



LOWN INSTITUTE HOSPITALS INDEX

White Paper Series

Ranking and analysis of overuse in U.S. hospitals

EXECUTIVE SUMMARY

Overuse, which is also known as low-value care, is often defined as the provision of health care services for which the potential for harm exceeds the likely benefit to a patient. Overuse occurs in all healthcare settings, including hospitals. It exposes patients to preventable harm and wastes more than \$100 billion each year. To date, no study has published the rate of overuse in specific U.S. hospitals.

The Lown Institute Hospital Index is the first hospital ranking to grade individual hospitals by how well they avoid overuse. This white paper provides an analysis of the overuse of 13 low-value services in 3,282 U.S. hospitals using Medicare data. These 13 services include imaging tests, surgeries, and cardiovascular procedures, and have all been validated in previous studies of low-value care. Only instances of these services deemed inappropriate in the literature were counted as overuse. Hospitals that did not have the capacity to perform a specific low-value procedure did not have that service counted in their total grade.

We find that overuse varies across hospitals by type, size, and location. Teaching hospitals, larger hospitals, urban hospitals, and for-profit hospitals on average ranked lower for avoiding overuse overall, compared to non-teaching, smaller, rural hospitals. However, these patterns were not always consistent across all low-value services. Safety net hospitals and small rural hospitals had higher rankings in avoiding overuse overall, but their scores differed by specific low-value service. For-profit hospitals consistently ranked lower than nonprofit hospitals for avoiding nearly every low-value service measured.

Overuse rankings also varied by geographic region, with hospitals in the South having lower average rankings compared to other regions. Looking at states, hospitals in Arizona, Florida, Maryland, Nevada, New Jersey, and Texas had the lowest overall rankings in overuse, with average rankings below the 40th percentile. Hospitals in

Maine, Minnesota, Montana, New Hampshire, Oregon, and Vermont all had average rankings above the 70th percentile.

While we do not know for certain what drives differences in overuse among hospitals, previous research suggests that hospital capacity and resources, hospital competition, and individual hospital culture are all associated with overuse.^{1,2} These factors point to potential policy solutions for reducing hospital overuse, such as new payment models, educational initiatives, and more effective oversight of hospitals' capital investments.

INTRODUCTION

Overuse is often defined as the provision of health care services for which the potential for harm exceeds the likely benefit to a patient.^{3,6} Such services are often called “low-value care,” because they are unlikely to have an impact on clinician decisions, increase healthcare spending without improving health outcomes, pose the risk of preventable harm, waste money and resources, and in many cases have never been found to offer the chance of improving health.¹⁰

At least 42 percent of Medicare beneficiaries, 15 percent of Medicaid patients, and 11 percent of commercially insured patients—about 50 million people in total—receive at least one low-value medical service annually in hospitals and other clinical settings.^{3,4} Estimates for how much money is wasted on low-value care across all settings vary, with the most recent estimate putting the figure at \$106 billion annually.⁵ Other estimates put the amount of money wasted on overuse in the Medicare system at about 29 percent of total reimbursements.^{6,7} There is less known about the cost of overuse among patients with commercial insurance. In addition to adding to the cost of care, overuse also contributes to preventable harm to patients. While preventable harm from all medical intervention is believed to affect one in twenty patients worldwide, there are currently very few estimates for how much of that harm is attributable to patients receiving a low-value service.⁸

While it is the individual clinician who prescribes an unneeded or useless medication or performs an unnecessary test or procedure, hospital policy and culture can also influence those clinical decisions. However, very little is known about which hospitals are more tolerant of overuse and which are taking steps to weed it out. Some studies have compared rates of overuse by region and payer, while others have measured hospital overuse of a very small number of specific services, such as cesarean sections and hysterectomies.^{2,3,9} However, no other hospital ranking currently evaluates U.S. hospitals on rates of delivery of multiple low-value services.

Measuring the prevalence and harm of overuse

In hospitals, examples of commonly overused medications include powerful antibiotics, opioids, sleep aids, and anti-anxiety drugs.¹¹ Many tests are also routinely overused, such as imaging tests for acute low back pain, ankle injury and head injury, cardiac tests for low-risk patients, and repeated blood tests.^{3,12,13} Surgeries and minor procedures are also overused. These range from relatively low-risk procedures such as tonsillectomy to highly invasive surgeries such as spinal fusion and cardiac bypass.¹⁴⁻¹⁶ Even hospitalization itself is overused. Regions with more hospital beds tend to have higher rates of hospitalization, even when patient populations in these regions are no sicker than those in regions with fewer beds.^{17,18}

Understanding how much and what kind of low-value care is delivered in hospital settings is a crucial first step toward reducing overuse. However, measuring overuse presents several challenges. There are numerous health care services that are overused, and it is difficult to account for them all. In addition, some rates of overuse are easier to measure than others. The simplest services to measure are those that have been shown to be ineffective and therefore any time they are done represents overuse. For example, arthroscopic knee surgery for arthritis pain has been shown to be no better than sham surgery for reducing pain, yet it was performed an estimated 800,000 times in the U.S. in 2016.¹⁹

More difficult to measure are health care services that are appropriate for some patients but inappropriate for others. For example, placing a coronary artery stent can be life-saving for a person having a heart attack. However, for an individual with stable heart disease, placing a coronary stent has not been shown to improve mortality or chest pain compared to placebo.²⁰

There is some evidence documenting extreme variation in the use of health services, indicating overuse in some geographic areas. For example, the rate at which infants with normal birth weight are unnecessarily admitted to the neonatal intensive care unit ranges from 1.6 percent to 9.2 percent of newborns, depending on the region.²¹

This paper provides background for the Lown Institute's analysis of rates of overuse of 13 low-value services in hospitals. Using overuse as a metric represents an important advance in hospital rankings, which generally only discuss whether or not a hospital can perform a test or procedure and how well it is performed, not whether or not it should have been performed. Our analysis provides hospitals with data they can use to address overuse, and communities and policymakers with information they need to hold hospitals accountable for avoiding it.

The Lown Institute Hospitals Index (LIHI) aims to establish the delivery of low-value services as a central measure of the value of care that hospitals deliver. The LIHI

provides a holistic view of American hospitals that ranks them not only on clinical outcomes and cost, but also value of care and civic leadership. (For more information on the LIHI and to see the full data set, metrics list, and methodology, go to www.LowValueHospitalsIndex.org.)

METHODOLOGY

We analyzed overuse of 13 specific low-value services in 3,282 U.S. hospitals. While many other medical services are also overused in hospitals, the 13 interventions in this study represent a cross section of services that have been validated in previous studies of low-value care, and that we determined can be attributed to a hospital as opposed to another site of care (see Table 1).^{3,26}

We used the 100 percent Medicare claims datasets (MEDPAR and outpatient) for years 2015-2017 to search for instances when these 13 services were used. Only hospitals with at least one claim indicating they would have the capacity to perform a service were included in the rating for that service. Hospitals without capacity to perform any of the 13 services were excluded entirely from the overuse ratings; this excluded 77 hospitals from the analysis.

Five of these services (vertebroplasty, arthroscopy, renal stenting, inferior vena cava filter, and pulmonary artery catheterization) have been shown in high-quality clinical trials to be ineffective and are nearly always considered overuse. For those services, we measured overuse by counting the number of instances of the procedure and then adjusting for hospital volume to arrive at a rate of overuse.

For the services where determining whether the service was low-value or inappropriate depends on the condition, we used additional diagnosis and procedure codes to identify appropriateness of use. We used two different methods to calculate a denominator for such services. For EEG for fainting, EEG for headache, carotid artery screening for fainting, and head imaging for fainting, we measured the proportion of patients with the diagnosis (fainting or headache) who received the low-value test. For hysterectomy, spinal fusion, coronary artery stenting, and carotid endarterectomy, we measured the proportion of patients receiving these procedures inappropriately compared to all those who got the service.

We then conducted volume or sub-population (service or diagnosis volume) adjustment of observed overuse rates and applied a weighted average of the adjusted overuse rate and the population overuse rate across all hospitals in our cohort, to

balance the reliability of the hospital estimate where volumes are small. (For more information about our methods, see our white paper explaining the [Methodology of the Lown Index](#).)

Table 1: Description of low-value services

Name of low-value service	Description of service	How overuse was measured	Source for validation
Arthroscopic knee surgery	Surgery to remove damaged cartilage or bone in the knee using an arthroscope (tiny camera)	Measured as the number of times a patient with osteoarthritis received arthroscopic knee surgery	Schwartz et al, 2014
Vertebroplasty	Procedure to inject cement into the vertebrae of patients with spinal osteoporosis	Measured as the number of times a patient with osteoporosis received vertebroplasty	Schwartz et al, 2014
Inferior vena cava filter (IVC)	Procedure to place a filter (a medical device) in the large vein in the abdomen to prevent blood clots from moving to the lungs	Measured as the number of times an IVC filter was placed	Schwartz et al, 2014
Renal artery stenting	Procedure to place a stent or balloon in the renal (kidney) artery in a patient with high blood pressure or cholesterol (plaque) buildup in the artery	Measured as the number of times a renal artery stent or balloon was placed in a patient who had hypertension or plaque buildup but did not have hyperplasia (abnormal growth of the artery walls)	Schwartz et al, 2014
Pulmonary artery (PA) catheterization	Procedure to insert a catheter in the pulmonary artery to monitor heart failure or adjust medical treatment in patients in the intensive care unit (ICU)	Measured as the number of times a PA catheter was placed for nonsurgical patients in the ICU	Schwartz et al, 2014 (Supplementary material)
Hysterectomy	Surgical removal of the uterus	Measured as the proportion of hysterectomies that were performed on patients with benign disease	Segal et al, 2015
Carotid endarterectomy	Procedure to remove plaque buildup from a carotid (neck) artery in a patient to prevent stroke	Measured as the proportion of carotid endarterectomies that were performed on patients without stroke symptoms or history of stroke	Schwartz et al, 2014

Coronary artery stenting	Procedure to place a stent in a coronary artery	Measured as the proportion of coronary artery stents performed on patients with stable heart disease (not having a heart attack or unstable angina)	Schwartz et al, 2014
Laminectomy/spinal fusion	Procedure to remove part of a spinal vertebra or fuse vertebrae together	Measured as the proportion of spinal fusion or laminectomy procedures for patients without radicular (radiating) pain	Segal et al, 2015
EEG for fainting	A test of the electrical activity of the brain	Measured as the proportion of patients who came to the hospital with fainting but no other symptoms of serious disease and received an EEG	Schwartz et al, 2014; Segal et al, 2015
EEG for headache	A test of the electrical activity of the brain	Measured as the proportion of patients who came to the hospital with headache but no other symptoms of serious disease and received an EEG	Schwartz et al, 2014
Carotid artery imaging for fainting	A test to screen for carotid (neck) artery disease	Measured as the proportion of patients who came to the hospital with fainting but no other symptoms of serious disease and received carotid artery imaging	Schwartz et al, 2014
Head imaging for fainting	A CT scan or MRI of the head	Measured as the proportion of patients who came to the hospital with fainting but no other symptoms of serious disease and received an MRI or CT scan	Schwartz et al, 2014

RESULTS

Some low-value services were much more likely to be overused than others (see Table 2). About 15 percent of hospitals had relatively higher rates of performing unnecessary arthroscopic knee surgeries, and a similar proportion of hospitals had high rates of hysterectomy overuse. However, 96 percent of hospitals avoided providing pulmonary artery monitoring for non-surgical patients in the ICU; about one-third of hospitals avoided placing inferior vena cava filters; and a little more than one-third of hospitals did not perform any vertebroplasties, out of all hospitals that had the capacity to do so. For nine of these services, at least one-third of hospitals did not have the capacity to perform the procedure or tests.

Table 2: Frequency of overuse by low-value service

Low-value service	Number and percent of hospitals with no overuse (5 stars)	Number and percent of hospitals with high overuse (1 star)	Number and percent of hospitals without the capacity to perform the procedure	Relative frequency of overuse (percent of hospitals with any overuse, out of those with capacity)
Arthroscopic knee surgery	152 (5%)	507 (15%)	658 (20%)	High (94%)
Vertebroplasty	1053 (32%)	385 (12%)	390 (12%)	Medium (64%)
Inferior vena cava filter	1065 (32%)	414 (13%)	219 (7%)	Medium (65%)
Renal artery stent	867 (26%)	276 (8%)	1118 (34%)	Medium (60%)
Pulmonary artery catheterization	1502 (46%)	28 (1%)	1719 (52%)	Low (4%)
Hysterectomy	6 (0.1%)	495 (15%)	883 (27%)	High (99%)
Carotid endarterectomy	63 (2)	331 (10%)	1645 (50%)	High (96%)
Coronary artery stent	7 (0.2%)	321 (10%)	1738 (53%)	High (99%)
Laminectomy/ Spinal fusion	162 (5%)	342 (10%)	1496 (46%)	High (91%)
EEG for fainting	57 (2%)	368 (11%)	1480 (45%)	High (97%)
EEG for headache	166 (5%)	345 (11%)	1480 (45%)	High (91%)
Carotid artery imaging for fainting	6 (0.1%)	450 (14%)	1107 (34%)	High (99%)
Head imaging for fainting	0 (0%)	235 (7%)	2185 (66%)	High (100%)

Hospitals varied considerably in terms of which low-value services they were most likely to deliver. For example, the Cleveland Clinic had relatively high scores on avoiding overuse of most services, but it had some of the worst rates of overuse of coronary artery stenting, renal artery stenting, and spinal fusion. In contrast, Morristown Medical Center in Morristown, NJ, was one of the best hospitals at avoiding coronary stents and spinal fusion, but it had the highest rates of overuse of arthroscopic knee surgery, IVC filter placement, and carotid artery imaging for fainting. Kings County Hospital Center in Brooklyn, NY, had the best overall score in

avoiding overuse, while Gulf Coast Medical Center in Fort Myers, FL, had the worst. (See Tables 3a & b).

Among the top 20 highest-ranking hospitals for avoiding overuse, most are nonprofit teaching hospitals. In addition, half are safety net hospitals, one-third are critical access hospitals, four are rural hospitals, and six are small or very small hospitals.¹ Eleven of the top 20 are in the Northeast (six in New York City), five are in the West, and four in the Midwest.

Among the 20 lowest-ranking hospitals for low-value care, there are no safety-net hospitals, small hospitals, critical access hospitals, or rural hospitals. There are three for-profit hospitals. At the regional level the differences are stark: Eleven of the 20 lowest ranked hospitals for overuse are in the Southeast region, three are in the Southwest, four are in the Midwest, and just one each in the West and Northeast.

Table 3a: Twenty highest-ranking hospitals for avoiding overuse

Avoiding Overuse Rank	Hospital Name	State	Nonprofit	Urban Hospital	Teaching Hospital	Hospital size	Critical Access Hospital	Safety net
1	Kings County Hospital Center	NY	Yes	Yes	Minor	Very large	No	Yes
2	Bellevue Hospital Center	NY	Yes	Yes	Minor	Very large	No	Yes
3	Elmhurst Hospital Center	NY	Yes	Yes	Minor	Very large	No	Yes
4	Southwestern Vermont Medical Center	VT	Yes	No	No	Small	No	No
5	Clark Fork Valley Hospital	MT	Yes	No	No	Very small	Yes	No
6	Woodhull Medical and Mental Health Center	NY	Yes	Yes	Minor	Large	No	Yes
7	St Elizabeth Hospital	WA	Yes	Yes	No	Very small	Yes	No
8	Marshall Medical Center	CA	Yes	Yes	No	Medium	No	No

¹ Critical Access Hospital is a [designation given to eligible rural hospitals by the Centers for Medicare and Medicaid Services](#). Among other requirements, critical access hospitals must have 25 or fewer beds and be located at least 35 miles away from another hospital.

9	Putnam County Hospital	IN	Yes	Yes	No	Very small	Yes	No
10	Perham Health	MN	Yes	No	No	Medium	Yes	No
11	Broadlawns Medical Center	IA	Yes	Yes	Minor	Medium	No	Yes
12	LAC+USC Medical Center	CA	Yes	Yes	Minor	Very large	No	Yes
13	Jacobi Medical Center	NY	Yes	Yes	Minor	Very large	No	Yes
14	Cambridge Health Alliance	MA	Yes	Yes	Major	Large	No	Yes
15	Bridgeton Hospital	ME	Yes	Yes	No	Very small	Yes	No
16	Queens Hospital Center	NY	Yes	Yes	Minor	Large	No	Yes
17	Boone County Health Center	NE	Yes	No	Minor	Very small	Yes	No
18	Tufts Medical Center	MA	Yes	Yes	Major	Large	No	No
19	Geisinger-Bloomsburg Hospital	PA	Yes	Yes	No	Small	No	No
20	Kern Medical Center	CA	Yes	Yes	Minor	Medium	No	Yes

Table 3b: Twenty lowest-ranking hospitals for avoiding overuse

Avoiding Overuse Rank	Hospital Name	State	Nonprofit	Urban location	Teaching Hospital	Hospital size
3263	Hillcrest Medical Center	OK	No	Yes	Minor	Very large
3264	North Kansas City Hospital	MO	Yes	Yes	Minor	Very large
3265	St Dominic-Jackson Memorial Hospital	MS	Yes	Yes	Minor	Very large
3266	Henrico Doctors' Hospital	VA	No	Yes	No	Very large
3267	Meritus Medical Center	MD	Yes	Yes	No	Large
3268	Halifax Health Medical Center	FL	Yes	Yes	Minor	Very large

3269	Chesapeake General Hospital	VA	Yes	Yes	No	Large
3270	Winchester Medical Center	VA	Yes	Yes	Minor	Very large
3271	Advocate Good Samaritan Hospital	IL	Yes	Yes	Minor	Large
3272	Texoma Medical Center	TX	No	Yes	No	Large
3273	Stormfront Vail Hospital	KS	Yes	Yes	Minor	Large
3274	Liberty Hospital	MO	Yes	Yes	No	Large
3275	Northeast Georgia Medical Center, INC	GA	Yes	Yes	No	Very large
3276	NEA Baptist Memorial Hospital	AR	Yes	Yes	No	Large
3277	Grossmont Hospital	CA	Yes	Yes	No	Very large
3278	AnMed Health	SC	Yes	Yes	Minor	Large
3279	Leesburg Regional Medical Center	FL	Yes	Yes	No	Large
3280	Houston Methodist Hospital	TX	Yes	Yes	Major	Very large
3281	Villages Regional Hospital	FL	Yes	Yes	No	Large
3282	Gulf Coast Medical Center	FL	Yes	Yes	No	Large

Looking at hospital overuse scores more broadly, several patterns emerge (see Table 4 for average percentile rankings and Appendix for percentile rankings by low-value service):

- Overall, nonprofit, smaller size, safety net, rural, and critical access hospitals had significantly better average rankings on avoiding overuse compared to for-profit, larger size, urban, and acute care hospitals, respectively.
- Major teaching hospitals and non-teaching hospitals had better average scores than minor teaching hospitals. Major teaching hospitals were consistently good at avoiding overuse, with average rankings above the 60th percentile for avoiding overuse in eight of the low-value services, and a low average ranking in only one (spinal fusion).
- For-profit hospitals had poor scores on avoiding overuse across low-value services, with an average ranking above the 50th percentile for only one low-value service (spinal fusion), and average percentile rankings below 40 percent for five low-value services.
- Small critical access hospitals in rural areas were good at avoiding hysterectomies, IVC filters, and head imaging for fainting; but some had

relatively high rates of overuse for PA catheter, spinal fusion, and carotid endarterectomies.

- Safety net hospitals had relatively high average rankings for avoiding overuse of hysterectomy and vertebroplasty, but poorer rankings for avoiding coronary stents and PA catheters.

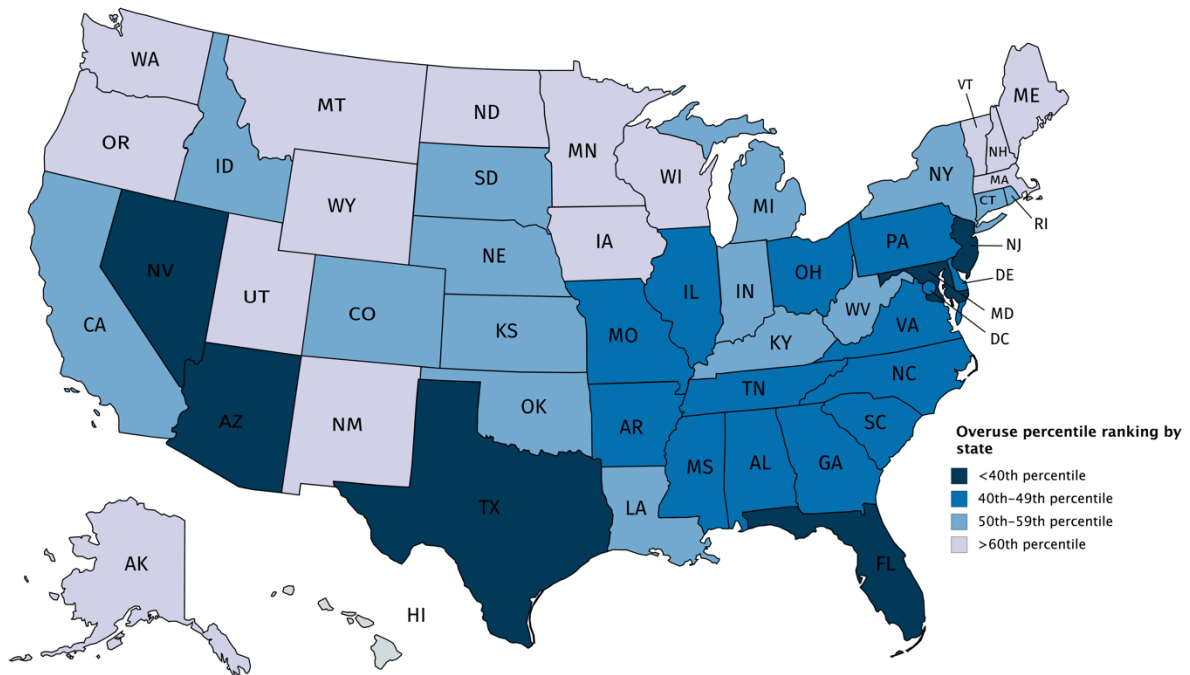
Among states, hospitals in Arizona, Florida, Maryland, Nevada, New Jersey, and Texas stand out as having the lowest overall rankings in overuse, with average rankings below the 40th percentile. Hospitals in Maine, Minnesota, Montana, New Hampshire, Oregon, and Vermont all had average rankings above 70 percent (see Figure 1).

Looking at overuse rates across all low-value services by state, we find that hospitals in some states stand out in being consistently good at avoiding overuse (California, Colorado, Connecticut, Massachusetts, Montana, Rhode Island, and Virginia). Hospitals in a few states were good at avoiding every type of overuse except spinal fusion (Maine, Minnesota, Oregon, Vermont, and Washington). Hospitals in other states had relatively poor overuse rankings for nearly all low-value services (Alabama, Arkansas, Florida, Georgia, Illinois, Mississippi, Nevada, Tennessee, and Texas).

Table 4: Average overuse rank percentiles by hospital type

Hospital type	Number of hospitals	Avoiding Overuse average rank percentile
Non-teaching	2320	53.26
Major teaching	224	51.28
Minor teaching	810	39.88
Nonprofit	2811	51.90
For-profit	543	39.14
Very Small - Small	1411	67.21
Medium	779	45.44
Large - Very Large	1164	32.78
Safety	692	60.88
Not safety	2670	47.06
Not urban	1234	65.84
Urban	2120	40.91
Critical access hospital	728	71.26
Acute care hospital	2634	44.31

Figure 1: Overuse Average Rankings by State*



Created with mapchart.net ©

* For this map, a darker color indicates a lower ranking on the Low Index for avoiding overuse, while a lighter color indicates hospitals in the state are better at avoiding overuse, on average.

DISCUSSION AND POLICY IMPLICATIONS

This analysis builds on previous research measuring rates of overuse across regions and types of insurance. We rank individual hospitals for the first time by their overuse rates. We find that overuse varies across hospitals by type, size, and region. While we do not know for sure what drives differences in overuse among hospitals, previous research suggests that hospital capacity and resources, hospital competition, and cultural factors are associated with more overuse.^{1,2} These factors point to potential policy solutions for reducing hospital overuse.

CAPACITY

Hospital capacity likely plays a role in the differences in overuse rates between larger urban hospitals and smaller rural hospitals. Research strongly suggests that the relative regional per capita supply of many hospital resources influences the rate at which those resources are used. For example, Elliott Fisher and colleagues at Dartmouth, showed that patients who suffered a heart attack, hip fracture, or undergone colon resection for colon cancer, were treated very differently in different regions of the country, depending upon the per capita supply of hospital beds in the region.^{9,27} They found that outcomes across regions were no better where patients were hospitalized more often and received more medical services. Another study from the Johns Hopkins School of Public Health examining overuse rates by region found that a greater number of hospital beds per resident population is associated with more overuse.²

Clinicians are likely influenced—perhaps subconsciously—by the increased availability of hospital beds, in-house labs, imaging machines, and other resources. When hospitals have more beds to fill or devices to be used, clinicians end up using them more often, whether or not it is necessary or beneficial for patients—a phenomenon known as “supply-sensitive care.”^{18,28} The mere fact that a piece of machinery, such as a CT scanner, is readily available, may influence habits of clinical decision-making.

COMPETITION

Research from the Johns Hopkins School of Public Health finds that areas of increased hospital competition have higher rates of overuse than regions with fewer hospitals.¹ This could be another reason why hospitals in urban settings tend to have worse LIHI rankings on avoiding overuse compared to rural hospitals, and especially critical access hospitals. Critical access hospitals are by definition located at least 35 miles from another hospital, and thus have little in the way of competition.

For hospitals in high-competition areas, hospital leadership may influence overuse by pressuring clinicians to increase hospital revenue. In a fee-for-service payment environment, revenue goes up when clinicians order more of certain tests and procedures—especially services that have the highest margins of profit—whether or not the clinical need is clearly compelling and necessary. Anecdotally, clinicians report being pressured to perform certain surgeries, for example, and to admit patients to the hospital.²⁹ Additionally, hospitals may try to attract patients by investing in equipment, such as proton-beam machines, Da Vinci surgical robots, and advanced CT

scanners, the cost of which must be recouped, thus creating an incentive that might encourage their use without clinical discrimination.^{30,31}

CULTURAL FACTORS

There are many drivers of overuse that are not explained by resource differences among hospital types, but may be attributable to the culture of practice at that hospital. Clinician leaders at teaching hospitals set an example for trainees, creating a “hidden curriculum,” through which practice norms and habits are transmitted and learned across generations of clinicians.³² According to a 2019 study by Aaron Schwartz and colleagues, some physicians within the same geographic region deliver twice the rate of low-value care services compared with others in the same region.³³ Other studies of individual-level variation find that physician habits are a strong predictor of whether a patient receives low-value care.³⁴

Differences in physician culture may also explain why certain types of low-value care are delivered more in different regions of the U.S. We found that states with the worst rankings in avoiding unnecessary hysterectomies were clustered in the South and West (see Figure 2). Previous research has found that African American women in the South are at a much greater likelihood of receiving a hysterectomy for benign disease compared to white women, and inappropriate hysterectomies in Native American women have also been documented.³⁵⁻³⁷ While patient preferences may play a role in high rates of hysterectomy, physician habits—which themselves may be impacted by implicit racial bias—may affect rates of hysterectomy overuse.

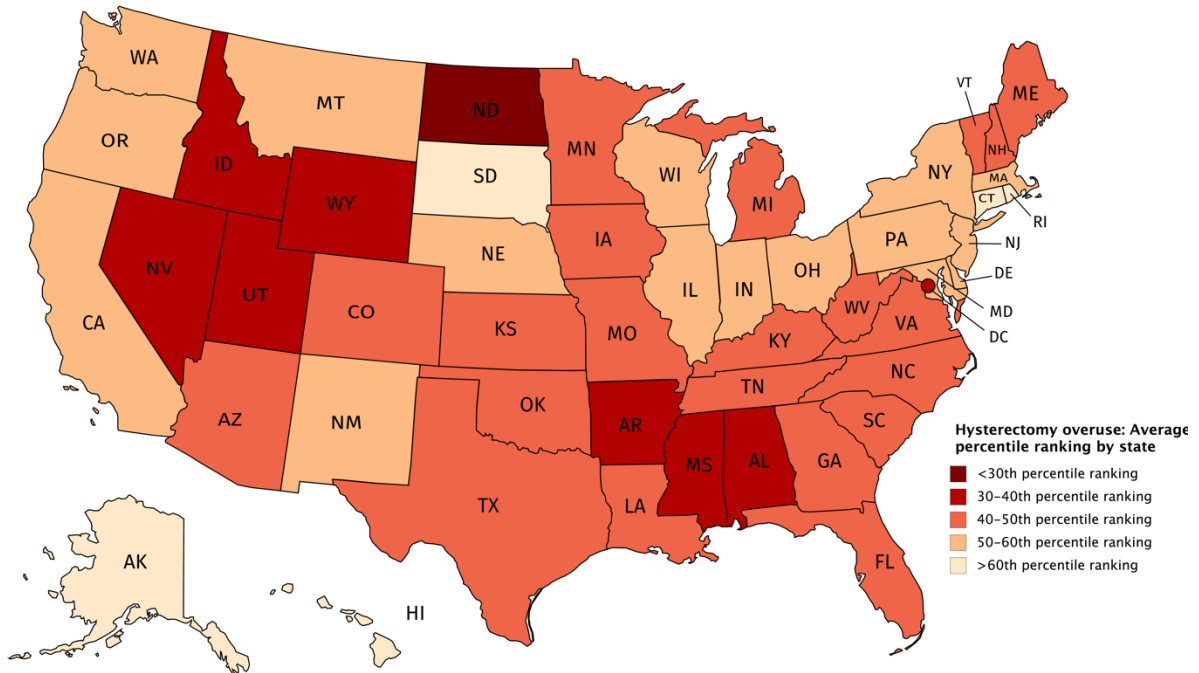
SOLUTIONS

When hospitals and physicians are paid for doing more, it is not surprising that overuse is a result. Many researchers and policy experts believe that overuse would decline if hospitals and physicians were no longer paid through the prevailing fee-for-service model.

Insurers, including the Centers for Medicare and Medicaid Services (CMS), have been experimenting with “bundled payments,” which reimburses clinicians and hospitals for all services provided within an episode of care, such as a knee replacement, rather than each individual service. Bundled payments remove the incentive for hospitals to provide unnecessary services within the episode of care. CMS’s bundled payment program for joint replacement reduced Medicare spending by 1.6 percent from 2013–2016, while still maintaining or improving quality of care.^{38,39} However, bundled payments for other clinical episodes such as spinal fusion surgery or heart failure have

not shown evidence of reduced spending or quality improvement.³⁹ In addition, a bundled payment does not guarantee that the patient actually needs to undergo the procedure.

Figure 2: Hysterectomy for benign disease: Average percentile ranking by state*



Created with mapchar.net ©

*For this map, a darker color indicates lower rankings and thus more overuse of hysterectomy among hospitals in the state, on average.

Theoretically, “global budgeting,” or paying a hospital a set amount per year to care for a defined population of patients could provide an incentive for hospitals to reduce the delivery of unnecessary services, which would reduce costs. Unfortunately, evidence is scant for the impact of global budgeting on overuse. In Maryland, where global budgeting was implemented in 2014, total hospital expenditures grew 4.1 percent slower than a national comparison group, saving Medicare an estimated \$796 million over five years.⁴⁰ However, it is unclear whether global budgeting has reduced overuse in the state. All-cause inpatient admissions and potentially avoidable admissions for Medicare beneficiaries decreased by more than 5 percent in Maryland in

five years. At the same time, a previous analysis of overuse by geographic area found high rates of overuse in Maryland, and the state ranked near last (47/50) in avoiding overuse on the 13 services measured by the LIHI and other researchers.¹ In the future, the LIHI overuse ranking may be a useful tool to examine changes in overuse over time in hospitals and states.

Communities and states can also mitigate “supply-sensitive care” by limiting the excessive growth of hospital capital investments. For example, about half of states have “Certificate of Need” regulations, which require a state health agency or legislature to approve new health care facilities or large capital expenditures to improve existing facilities. In these states, before creating a new hospital wing, a hospital may have to show evidence that this investment does not duplicate existing health care services and is necessary to meet community health needs. Certificate of Need regulations have shown some evidence of limiting the excess growth of hospital capacity.^{41,42}

It is difficult to change the culture and standard of clinical practice at hospitals, but transparency and education can help. Clinicians and hospital administrators may not realize that their rate of delivering low-value care is high until they see the data. For example, providing clinicians with information about how often they are prescribing certain medications compared to their peers has been shown to reduce overprescribing.^{43,44} The Lown Index ranking could be a transformative tool, by showing hospitals their rates of overuse compared to other hospitals of the same type, potentially inspiring them to address overuse. When hospitals have the drive, various programs can provide a framework for education and change.^{45,46}

Finally, policymakers, legislators, regulators researchers, clinicians, patients, and community members can all help hold hospitals accountable for reducing low-value care. Questions should be asked of major teaching hospitals about their relatively high rates of inappropriate spinal surgeries, given the risk of dangerous complications and adverse events.^{47,48} Community activists should question why certain regions of the country have much higher rates of unnecessary hysterectomy, and whether these rates are influenced by physicians’ implicit racial biases. And for-profit hospitals deserve scrutiny for having the lowest rankings for avoiding overuse of any hospital type in our database.

As the country emerges from the COVID pandemic, hospitals may need to rethink their strategies for addressing overuse. The delivery of low-value services creates a burden on the health care system both in terms of costs and wasted effort. The pandemic has exposed the critical need to husband the clinical resources that have been needed to

meet the public health challenge we are currently facing. We hope these findings from the Lown Institute Hospitals Index provides hospitals with data they can use to examine both the explicit policies and hidden influences that may drive unnecessary tests and procedures. Policymakers, lawmakers, regulators, and community members can also use these data to consider policies, regulations, and incentives to reduce overuse and the preventable harm it entails. Such policies might include changing payment models and providing more effective oversight to ensure hospitals' capital investments are matched to population health needs. We also hope these findings will help patients and voters recognize the importance of measuring overuse and addressing it to optimize the health of their communities.

ABOUT THIS WHITE PAPER

This white paper is part of a series analyzing specific metrics in the Lown Institute Hospitals Index. This paper was written by Judith Garber, Shannon Brownlee, and Vikas Saini. Valérie Gopinath, Paula Smith, and Vikas Saini led the data analytics for this project.

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METRICS ADVISORY COUNCIL

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Table A1: Overuse rankings by hospital type and low-value service

Hospital type	Number of hospitals	All low-value services	Average rank percentile score (higher indicates better avoidance of overuse)												
			Knee arthroscopy	Carotid endarterectomy	Carotid screening for fainting	EEG for headache	EEG for fainting	Hysterectomy	IVC filter	Spinal fusion	Coronary stents	Renal artery stents	PA catheter	Head imaging for fainting	Vertebroplasty
Major teaching	224	51.28	78	56	76	58	64	52	37	50	60	61	69	71	
Minor teaching	810	39.88	51	49	51	49	48	49	45	50	53	49	54	48	
Non teaching	2320	53.26	46	49	45	49	48	47	52	53	48	49	44	43	48
Nonprofit	2811	51.90	52	50	52	51	50	50	53	49	52	53	54	51	53
For-profit	543	39.14	39	49	43	47	49	46	37	54	41	37	31	42	36
Very Small - Small	1411	67.21	46	44	50	52	52	54	60	47	50	54	32	51	54
Medium	779	45.44	44	49	46	50	46	43	51	51	52	53	41	45	50
Large - Very Large	1164	32.78	57	51	52	49	51	50	39	50	49	47	57	51	47
Safety	692	60.88	51	54	48	51	49	55	53	46	39	53	38	52	55
Not safety	2670	47.06	50	49	50	50	50	48	49	51	52	49	52	50	49
Urban	2120	40.91	51	50	51	50	50	49	43	50	50	49	51	50	47
Not urban	1234	65.84	49	48	46	51	52	49	63	47	52	55	44	51	56
Acute care hospital	2634	44.31	50	50	50	50	50	48	48	50	50	50	50	50	49
Critical access hospital	728	71.26	52	43	50	48	55	62	60	40	44	50	21	59	54
Region															
Northeast	491	53.87	57	45	58	53	48	55	55	51	52	67	55	57	67
South	1287	43.44	46	48	40	50	50	45	44	51	42	43	47	38	42
Midwest	997	53.39	52	49	52	43	48	50	57	46	55	51	57	57	50
West	587	54.17	49	59	60	56	55	51	48	52	60	48	42	60	50

Table A2: Overuse rankings by state and low-value service

Average rank percentile score (higher indicates better avoidance of overuse)															
State	Number of hospitals	All low-value services	Knee arthroscopy	Carotid endarterectomy	Carotid screening for fainting	EEG for headache	EEG for fainting	Hysterectomy	IVC filter	Spinal fusion	Coronary stents	Renal artery stents	PA catheter	Head imaging for fainting	Vertebroplasty
AK	9	66.79	37	56	67	76	79	64	62	47	62	36	48	68	62
AL	76	44.24	39	44	32	40	49	37	49	47	27	35	53	36	46
AR	56	47.59	43	45	36	41	51	39	50	51	31	35	59	53	32
AZ	50	34.27	38	49	59	37	37	43	30	60	64	34	34	43	49
CA	247	49.98	50	61	55	59	53	52	43	55	49	49	41	57	46
CO	40	54.36	48	59	62	50	54	49	50	49	69	44	42	67	49
CT	26	49.65	65	42	73	58	58	63	47	62	68	78	63	64	68
DC	5	44.30	70	61	74	48	47	30	23	36	44	45	38	63	61
DE	6	43.11	49	75	39	38	38	55	62	66	41	68	80	40	65
FL	165	27.86	47	44	40	43	47	49	27	59	23	37	38	38	35
GA	97	42.12	51	47	36	56	52	41	41	44	50	43	48	39	43
HI	10	59.36	41	63	84	55	60	69	51	35	72	55	39	76	46
IA	85	65.87	57	29	60	46	51	46	63	45	55	46	47	68	59
ID	16	58.23	56	89	83	56	71	38	58	46	85	52	51	82	45
IL	161	45.92	52	46	43	42	37	51	48	50	55	49	53	46	51
IN	93	49.59	51	63	51	40	44	50	61	49	57	45	55	57	49
KS	81	52.78	47	55	56	50	50	49	51	52	62	36	48	57	30
KY	80	56.47	50	52	31	46	42	44	61	45	39	47	50	37	52
LA	79	52.65	62	36	46	53	56	42	50	49	37	45	53	42	53
MA	56	65.39	51	53	86	73	54	57	83	52	69	83	65	73	65
MD	41	31.49	42	69	49	48	37	54	28	57	55	55	56	21	50
ME	27	81.20	73	56	78	65	81	43	89	28	77	84	76	82	80
MI	105	54.91	49	49	45	38	50	49	67	49	29	58	65	49	61
MN	73	72.28	62	60	70	58	73	57	66	7	81	60	72	89	62
MO	82	45.19	46	53	56	45	45	41	58	48	50	50	58	62	43
MS	64	47.18	54	42	37	40	45	33	48	57	40	42	51	40	48
MT	24	71.56	61	42	71	53	49	55	68	41	88	65	67	79	57
NC	91	46.19	40	62	50	67	62	41	56	49	51	50	55	39	45
ND	16	62.23	61	22	65	58	84	26	66	8	53	45	67	93	48
NE	54	56.38	56	54	50	39	42	51	51	48	68	56	57	67	38
NH	24	74.13	71	39	69	70	70	48	85	31	75	78	74	74	75
NJ	62	29.10	53	50	38	31	27	59	20	65	40	58	45	46	64
NM	27	69.72	49	56	53	60	70	59	58	55	64	60	52	54	55
NV	23	27.41	31	47	28	36	45	37	27	80	47	37	22	33	33
NY	143	54.95	51	37	55	59	51	56	52	47	45	62	51	52	68
OH	124	41.47	48	52	49	40	46	53	53	52	59	54	58	50	45
OK	67	52.42	35	45	31	59	62	40	50	50	53	41	44	48	40
OR	45	70.01	55	66	74	63	62	56	66	37	73	50	43	79	70
PA	134	48.52	59	44	51	44	41	55	50	51	52	63	53	55	62
RI	9	56.73	56	55	64	64	58	63	64	41	65	77	65	55	48
SC	47	43.90	44	34	39	60	59	42	44	38	63	46	62	34	45
SD	22	59.31	55	13	49	46	50	67	53	16	71	35	65	79	48
TN	81	45.43	43	45	37	47	55	47	41	54	52	33	45	41	41
TX	221	39.18	42	53	38	52	48	49	37	50	41	40	39	34	34
UT	20	60.35	35	79	71	55	78	36	44	55	74	47	32	83	44
VA	70	47.49	47	55	52	52	48	49	50	48	67	55	51	49	46
VT	10	84.82	74	64	78	59	85	43	91	32	91	94	73	79	88
WA	62	62.72	62	62	83	62	68	56	62	38	70	50	63	76	65
WI	101	61.37	54	36	69	53	62	55	59	40	63	53	45	73	57
WV	41	58.17	49	34	28	47	36	44	61	39	31	55	55	32	60
WY	14	66.56	47	31	52	55	46	33	54	31	81	44	22	68	45

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