are described in the procedures and the subanalysis contained 91,907 GI procedures and 1440 unique physicians. Patient characteristics (procedure type, insurance type, age, sex, service setting, and geographic region) at their means and controlling for comorbid conditions other than the specific condition of interest, including respiratory conditions (sleep apnea, chronic obstructive pulmonary disease [COPD], asthma, and cystic fibrosis), cardiovascular conditions (prior cardiac arrest, congestive heart failure, and coronary artery disease), and other chronic conditions (anemia, cancer, cerebrovascular diseases, dementia, diabetes mellitus, gastrointestinal bleeding, hepatobiliary diseases, human immunodeficiency virus, hypertension, inflammatory bowel disease, pancreatic disease, peripheral artery diseases, psychiatric disorder, renal failure, and other neurological diseases).

The Figure shows that the predicted probability of being coded as having a high risk of anesthesia more than doubled for all conditions from 2005 to 2013, indicating potential upcoding. The probability for patients with sleep apnea, for example, increased from 8.8% in 2005 to 21.5% in 2011 and remained at 20.8% in 2013. A similar pattern was also found among patients without any chronic conditions.

In the subanalysis, the odds of patients with similar characteristics being coded as being at high risk in 2011 were approximately twice those in 2010, more than 3 times those in 2012, and about 5 times those in 2013, with all year-to-year changes found to be statistically significant.

**Discussion**| Coding practices for anesthesia services changed with time, and there is evidence of potential upcoding of patient anesthesia risk. Our results cannot be explained by the severity of patients’ conditions. Neither can they be attributed to changes in the physician population, in that the changes in coding for anesthesia risk become more marked when the same physicians were examined over time. It also seems unlikely that the prevalence of risks that we cannot detect on the basis of claims data (eg, allergies to sedatives and airway abnormalities) would have more than doubled during the study period. A likely explanation for this change is therefore that physicians used their clinical discretion to systematically change coding practices because coding a patient as being at high risk in a claim ensures payment of the claim. Nevertheless, our study has limitations. We relied on claims data and may have missed conditions affecting anesthesia risk. We also may have underestimated potential upcoding because physicians became more likely to report comorbidities over time and we may have overadjusted for the severity of patients’ degrees of illness. Furthermore, only a minority of cases had their ASA level coded, and the proportion with a coded ASA level changed over time.

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**Additional Information:** Sedasys is the manufacturer of the SEDASYS Computer-Assisted Personalized System. The system is intended to allow trained physician-led teams to deliver minimal to moderate sedation with propofol to patients at low risk of complications during colonoscopy and other procedures.


**The Adequacy of Individual Hospital Data to Identify High Utilizers and Assess Community Health**

Many hospitals are analyzing data from their own information systems to develop new strategies to improve popula-
tion health. Such analyses aim to identify high utilizers who may benefit from additional support and to elucidate community patterns of potentially preventable serious illness, but the extent to which individual hospital data are sufficient for these purposes is unclear.

Methods | The Chesapeake Regional Health Information System for Our Patients, Maryland’s Health Information Exchange, aggregates data for all 48 of the state’s acute care hospitals. The Health Information Exchange uses a Master Patient Index based on IBM’s Initiate technology to link admission, discharge, and transfer data, clinical records, and billing diagnoses for unique individuals. As part of a quality improvement initiative and ongoing efforts to support community health planning, using a complete set of admission, discharge, and transfer data, we examined the patterns of hospital use of all patients with more than 5 emergency department visits to Maryland hospitals in calendar year 2014. We also evaluated all hospital admissions for calendar year 2014 to Maryland hospitals to determine the percentage of volume received by the most utilized hospital in each zip code. All 434 zip codes statewide whose residents had more than 10 acute care admissions to a single Maryland hospital and who had more than 99 residents in the 2010 census were included.

Results | Of 45,861 individuals with more than 5 emergency department visits to Maryland hospitals in 2014, 8,438 (18.4%) visited more than 3 hospitals, 8,905 (19.4%) visited 3 hospitals, 14,627 (31.9%) visited 2 hospitals, and 13,891 (30.3%) visited only 1 hospital. Only 27,251 (59.4%) of the 45,861 made more than 5 emergency department visits to 1 hospital, meaning that the rest would fail to be identified by individual hospital analyses.

The majority of Maryland residents (53.0%) live in zip codes where no single hospital received more than half of inpatient volume. In zip codes close to multiple hospitals, there is only modest concentration of inpatient utilization (Figure).

Discussion | As a result of new payment incentives that favor reductions in avoidable illnesses, more hospitals are working to identify and assist high utilizers. For more than two-thirds of frequent visitors to emergency departments in Maryland, however, no single hospital had a full picture of their care. Moreover, hospital-specific analyses would have failed to identify approximately 2 in 5 high utilizers. These results do not account for the fact that some facilities within the same hospital system may be able to share data. Nonetheless, the findings, which are consistent with previous analyses based on hospital claims for 1 city, support the importance of health information exchange for the identification and understanding of this vulnerable population.

Hospitals are also increasingly engaged in efforts to advance overall community health. A precondition for success is the effective measurement of health outcomes at the local level; hospital data can be more timely and local than usual public health information sources. For zip codes that cover most of Maryland’s population, however, no single hospital’s records captured even half of the inpatient utilization. This suggests that data sharing may be essential to tracking the trajectory of chronic illness at the population level. Further research at smaller geographic units than zip code is needed to confirm this finding.

Even though hospitals in competitive markets may have the most to gain from health information exchange, they are the least likely to participate. As financial incentives continue to evolve, perhaps this reluctance will fade. By shining a light on patterns of preventable use of hospital services, data...
sharing can illuminate a path to substantial improvements in community health.

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Acquisition, analysis, or interpretation of data: All authors.

Drafting of the manuscript: Alpern, Sharfstein.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Alpern.

Administrative, technical, or material support: Afzal.

Study supervision: Horrocks, Afzal.

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HEALTH CARE REFORM

Health Reform and Coverage Changes Among Native Americans

The Affordable Care Act (ACA) expands health insurance for Native Americans through Medicaid and Marketplace coverage, despite Native Americans being exempt from the law’s individual mandate. The ACA also permanently reauthorized the Indian Health Care Improvement Act, which funds the Indian Health Service (IHS). The IHS provides health care services to 2.2 million Native Americans annually but is not considered insurance by the US government.1 We evaluated changes in insurance and IHS coverage among Native Americans following the ACA’s implementation.

Methods | We used the 2012-2014 American Community Survey (ACS), administered by the US Census Bureau. The survey is mailed to 3.5 million households annually, with a response rate of 90% to 97%.2 The ACS can be used to evaluate changes in health insurance in states and smaller geographic areas.3

Table 1. Demographic Characteristics of Nonelderly Native Americans by Geographic Sample and State Medicaid Expansion Status

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>National Sample, %</th>
<th>Reservation Sample, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expansion</td>
<td>Nonexpansion</td>
</tr>
<tr>
<td>No.</td>
<td>93 103</td>
<td>75 551</td>
</tr>
<tr>
<td>Age, mean (SD), y 29.4 (18.3)</td>
<td>29.2 (18.5)</td>
<td>28.0 (18.3)</td>
</tr>
<tr>
<td>Age group, y ≤18</td>
<td>33.8</td>
<td>35.1</td>
</tr>
<tr>
<td>19-34</td>
<td>26.5</td>
<td>25.3</td>
</tr>
<tr>
<td>35-64</td>
<td>39.7</td>
<td>39.6</td>
</tr>
<tr>
<td>Income as % of FPL, mean (SD)</td>
<td>241 (302)</td>
<td>240 (281)</td>
</tr>
<tr>
<td>Income group, % FPL ≤138</td>
<td>46.8</td>
<td>44.7</td>
</tr>
<tr>
<td>≥138 to ≤200</td>
<td>12.1</td>
<td>12.3</td>
</tr>
<tr>
<td>≥201 to ≤400</td>
<td>22.5</td>
<td>25.2</td>
</tr>
<tr>
<td>&gt;400</td>
<td>18.7</td>
<td>17.9</td>
</tr>
<tr>
<td>Education Did not graduate high school</td>
<td>13.4</td>
<td>12.4</td>
</tr>
<tr>
<td>High school diploma</td>
<td>67.3</td>
<td>67.6</td>
</tr>
<tr>
<td>College graduate</td>
<td>19.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Married</td>
<td>24.2</td>
<td>27.0</td>
</tr>
<tr>
<td>Parent</td>
<td>17.9</td>
<td>18.8</td>
</tr>
<tr>
<td>Race AI/AN alone</td>
<td>48.3</td>
<td>49.8</td>
</tr>
<tr>
<td>Latino</td>
<td>26.0</td>
<td>15.1</td>
</tr>
<tr>
<td>Speaks English well</td>
<td>93.9</td>
<td>96.3</td>
</tr>
<tr>
<td>Noncitizen</td>
<td>4.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Employed</td>
<td>55.2</td>
<td>57.0</td>
</tr>
</tbody>
</table>

Abbreviations: AI/AN, American Indian or Alaska Native; FPL, federal poverty level.

* Includes Fond du Lac (Minnesota, Wisconsin), Goshute (Nevada, Utah), Duck Valley (Idaho, Nevada), Lake Traverse (North Dakota, South Dakota), Navajo Nation (Arizona, New Mexico, Utah), Standing Rock (North Dakota, South Dakota), and Ute Mountain (Colorado, New Mexico, Utah).

Among individuals 16 years or older.

Our sample included individuals aged 0 to 64 years reporting “American Indian or Alaska Native” race (US Census terminology for Native Americans). Analyses were conducted at 2 geographic levels: nationally, and among Native American reservations containing populated land in both a Medicaid expansion and nonexpansion state. Reservations were approximated using ACS public use microdata areas.2

First, we assessed overall national coverage changes. Then we used a differences-in-differences approach to compare pre-ACA (2012-2013) and post-ACA (2014) changes in outcomes between Medicaid expansion and nonexpansion states. The outcome was primary health insurance, in 4 mutually exclusive categories: Medicaid with IHS, Medicaid without IHS, private coverage, and uninsured. We also assessed overall rates of IHS coverage.