHADAC), an RWJF-funded research center in the Division of Health Policy and Management at the University of Minnesota, School of Public Health.

Introduction

Hospital administrative data provide information on health care encounters of large populations of patients. These data generally include detailed, accurate, and standardized information on the use and cost of health care services and can provide timely indicators of changes in health care utilization and costs. As such, hospital administrative data can be useful for evaluating the impacts of the major health reforms that have been instituted under the Affordable Care Act (ACA; Avery et al., 2014). The aims of this brief are to describe a rich source of U.S. administrative data and to provide an example of how researchers have used these data to evaluate the impacts of an early ACA Medicaid expansion on utilization-related outcomes at hospitals in California.

Overview of HCUP

The Healthcare Cost and Utilization Project (HCUP) is a collection of databases sponsored by the federal Agency for Healthcare Research and Quality (AHRQ). These databases consist of longitudinal hospital data based on de-identified discharge records for individual patients, covering 1988 to present day for a majority of states: The nationwide samples consist of inpatient data from 48 states, emergency department data from 31 states, and readmissions data from 21 states. The types of hospitals that are captured in the data vary by state, but the primary focus is on community hospitals, which are defined as “all nonfederal, short-term, general and other specialty hospitals, excluding hospital units of institutions” (AHA, 2016). The data do not include information from physician offices or pharmacy, laboratory, pathology, and radiology settings. HCUP consists of six different databases that can be purchased through the HCUP Central Distributor¹:

- National Inpatient Sample (NIS)
- Kids' Inpatient Database (KID)
- Nationwide Emergency Department Sample (NEDS)
- Nationwide Readmissions Database (NRD)
- State Inpatient Databases (SID)
- State Emergency Department Databases (SEDD)

Much of the information on HCUP contained in this brief was found on the AHRQ webpage: www.hcup-us.ahrq.gov

The state databases (SID and SEDD) are released whenever they become available – usually six to nine months after the end of a calendar year. The nationwide databases (NIS, NEDS, and NRD) are released 18 to 22 months after the end of a calendar year. The KID is released every three years. The databases

¹The HCUP Central Distributor facilitates the purchase of HCUP databases. More information available at: <https://www.distributor.hcup-us.ahrq.gov/Home.aspx>

vary in their samples. For example, the NIS contains a 20 percent stratified sample of discharges from all community hospitals participating in HCUP, representing more than 95 percent of the U.S. population. The SID, on the other hand, contain hospital inpatient discharge records submitted by individual state organizations, which are then coded uniformly to compare across states. The data elements included in these records vary based on the state organization responsible for submission, which ranges from the California Office of Statewide Health Planning & Development to the Colorado Hospital Association.

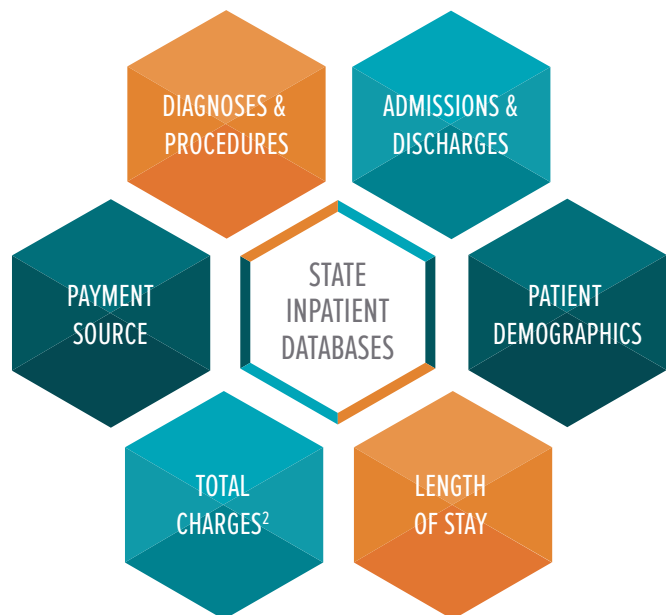
Of note, HCUP data include patients from all sources of coverage - Medicare, Medicaid, private insurance, and self-pay/uninsured. This inclusion can be especially valuable for researchers who do not have access to a state all-payers claims database.

HCUP provides high-level access to their data at no charge through [“HCUP Fast Stats.”](#) which utilizes visual displays of aggregate level statistics. HCUP Fast Stats shows national trends for inpatient stays; most common diagnoses and operations during inpatient stays; and state-level trends in inpatient stays for Medicaid and uninsured patients.

HCUP for State Health Policy Research

For state-focused health policy researchers, the State Inpatient Databases (SID), which consist of hospital inpatient discharge data, are particularly useful for understanding patient utilization. The SID include data on approximately 90 percent of all U.S. hospital discharges, with 48 of the 50 states reporting their data through HCUP, and 28 of them also releasing their state-specific files through the HCUP Central Distributor.

SID data are available for purchase for the years 1990 through 2014 and allows for linkage to the American Hospital Association (AHA) Annual Survey of Hospitals. The SID not only allow researchers to examine hospital-level differences within states but also foster multi-state comparisons and analyses because of their uniformity. The SID contain de-identified inpatient discharge records that consist of clinical and non-clinical variables. See adjacent figure.



Case Study: Early Medicaid Expansion in California

California implemented an early ACA Medicaid expansion in 2011, establishing the Low Income Health Program (LIHP) to expand coverage for non-elderly adults up to 200 percent of the federal poverty level (FPL). By the end of 2013, roughly 700,000 individuals were enrolled in the LIHP. With funding from the State Health Access Reform Evaluation (SHARE) program, a research team led by Peter Cunningham, Lindsey Sabik, and Ali Bonakdar-Tehrani at Virginia Commonwealth University has capitalized on the data available through the HCUP databases in order to evaluate the impact of California's early Medicaid expansion on inpatient hospital admissions in the state, with a particular focus on admissions at safety net hospitals. The research team used data from the SID to compare (1) utilization at hospitals in California from 2010 to 2013 with utilization at hospitals in neighboring states without an early Medicaid expansion, and (2) utilization over the same time period at safety net and non-safety net hospitals within California.

² Charges refer to the amount the hospital billed for the hospital stay, and does not reflect the actual cost of the services or how much the hospital is paid.

Background

The ACA is expected to profoundly affect inpatient hospital utilization across the U.S., with changes in overall volume, payer mix, and co-morbidity of patients anticipated. As the majority of states implement the ACA's Medicaid expansion, safety net hospitals in particular are expected to see changes in the number of uninsured patients they serve and in the utilization patterns of their patients. Because safety net hospitals are expected to gain more insured patients, leading to a reduction in the amount of uncompensated care they provide, the ACA reduces Medicare and Medicaid Disproportionate Share Hospital (DSH) payments³ to these hospitals. However, since the Medicaid expansion is optional for states⁴, the extent to which safety net hospitals actually see changes in their levels of uncompensated care and in patient utilization may vary by state expansion status.

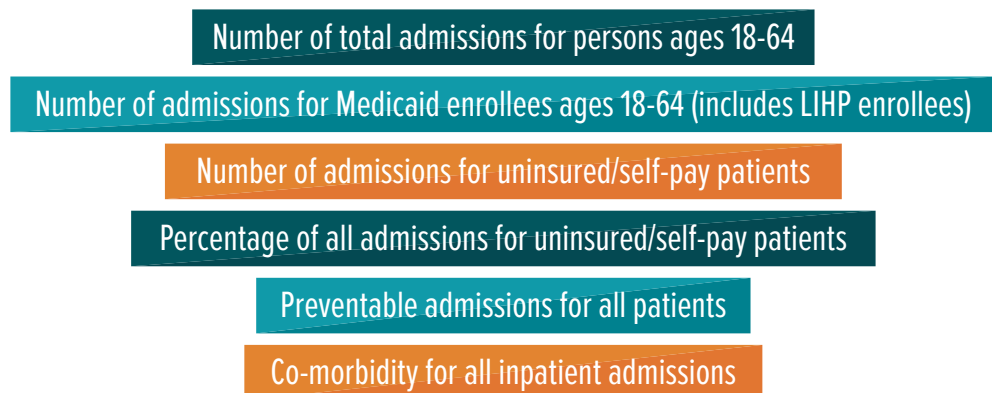
The study led by the Virginia Commonwealth University research team estimates the impact of California's expansions on inpatient hospital utilization for LIHP and uninsured individuals between 2010 and 2013 and compares these changes to trends in Arizona, Nevada, and Washington for the same time period, during which these states had no changes in coverage eligibility. The researchers also compare the same utilization indicators for safety net and non-safety net hospitals within California from 2010 and 2013 to determine the extent to which coverage expansion might differentially affect safety net hospitals in particular. This analysis has the potential to inform expectations and planning for changes in payer mix and patient utilization patterns in both safety net and non-safety net hospitals in expansion and non-expansion states.

What Are Safety Net Hospitals?

Safety net hospitals are generally defined as hospitals "who by mandate or mission offer access to care regardless of a patient's ability to pay and whose patient population includes a substantial share of insurance, Medicaid, and other vulnerable patients" (IOM, 2000).

Methods

The researchers analyzed the changes between 2010 and 2013 in the volume, payer mix, and patient acuity level of inpatient hospital admissions in California and the comparison states using data from the HCUP SID and the California Office of Statewide Health Planning (OSHPD). The majority of the data were obtained through HCUP; however due to delays in data availability, California data for 2012 and 2013 were accessed through the OSHPD. These data consist of inpatient stays across all payers and include diagnoses and procedures, patient demographics, expected payment source, and total charges. Total charges are defined as the price set by the hospital, not the actual cost of the service or how much the hospital is reimbursed. The measures used to estimate hospital utilization included:



³ Section 2551 and Section 3133 of the Affordable Care Act reduces Medicaid and Medicare disproportionate hospital payments (DSH) respectively. DSH payments are provided to hospitals to offset the costs of uninsured patients and uncompensated care. The Medicare DSH payments were initially reduced by 75 percent while Medicaid DSH payments were reduced over time and states are subject to a new allotment methodology based on percentage of uninsured (Kaiser Family Foundation, 2013).

⁴ National Federation of Independent Business v. Sebelius, 657 U.S. ___ (2012).

Since the HCUP provides measures that are comparable across states, the researchers used a difference-in-differences approach to estimate whether changes in inpatient utilization in California were different from changes in Arizona, Nevada, and Washington.

To compare admissions between safety net and non-safety net hospitals in California, the research team used hospital characteristics from the American Hospital Association (AHA) annual survey, defining safety net hospitals as those who either have (1) a high market share of uninsured patients in the county, or (2) a high burden of uninsured patients at the hospital. They once again used a difference-in-differences approach, this time estimating whether changes in inpatient utilization differed between safety net and non-safety net hospitals.

The analysis compared the “pre-LIHP” period (before July 1, 2011) to the first post-implementation period (7/1/11 to 9/30/12) and to the second post-implementation period (10/1/12 to 12/31/13).

Preliminary Findings

California vs. Neighboring States, Controlling for National Trends

When the researchers compared California discharge records to records for neighboring non-expansion states (Arizona, Nevada, and Washington) and controlled for national trends, they found that:

- *Inpatient volumes increased at California hospitals relative to the comparison states following implementation of the LIHP—consistent with expectations of increased demand for care.*
- *Medicaid admissions as a percent of total admissions increased during both post-implementation periods of the LIHP, while uninsured admissions declined when compared to non-expansion states.*
- *The co-morbidity of Medicaid admissions increased compared to neighboring states following implementation of the LIHP, while co-morbidity of uninsured patients decreased, suggesting that new Medicaid enrollees were sicker compared to the remaining uninsured.*
- *The share of admissions that were preventable also declined at California hospitals relative to the comparison states, especially among uninsured admissions.*

California: Safety Net vs. Non-Safety Net Hospitals

The comparison of inpatient admission trends at safety net and non-safety net hospitals within California revealed that:

- *Overall inpatient volumes at safety net hospitals increased to a greater extent than at non-safety net hospitals following the LIHP.*
- *Co-morbidity of Medicaid admissions increased to a greater extent at safety net hospitals compared to non-safety net hospitals.*
- *Safety net and non-safety net hospitals observed similar patterns in payer mix, with an increase in Medicaid admissions as a percent of total admissions and a decrease in uninsured admissions as a percent of total admissions.*

Discussion

The preliminary findings from this study have implications for states as they consider the financial and logistical impacts of a Medicaid expansion on their safety net hospitals. Based on California’s experience, expansion states and those considering expansion can anticipate that Medicaid expansion will lead to increases in inpatient volumes overall, increases in Medicaid admissions as a percent of total admissions, and decreases in uninsured admissions as percent of total admissions—whether or not hospitals are categorized as safety net. Additionally, hospitals in expansion states could see an increase in Medicaid patients with co-morbidities, putting pressure on the capacity of both the

safety net and non-safety net hospital systems. For non-expansion states that have limited public coverage, safety net hospitals will be—as anticipated—more financially vulnerable when DSH payments are reduced in 2018, given the changing payer mix in hospitals without a concurrent reduction in uninsured admissions.

Conclusion

As the landscape of insurance coverage evolves in the United States, state-level administrative data such as those available through HCUP are important tools for measuring change and identifying new trends in the health care system in a timely way. As illustrated in the case study presented here, the standardized nature of state-level administrative data facilitates interstate analyses that leverage natural experiments created by variation in state health policy implementation, allowing researchers and policymakers to more accurately identify outcomes related to particular decisions for the purposes of policy evaluation and health system planning. The standardization of state-level administrative data can also facilitate analyses within states to look for variations in outcomes by provider type or setting so that differential impacts can be addressed.

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