Estimating State-Level Prevalence of Low-Value Care Services Among the Privately Insured, 2015

Executive Summary

In an analysis of health care claims from a major U.S. health insurer for the year 2015, we find that for the privately insured population, an estimated $5.5 billion was spent on 20 services that were of little to no value to their members. The prevalence of low-value care for these 20 services was widespread across the nation, with some variation from state to state. We found that the states with the lowest rates had around 10% of members who received at least one low-value care service in the year, while low-value care in the worst states was over twice as frequent, with some states exceeding 20% of members with at least one unnecessary service. The cost of the 20 low-value care services across states for the privately insured population ranged from $12 per member per year to $32 per member per year. The most frequent and most costly services included unnecessary annual cervical cytology screening (Pap tests) for women aged 30-65, routine population-based Vitamin D testing, the use of several specific branded drugs when generics were available, and antibiotics for colds. Based on the types of low-value services observed frequently, we find a need to address several different drivers of unnecessary care: providers, systems, and patients.

This work, while not a comprehensive assessment of all low-value care services, supports prior research that suggests the cost and prevalence of low-value services is a major problem. The variation observed in this study among states suggests two findings: first, even in the states that are performing "better", low-value care is still occurring too often, and second, that the reduction in low-value care is possible, given that rates of care provided in some states is less than half of that in others. We note that trends in low-value care among the privately insured may be driven by different patient populations or broader issues with access to health care. Areas of the country with lower utilization of low-value services could be driven by better provider practices or other factors. Analyses of the types of low-value care occurring find that changes to provider behavior, systems and administrative practices, and patient behavior all have the potential to reduce the prevalence of low-value care. Meaningful policy and solutions must align incentives appropriately along all three of these areas.

Acknowledgements

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BACKGROUND

The focus on identifying, measuring, and reducing the prevalence of low-value care has increased over the last decade and is one of the major focus areas for the Research Consortium for Health Care Value Assessment. Recent work published in October 2019 by William Shrank and colleagues updated prior estimates on the amount of probable waste in the U.S. health care system. They conservatively found that 20-25% of total health care expenditures are likely wasteful, including unnecessary spending on administrative complexity, failures in care delivery and coordination, pricing failures, fraud and abuse, and overtreatment. Given the U.S. spends over $3.5 trillion dollars a year on health care, that is over $800 billion annually. Their work estimates $345 billion is spent on the three types of waste associated with low-value and unnecessary services: overtreatment/low-value care, failure of care delivery, and failure of care coordination. Furthermore, their review of evidence-based solutions to reduce waste at a national level found the potential to reduce excess expenditures by $282 billion.

Taking the next steps to understand where the low-value care is occurring and how it can be addressed is critical. Allison Oakes, Hsien-Yen Chang & Jodi Segal recently published findings using the Johns Hopkins Overuse Index in the privately insured population. Their findings suggest that systemic overuse is occurring across the country and remains relatively constant over time, suggesting cultural factors affecting overuse as a problem. As we work to reduce the prevalence of low-value care, understanding what type and where can help inform actionable strategies.

CURRENT PROJECT

Drawing off the successful completion of the 2018 Quick Strike project that explored the prevalence of five low-value and five high-value services among the privately insured population using data from a major insurer covering over 10 million lives, this study adds new analyses increasing our understanding of low-value care utilization. By applying new algorithms identifying low-value care, we expand our list to 20 low-value services and add further analyses assessing low-value care use across states. We use this information to explore some of the drivers of low-value care services, as well insights that can be gained from the state to state variation in unnecessary care.

DATA AND METHODS

We programmed queries to identify 20 low-value care services in claims using coded algorithms developed by a team at Anthem that was made available to researchers, and we supplemented those algorithms when necessary with data from the VBID low-value care task force. The examples of low-value care identified were sourced primarily from the Choosing Wisely recommendations, and the 20 services analyzed in this work were selected from these lists via a consensus process within the Research Consortium for Health Care Value Assessment. The final algorithms allowed us to estimate the total utilization and spending on each service in a large, commercial claims dataset from a single insurer. The algorithms worked as follows: first, identifying members with conditions or care that potentially put them at risk for a low-value care service; second, identifying if a low-value service was received; and finally finding if there were co-occurring conditions or risk-factors that made the low-value care potentially warranted. All patients with any of these "exclusions" were excluded via the algorithms from the low-value care prevalence rates. This resulted in estimates of care utilization rates that were highly likely to be of low-value. We note that total cost estimates of a particular service may vary from earlier work, due to using the Anthem-derived algorithms as a replacement for other measures in these queries.

The commercial dataset contained complete medical and pharmaceutical claims for over ten million members, representing enrollees from all fifty states and Washington DC, and accounting for at least 5% of the privately insured population in 24 states. This same dataset was used in previous work in 2018. Due to the often-required lookback and look-forward periods in the Anthem algorithms that determined if a service was highly likely to be low-value, this analysis focuses on a single year period of 2015, using the 2014 and 2016 claims data as periods to identify relevant co-occurring identifiers.

In order to estimate state-level counts, prevalence, and costs of low-value care services for each of the 20 services, we generated population weights in the data, based on age and sex counts of each state's privately insured population relative to the population covered by this insurer. Data on the privately insured population are generated from American Community Survey 2013-2017 data, which best approximates the year 2015. Applying these weights allowed for analyses representative of each state's privately insured population in 2015, a total of 212 million individuals nationwide. While not a perfectly representative sample of the U.S. privately insured population, the breadth and extent of this insurer's coverage supports extrapolation and any errors would be the result of differences in low-value care utilization across commercial insurers.

In order to estimate total counts and costs of low-value care service utilization, we generated statistics for each member on the number of low-value care services received. These counts of low-value care per member in 2015 were winsorized at the 99th percentile to avoid possibly erroneous claims records for some members from biasing our counts and costs upwards. As is consistent with our prior work, in order to avoid biasing the estimates of the total costs based on this particular insurer's negotiated rates, we estimated the prices of each low-value care service not from the prices paid as reported in the claims, but rather by estimating an average U.S. private price for each service at 160% of the national Medicare average allowed amount. This price factor is likely conservative and will have an effect of standardizing service prices across the country, possibly undercounting total costs of low-value care in higher-cost states and vice versa. It is important to note that our estimates of spending on low-value care are limited to the direct procedural costs associated with the low-value care, not including any related follow-on or follow-up care that might be expected to be associated with unnecessary care.

RESULTS

NATIONAL ESTIMATES

We estimate that for the U.S. commercially-insured population in 2015, 17.8% of members received at least one low-value service during the year. The most frequently occurring low-value care services were: unwarranted routine annual cervical cytology screening (Pap tests) in women aged 30-65 (7.1% of members), costing over $782 million; population-based screening for Vitamin D (5.5% of members), costing over $928 million; the use of a selected set of brand-name drugs when generic equivalents are available (5.2% of members), costing over $1.5 billion; and the use of antibiotics for colds (1.8% of members) costing over $483 million. Altogether, spending on the 20 select low-value services was estimated to have exceeded $5.5 billion for the commercially-insured population in 2015. **Table 1** lists each of the 20 services, provides a short description, and shows the percent of privately insured members receiving each service when it was deemed to be of low value, the dollar contribution of each low-value care service to the total, and data on the variance in each service's utilization across states (discussed in detail in the next section). Further detail, links to the original recommendation sources, and the recommending professional society are found in **Appendix A.**

TABLE 1: 20 SELECT LOW-VALUE CARE SERVICES SPENDING AND FREQUENCY AND STATE PERCENTILE RESULTS

	Low-Value Care Service	National Data		State Data	
		2015 Spending (in millions)	% of Members w/ Service	10th Percentile State Rate	90th Percentile State Rate
LVC-1	Imaging for low-back pain	$170	0.81%	0.60%	1.10%
LVC-2	Pre-operative testing before low-risk surgery	$26	0.06%	0.03%	0.08%
LVC-3	Brand-name drugs with available generics	$1,570	5.2%	3.7%	6.02%
LVC-4	Population-based Vitamin D screening	$928	5.5%	2.5%	6.85%
LVC-5	PSA testing for those with limited life expectancy	$66	0.26%	0.31%	0.56%
LVC-6	Repeat DXA scans	$2	0.01%	0.00%	0.03%
LVC-7	EEG for headaches	$17	0.02%	0.00%	0.03%
LVC-8	EKG or cardiac screening for low-risk patients	$156	0.25%	0.13%	0.36%
LVC-9	Two or more concurrent antipsychotics	$220	0.07%	0.04%	0.10%
LVC-10	Other cancer screening for those with limited life expectancy	$195	0.16%	0.38%	0.72%
LVC-11	Cervical cancer screening in low-risk women over age 65 or with a hysterectomy	$63	0.30%	0.28%	0.61%
LVC-12	MRI for arthritis monitoring	<$1	0.00%	0.00%	0.00%
LVC-13	Arthroscopic lavage for knee arthritis	$156	0.36%	0.28%	0.66%
LVC-14	Routine cervical cancer screening in women 30 – 65 years of age	$782	7.1%	3.9%	6.68%
LVC-15	Coronary artery calcium scoring for known CAD	$8	0.01%	0.00%	0.02%
LVC-16	Opioids as first line headache treatment	$176	0.19%	0.09%	0.24%
LVC-17	Opioids for low-back pain	$78	0.09%	0.05%	0.15%
LVC-18	NSAIDs for those with HTN, HF, or CKD	$434	1.2%	0.76%	1.97%
LVC-19	Antibiotics for sinusitis	$483	1.8%	0.94%	2.40%
LVC-20	CT for rhinosinusitis	$12	0.08%	0.04%	0.14%
		$5,540	17.8%	12.5%	19.8%

STATE-LEVEL ESTIMATES

In addition to the estimates of low-value care utilization for the national privately insured population, an analysis of each service at the state level was completed. An aggregate state percentage was calculated by determining if members had at least one of the 20 selected low-value services. This allowed us to determine the percent of members that had at least one of these low-value care services in 2015. **Figure 1** shows a map of the United States and the percentage of commercially-insured members that had at least one of the selected low-value care services during the year.
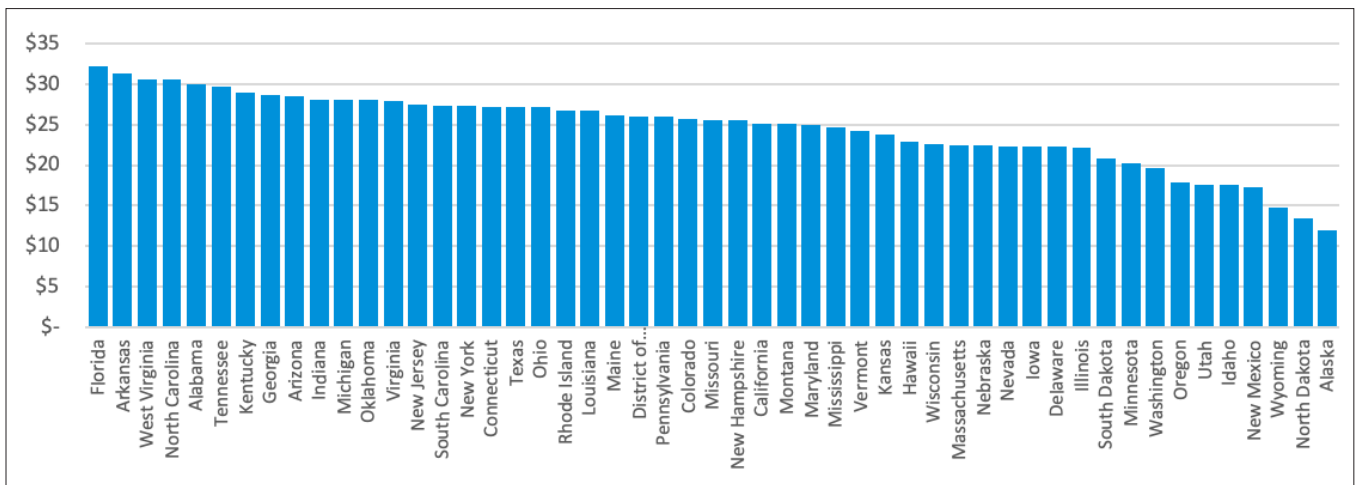
FIGURE 1: STATE FREQUENCY OF LOW-VALUE CARE SERVICES, PRIVATELY INSURED, 2015

Percent of Members
with a Low-Value Service

< 15%
15-17.5%
17.5-20.0%
> 20%
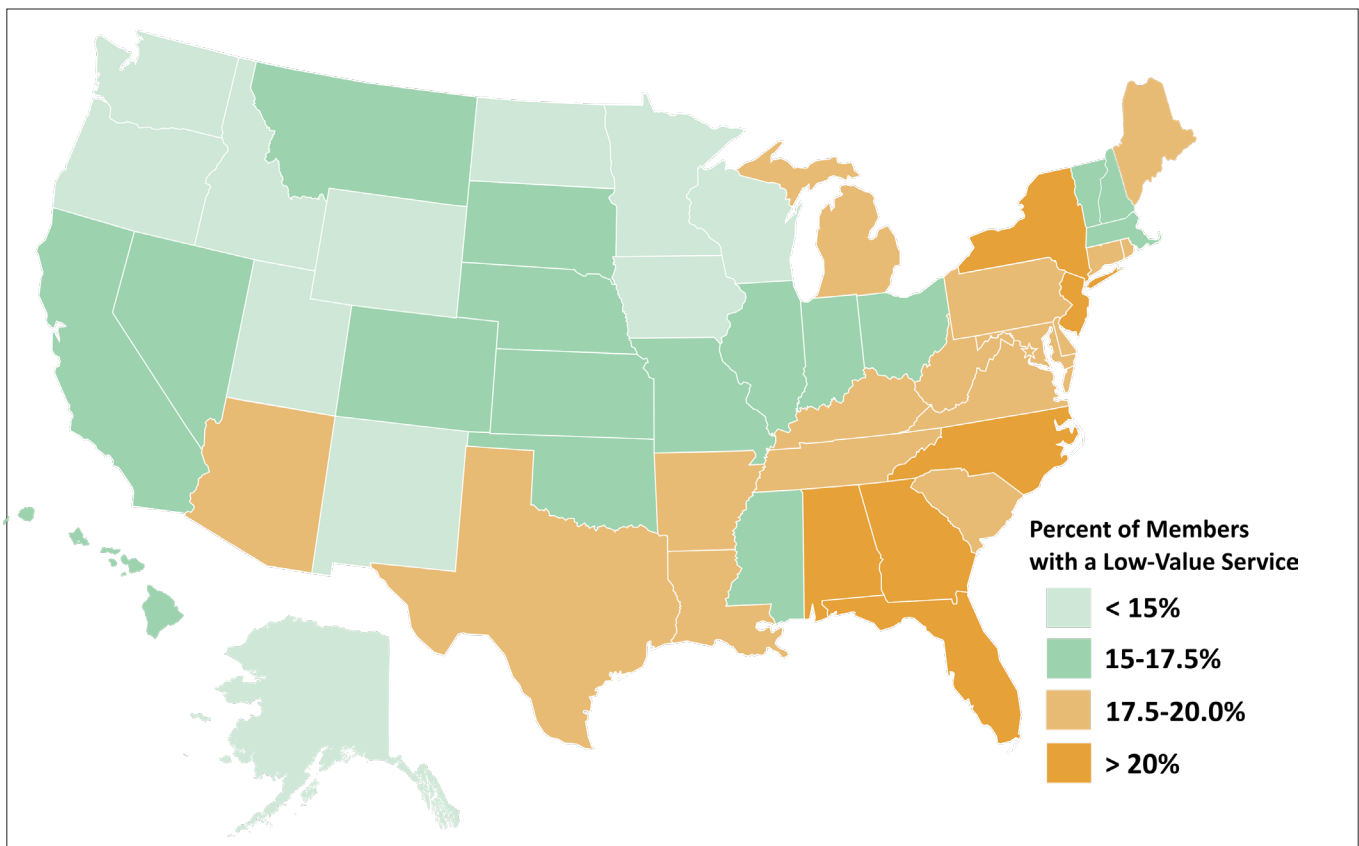
The variance among states in the percentage of members receiving low-value care services is interesting to note. As many as 22% of members received at least one low-value care service in the most prevalent states (Florida, New Jersey, North Carolina, New York, and Alabama). But even more noteworthy is that those states with the lowest prevalence (Alaska, North Dakota, Utah, Idaho, and Oregon) are still estimated to have approximately 10% of members receiving at least one of the selected low-value care services in 2015. There appear to be some geographic trends across the nation, with states in the Midwest and West of the U.S. more likely to have lower rates of low-value care, while states in the Southeast and Northeast tend to be on the higher end of low-value care prevalence rates. A partial explanation for these trends might be that states with the lowest prevalence rates tend to be largely rural, where difficulties in access to care could result in lower utilization of all services, whether of high or low value.

Examining the cost of these low-value care services by state, we normalized prices by using the Medicare average payment rates multiplied by a factor of 1.6 to calculate an estimated commercially-insured rate. This allowed us to compare state costs per member based on prevalence in their commercial population rather than any potential pricing or market failures driving cost. Costs of these low-value care services ranged from $12 - $32 per member per year, showing even greater variation from state to state than the percent of members with a wasteful service. **Figure 2** illustrates the variation in cost per member per year by state.

FIGURE 2: STATE-LEVEL LOW-VALUE CARE SPENDING PER MEMBER PER YEAR, PRIVATELY INSURED, 2015

TYPES OF LOW-VALUE CARE

Figures 4-6 show the percent of members receiving each of the three most frequently occurring low-value services by state (routine annual cervical cytology screening (Pap tests) in women 30-65, population-based screening for Vitamin D, and use of brand-name drugs when generic equivalents were available). When looking at the variation from state to state across each of the 20 low-value care services, we find that state variation is highest for the more frequent services, with Vitamin D and cytology screening showing the largest variation from state to state, see **Figure 3**.

FIGURE 3: STATE INTER-QUARTILE RANGES AND PERCENTAGES FOR LOW-VALUE SERVICES
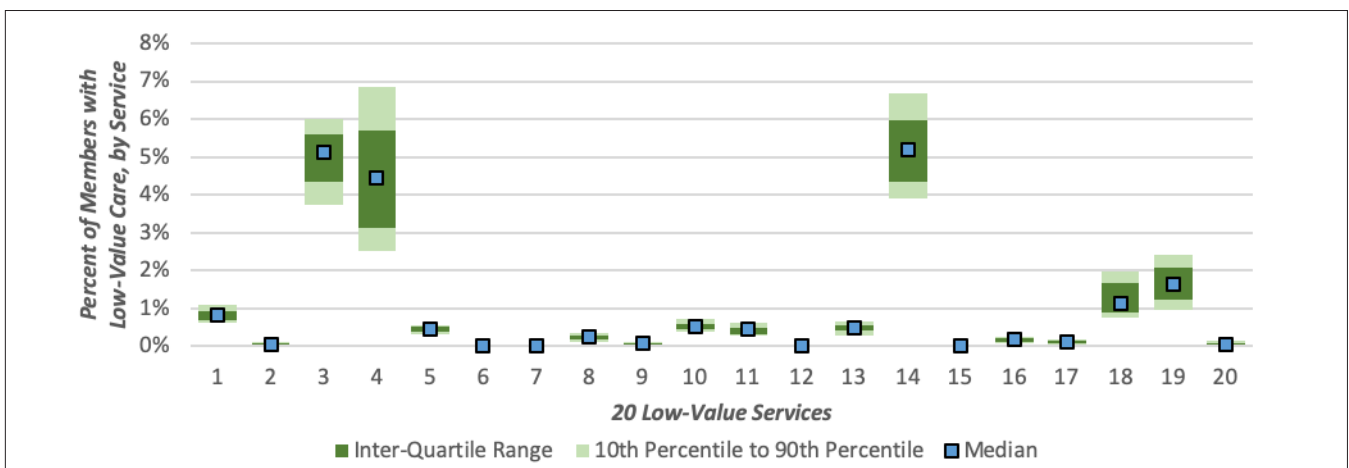
Note: See Table 1 for definitions of numbered services.

FIGURE 4: PERCENT OF MEMBERS RECEIVING LOW-VALUE CERVICAL CYTOLOGY (LVC-14) BY STATE
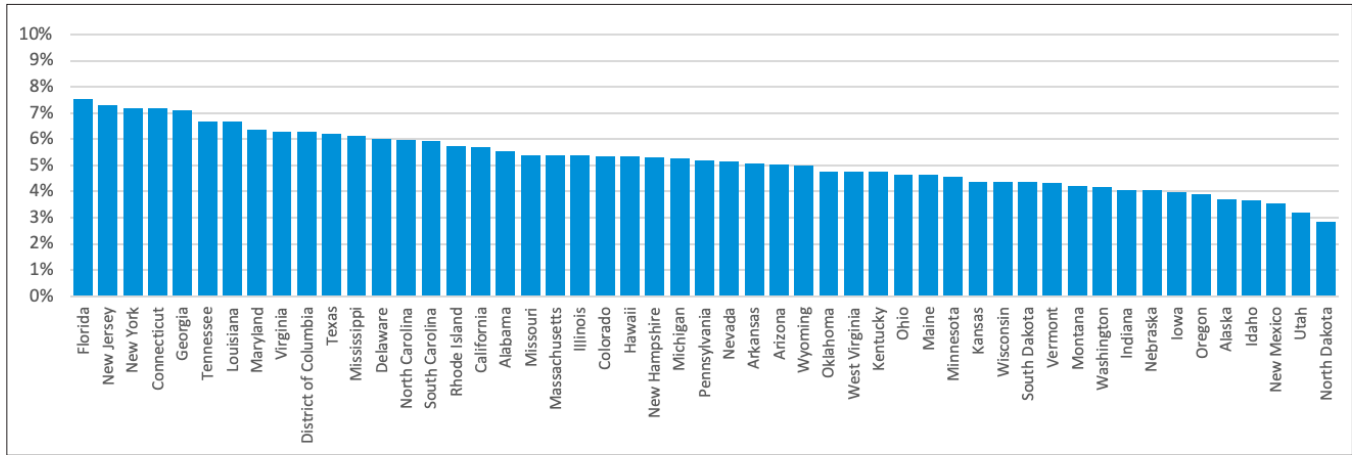

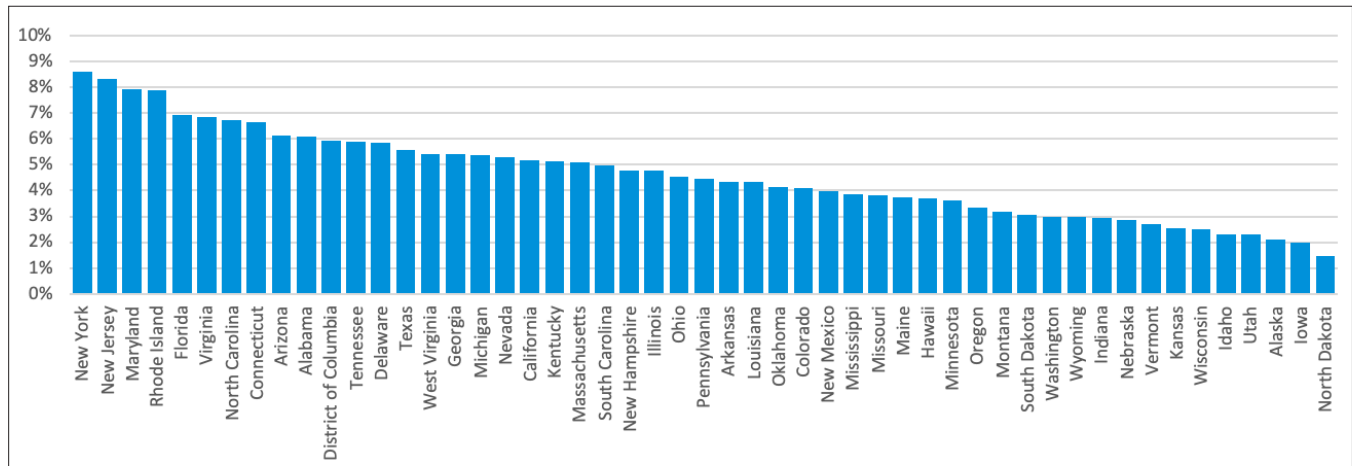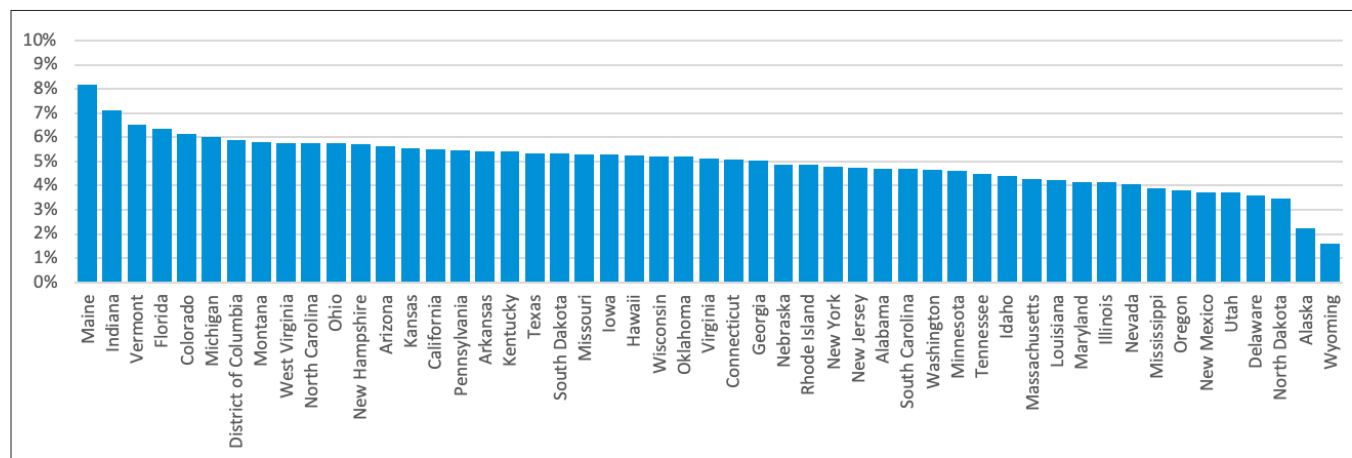**FIGURE 5: PERCENT OF MEMBERS RECEIVING LOW-VALUE VITAMIN D TEST (LVC-4) BY STATE**

FIGURE 6: PERCENT OF MEMBERS RECEIVING LOW-VALUE BRAND NAME DRUGS WHEN GENERICS ARE AVAILABLE (LVC-3) BY STATE

DISCUSSION

Most noteworthy when studying the results of these state-level estimates, are the types of low-value services that are occurring most often. We observe that among the 20 services, the three most often occurring low-value care services are likely driven by disparate causes (**Table 2**). We find that lack of provider adherence to revised professional guidelines, unintentional perpetuation of low-value care due to administrative practices, and patient preferences or lack of education may all be drivers of low-value care. For example, we expect that the use of brand name drugs when a generic is available likely represents a failure of patient education or perverse financial incentives perpetuated due to a patient's insurance plan design. Conversely, in the case of cervical cytology screening, it is unlikely patient preferences are the main driver of this low-value service, which is more likely a result of a provider's training culture of practice not keeping pace with current best practices. Lastly, the case of unnecessary Vitamin D testing is probably mostly due to an electronic medical record system, programmed to be more efficient through one-click ordering, yet this is perpetuating (unintentionally) low-value Vitamin D tests. Each of these three prominent examples demonstrates the lack of a unified cause for low-value care in the U.S. health system.

It is important to note that the variation observed across states could be driven in part by different patient population characteristics. Yet, given that the algorithms used control for and exclude patients with possible risk factors or co-occurring conditions that make the low-value services warranted, we expect this patient population effect to be small. Differences in the availability of medical care more broadly could also play a role, with parts of the country with more limited access to care likely also having lower rates of low-value services. Yet, the significant state variation observed still demonstrates the potential progress that is possible in reducing low-value care and points to further sharing of lessons learned from state to state to decrease the national rate of unnecessary services and their concomitant costs.

CONCLUSION

The findings of this study suggest several key observations: first, commercial payers spent over $5.5 billion on these 20 selected services that were of little to no value to their members. Second, our findings support the conclusions of prior research that the prevalence of low-value care is worse in certain regions or corridors of the U.S. However, given that even in the best states roughly 10% of members received at least one of the selected low-value care services, this remains a nationwide problem. Third, based on the types of services most frequently observed, it is clear that curbing the use of low-value care does not lie at the feet of any one driver. Changing provider behavior, systems, and patient behavior are all required and aligning various incentives among these players will be a meaningful way to address low-value care.

APPENDIX A: 20 SELECTED LOW-VALUE CARE SERVICES

	Professional Society & Recommendation Link	Detailed Measure Description
LVC-1	American Academy of Family Physicians	Don't do imaging for low back pain within the first six weeks, unless red flags are present
LVC-2	Society of General Internal Medicine	Don't perform routine pre-operative testing before low risk surgical procedures
LVC-3	Low-Value Care Task Force	Don't use brand-name drugs when generic equivalents are available
LVC-4	American Society for Clinical Pathology	Don't perform population-based screening for 25-OH-Vitamin D deficiency
LVC-5	American Society of Clinical Oncology	Don't perform PSA testing for prostate cancer screening in men with no symptoms of the disease when they are expected to live less than 10 years.
LVC-6	American College of Rheumatology	Don't routinely repeat DXA scans more often than once every two years
LVC-7	American Academy of Neurology	Don't perform electroencephalography (EEG) for headaches
LVC-8	American Academy of Family Physicians	Don't order annual electrocardiograms (EKGs) or any other cardiac screening for low-risk patients without symptoms
LVC-9	American Psychiatric Association	Don't prescribe 2 or more concurrent antipsychotic medications
LVC-10	Society for Post-Acute and Long-Term Care Medicine	Don't recommend screening for breast, colorectal, or prostate cancer if life expectancy is estimated to be less than 10 years
LVC-11	American College of Preventive Medicine	Don't perform screening for cervical cancer in low-risk women aged 65 years or older and in women who have had a total hysterectomy for benign disease.
LVC-12	American College of Rheumatology	Don't perform MRI of the peripheral joints to routinely monitor inflammatory arthritis
LVC-13	American Academy of Orthopaedic Surgeons	Arthroscopic lavage and debridement for Knee Osteoarthritis
LVC-14	American College of Obstetricians and Gynecologists	Don't perform routine annual cervical cytology screening (Pap tests) in women 30 – 65 years of age.
LVC-15	Society of Cardiovascular Computed Tomography	Coronary Artery Calcium Scoring for Known Cad
LVC-16	American Headache Society	Don't prescribe opioid or butalbital-containing medications as first-line treatment for recurrent headache disorders
LVC-17	American Academy of Physical Medicine and Rehabilitation	Don't prescribe opiates in acute disabling low back pain before evaluation and trial of other alternatives is considered
LVC-18	American Society of Nephrology	Prescribing NSAIDs for Hypertension, Heart Failure or Chronic Kidney Disease
LVC-19	American Academy of Family Physicians	Don't routinely prescribe antibiotics for acute mild-to-moderate sinusitis unless symptoms last for seven or more days, or symptoms worsen after initial clinical improvement.
LVC-20	American Academy of Allergy, Asthma & Immunology	Don't order sinus computed tomography (CT) or indiscriminately prescribe antibiotics for uncomplicated acute rhinosinusitis