



# Improving Price Transparency

Oregon Patients and Providers Need Better Information on the Cost of Health Care

FRONTIER GROUP

**OSPIRG**  
Foundation

# Improving Price Transparency

Oregon Patients and Providers Need Better  
Information on the Cost of Health Care

**Elizabeth Ridlington and Elizabeth Berg**  
Frontier Group

**Jesse O'Brien**  
OSPIRG Foundation

FRONTIER GROUP

**OSPIRG**  
Foundation

# Acknowledgments

The authors wish to thank David Adler, Senior Program Officer, The Robert Wood Johnson Foundation; Betsy Imholz, Special Projects Director, Consumers Union; and Lynn Quincy, Director, Healthcare Value Hub, ALTARUM, for providing review or insights for this report. Thank you to Emily Schneider for research assistance. Thanks also to Tony Dutzik and Rachel J. Cross of Frontier Group for editorial support.

OSPIRG Foundation thanks The Robert Wood Johnson Foundation for its generous support that made this report possible.

The authors bear responsibility for any factual errors. Policy recommendations are those of OSPIRG Foundation. The views expressed in this report are those of the authors and do not necessarily reflect the views of our funders or those who provided review.

© 2018 OSPIRG Foundation. Some Rights Reserved. This work is licensed under a Creative Commons Attribution Non-Commercial No Derivatives 3.0 Unported License. To view the terms of this license, visit [creativecommons.org/licenses/by-nc-nd/3.0](https://creativecommons.org/licenses/by-nc-nd/3.0).

With public debate around important issues often dominated by special interests pursuing their own narrow agendas, OSPIRG Foundation offers an independent voice that works on behalf of the public interest. OSPIRG Foundation, a 501(c)(3) organization, works to protect consumers and promote good government. We investigate problems, craft solutions, educate the public, and offer meaningful opportunities for civic participation. For more information about OSPIRG Foundation or for additional copies of this report, please visit [www.ospirgfoundation.org](http://www.ospirgfoundation.org).

Frontier Group provides information and ideas to help citizens build a cleaner, healthier and more democratic America. We address issues that will define our nation's course in the 21<sup>st</sup> century – from fracking to solar energy, global warming to transportation, clean water to clean elections. Our experts and writers deliver timely research and analysis that is accessible to the public, applying insights gleaned from a variety of disciplines to arrive at new ideas for solving pressing problems. For more information about Frontier Group, please visit [www.frontiergroup.org](http://www.frontiergroup.org).

Layout: Harriet Eckstein Graphic Design

Cover photo: everydayplus via Shutterstock

# Contents

|   |    |
|---|----|
| Executive Summary .....   | 4  |
| Introduction.....   | 7  |
| The High and Rising Cost of Health Care Is a Burden<br>for Oregon’s Families, Businesses and Governments .....        | 8  |
| Price Transparency Is a Basic Consumer Right.....   | 10 |
| Improved Price Transparency May Help Address<br>the High Cost of Care.....  | 10 |
| Consumer-Oriented Price Transparency.....   | 12 |
| Price Transparency Gives Patients the Opportunity<br>to Seek Lower-Cost Care.....                                     | 12 |
| Patients Make Limited Use of Current Price Transparency Tools .....   | 12 |
| Price Transparency for Consumers May Help<br>Reduce Total Health Care Spending .....                                  | 14 |
| Potential Downsides of Price Transparency for Consumers.....  | 15 |
| Price Transparency for Providers and Insurers .....   | 18 |
| Price Transparency May Help Providers Use Financial Resources<br>More Wisely When Ordering Tests and Procedures ..... | 18 |
| Insurers May Be Able to Design Health Care Plans<br>to Better Control Costs.....                                      | 21 |
| Potential Downsides of Price Transparency for Providers.....  | 22 |
| Improving Health Care Price Transparency in Oregon.....   | 26 |
| Oregon Health Care Prices Have Limited Transparency .....   | 26 |
| Recommendations for Improved Transparency .....   | 27 |
| Notes .....   | 31 |

# Executive Summary

**H**ealth care spending in Oregon averages more than \$8,000 annually per person, and increased 60 percent from 2004 to 2014 (before adjusting for inflation).<sup>1</sup> Much of this spending occurs without patients or providers knowing the price of care in advance.

Opaque and unavailable prices for health care services violate the basic consumer right to know in advance about the price of goods or services. When consumers are asked to make decisions about care without access to meaningful price information, they are unable to make informed decisions in high-stakes situations that can profoundly affect their future health and financial security.

Improving the price transparency of health care services isn't just about fulfilling a basic consumer right – it is also a critical step in diagnosing and addressing the high cost of health care. Combined with the right incentives, improved price transparency could shift the behavior of providers, consumers and insurers, enabling the nation to save \$100 billion over 10 years, according to one estimate.<sup>2</sup> Though that's a modest one-quarter of one percent of total health care spending, it still represents significant savings; for Oregon that would have reduced health care spending by \$80 million in 2014.<sup>3</sup>

Oregon policymakers, hospitals and health care providers have made modest

improvements in price transparency in recent years. However, Oregon should pursue additional measures to improve the visibility of prices for patients, providers and health plans.

## **Greater price transparency has the potential to play a role in controlling health care costs by influencing the behavior of patients and providers.**

- Patients currently make limited use of price transparency information for a variety of reasons. Existing price information is often not easily accessible or customized to the particular patient, and is rarely provided at the right time to help inform consumer decision-making. Even when price information is available, health plans often are not structured to provide meaningful benefits to consumers who act on it.<sup>4</sup> In addition, patients' perception of quality or their loyalty to current care providers may dampen their interest in using price transparency tools.
- When patients use price transparency information to choose less expensive providers, they can reduce their health care spending. For example, a study of price-shopping by patients insured by 18 large employers found that patients who used the transparency tool reduced total health care spending by 14 percent for lab tests and 13 percent for advanced imaging services.<sup>5</sup>

- With the right incentives and information, patients may use price transparency information to seek care from less expensive providers, and in response, higher-cost providers may choose to lower their prices to remain competitive. This can deliver system-wide cost savings. For example, higher-priced providers of MRIs in five metropolitan areas lowered their prices after an insurance company began an aggressive price-transparency effort and helped patients who needed elective MRIs schedule with lower-priced providers.<sup>6</sup>

**Price transparency is also important for health care providers and insurers.**

Providers influence or directly make a large share of health care decisions and spending, often without knowing in advance the price other providers, such as labs, charge customers and insurers. Insurers can use increased transparency to influence how much providers choose to charge for their services.

- Numerous studies, conducted primarily in hospitals, have found that knowing the price of lab and imaging tests prompts providers to order fewer tests. For example, when hospital-based health care providers were shown the price of lab tests as they ordered them, the number of ordered tests declined by 8.6 percent, which reduced charges by \$400,000 over six months.<sup>7</sup>
- Outside of hospitals, such as in a primary care setting, price transparency does not appear to change how providers order lab tests and imaging, though this has been less studied than price transparency in hospitals.
- Information about prices can help insurance companies design insurance plans that encourage patients to

choose lower-priced providers and may cause some providers to lower their prices. For example, insurance companies in New Hampshire have developed tiered-pricing plans that reward members for choosing high-value providers and charge patients much higher out-of-pocket fees for using the most expensive laboratories and outpatient surgery centers, which are usually affiliated with hospitals. As patients have reduced their use of higher-priced options, some hospitals have agreed to reduce their prices for lab services, outpatient surgery and other care.<sup>8</sup>

**If poorly implemented, however, price transparency has the potential to increase rather than decrease health care prices and spending.** This risk can be mitigated by how price data are presented or released.

- Though medical researchers have found no consistent link between the cost and quality of health care, a sizeable minority of patients may assume that higher-priced care is higher-quality care.<sup>9</sup> Thoughtful design of price transparency tools to include data on quality of care can reduce the extent to which consumers are inclined to use price as a measure of quality.<sup>10</sup>
- The Federal Trade Commission has expressed concern that increased price transparency could lead providers to increase their prices, either through reduced willingness to negotiate discounts or through tacit price collusion.<sup>11</sup> One way this potential problem can be avoided is to release data that are more than a year old so that providers lack sufficient information to match competitors' current prices.

**Oregon must do more to improve price transparency for consumers.**

- As a basic consumer right, patients should be able to ask for and receive information on the likely price of care at the “point of purchase.” Doctors’ offices, hospitals and imaging facilities should be required to provide the likely price of care if a patient asks for an estimate.
- Oregon policymakers should require that information collected in the state’s all payer-all claims database be made available to consumers, with data ideally disaggregated by payer, procedure and provider. This process could begin with the categories of health care that consumers are most willing to shop for, such as lab work and imaging studies.
- Oregon could explore the possibility of establishing benchmark prices for a wide range of procedures, drawing on data in the state’s all payer-all claims database. These reference prices would give consumers a benchmark against which to evaluate a price estimate from a provider and provide a sense of how much a patient might pay for quality care.
- Oregon should ban gag clauses that prohibit insurance companies

or providers from revealing the prices they have negotiated with each other, as that may limit the comprehensiveness of third-party price transparency websites, such as Castlight, HealthSparq and ClearCostHealth.

**Policymakers could also pursue options to improve price transparency for providers.**

For example, Oregon should explore requiring hospitals to include an estimated price for laboratory and imaging tests in electronic health record systems so that providers can see that information when ordering.

**Oregon should pursue measures to ensure that greater price transparency does not have the undesirable consequence of increasing prices.**

To start, the state should ban “most-favored nation” agreements between providers and health insurers, in which a provider, after negotiating a price with an insurer, agrees not to offer any competing insurer a lower price. Most-favored nation agreements can inflate health care prices even with current, limited price transparency, and should be banned.

# Introduction

Oregon hospitals charge very different prices for common procedures and services. Colonoscopies, for example, are among the most commonly performed outpatient procedures.<sup>12</sup>

In 2015, the lowest-paid hospital in Oregon received a median of \$1,311 per colonoscopy and the highest-paid received a median of \$4,123.<sup>13</sup> Within the Portland area, the least expensive median payment for a hospital-based colonoscopy was \$1,311 at Kaiser Westside Medical Center, versus \$3,405 at Legacy Emanuel Hospital and Health Center, less than 15 miles away. (Non-hospital facilities likely charge less than hospitals, but data for those facilities are not readily available.) Similarly wide variations in average hospital payments exist for many other common inpatient and outpatient procedures, and for imaging, obstetrical and chemotherapy services.

Such variation in the price of common medical services also suggests that there is opportunity to reduce the high cost of health care in Oregon. Patients could choose lower-priced facilities, doctors could suggest less expensive providers when recommending where patients should seek specialist care or services, providers could reduce their prices if they realize patients are beginning to favor lower-priced providers, and insurers could structure insurance plans that reward

patients for selecting lower-cost, but still high quality, providers.

None of this is possible, however, unless patients, providers and insurers have better access to information about the price of care. Patients, for example, need to know in advance of receiving care how much their insurance will cover and how much they will have to pay out-of-pocket. Providers need access to price information when helping patients make informed decisions about their care. Price transparency can enable insurance companies to identify higher-value providers and develop patient- or provider-focused incentives to encourage use of those lower-cost care facilities.

Simply knowing the price of care won't be enough to contain rising health care spending in Oregon, or to eliminate waste from the health care system, which is estimated to represent one-third of every dollar spent on health care.<sup>14</sup> But improved price transparency is an important tool for addressing the high cost of health care. In this paper, we review evidence showing the potential of price transparency to influence decisions throughout the health care system, as well as concerns about potential unintended consequences of price transparency that require careful attention by policymakers as Oregon attempts to stem the relentless growth of health care spending.

# The High and Rising Cost of Health Care Is a Burden for Oregon's Families, Businesses and Governments

In Oregon, total health care spending reached \$31.9 billion in 2014, equal to nearly 16 percent of the state's gross domestic product.<sup>15</sup> That's an average of more than \$8,000 per person, an increase of 60 percent since 2004 (before adjusting for inflation).<sup>16</sup> The cost of health care is a growing financial burden on individuals, businesses and government.<sup>17</sup>

Individuals and families are having to pay more for health care and health insurance. From 2004 to 2014, health insurance premiums for a family in Oregon increased by 65 percent, significantly faster than the increase in average household income in this period.<sup>18</sup> A consumer with health insurance through an employer paid an average of \$402 per month for family health insurance in 2014, up from a monthly cost of \$222 in 2004, according to national data (in addition to what the employer paid toward coverage).<sup>19</sup> In addition to higher health insurance premiums, consumers also face higher deductibles. Nationally, the average worker had a deductible of more than \$1,200 in 2014, up from less than \$600 in 2005.<sup>20</sup>

Employers who provide insurance to their employees also feel the high cost of health care. In 2017, health insurance expenses for employers equaled 8.3 percent of employee compensation costs, up from 7.3 percent in 2004.<sup>21</sup> Employers compensate for higher health care costs by reducing benefits, limiting wage increases,

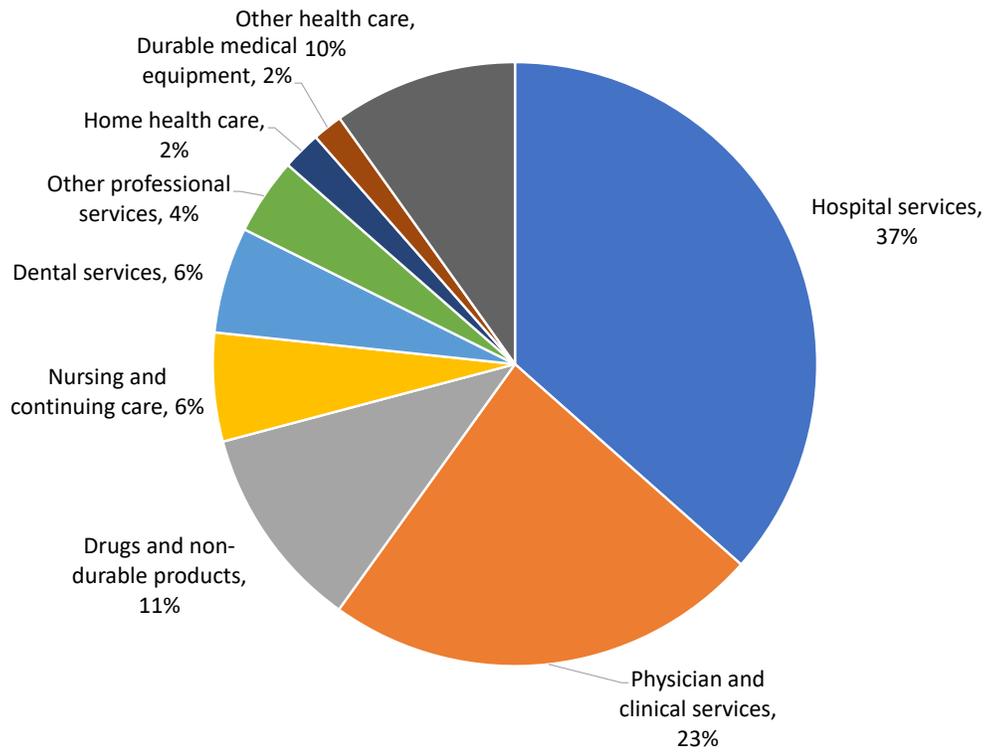
or hiring fewer employees.<sup>22</sup> As a result, rising health care costs act as a drag on the economy and impact everyone.

Health care spending is also a major component of state government spending and thus a cost to taxpayers. In 2013, Oregon spent \$717 million on health insurance for state employees, equal to 12 percent of the state's general fund expenditures.<sup>23</sup>

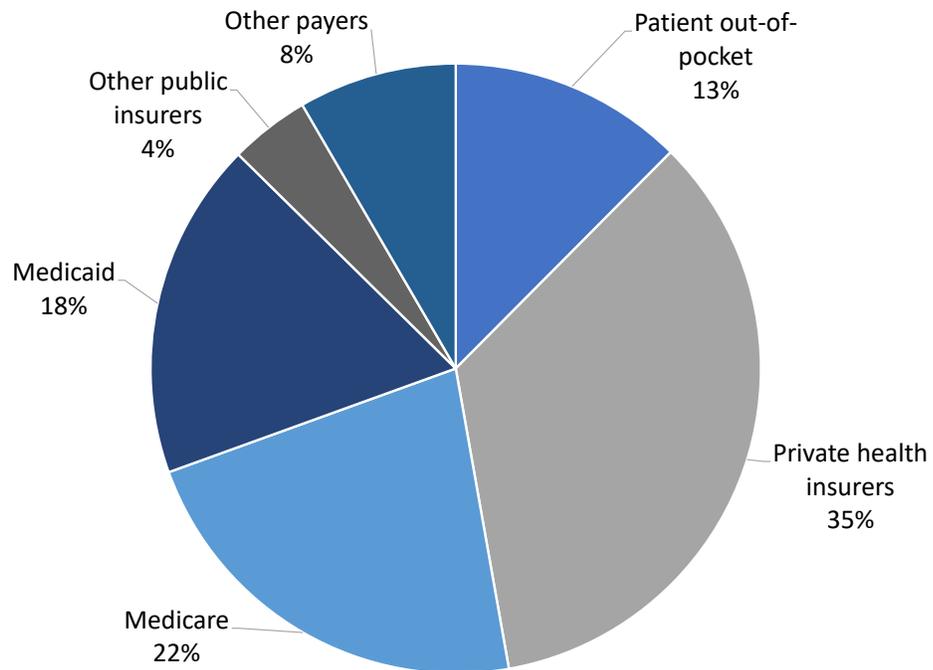
Hospital services account for 37 percent of health care spending in Oregon, more than any other category of care.<sup>24</sup> (See Figure 2.) Physician and clinical services consume nearly one-quarter of health care spending, followed by drugs purchased from retail pharmacies and non-durable products. (Drugs used in a hospital or clinical setting are included in those respective categories.) Figure 1 shows the breakdown of Oregon health care spending in these and other categories.

Private health insurance plans pay the largest single share of health care costs, according to national data. The federal government also pays for a large portion of health care spending through Medicare and Medicaid. State governments also help fund Medicaid. Ultimately, however, employees, consumers and citizens pay for these health care costs through lower wages, higher health insurance premiums, increased taxes, and reduced government spending on other priorities.

**Figure 1. Oregon Health Care Spending by Category<sup>25</sup>**



**Figure 2. U.S. Health Care Spending by Payer, 2015<sup>26</sup>**



Regardless of who is paying for health care, patients and their care providers both play a role in health care spending decisions. Patients sometimes have control over when to seek care and where to seek it, both of which are factors in how much their care will cost. Providers heavily influence subsequent health care spending through their recommendations and referrals. In a hospital setting, providers may be particularly influential as they order tests and services. However, patients seeking care or clinicians who offer that care rarely know in advance how much the care will cost, since the price charged by different providers can vary widely.

### **Price Transparency Is a Basic Consumer Right**

Opaque and unavailable prices for health care services violate the basic consumer right to know in advance the price of goods or services. Such knowledge is essential for consumers to make the right decision for their own needs.

In the health care setting, consumers are faced with especially complex and weighty decisions. When consumers are asked to make decisions about care without access to meaningful and actionable price information, they are unable to make informed decisions in high-stakes situations that can profoundly affect their future health and financial security.

It is not always possible or practical to provide advance price information, such as in an emergency setting or when unexpected medical complications arise. However, in most situations there is no justification for failing to provide a reasonable price estimate on request – something that is often unavailable today – and for the majority of health care services that involve no complications, that estimate should be able to provide a reliable price signal to patients.

Without improved access to health care prices, consumers are forced to make high-stakes decisions with inadequate information, which is unjust and unacceptable. Increasing the transparency of health care services can fulfill a basic consumer right.

### **Improved Price Transparency May Help Address the High Cost of Care**

Improved price transparency could also help reduce total health care spending by enabling patients to shop for less expensive care, by allowing providers to incorporate cost as a factor when making referrals or ordering lab work or imaging services, by encouraging higher-priced providers to lower their prices, and by giving health plans better tools to steer spending to lower-cost providers of good quality and to push providers to lower costs.

According to an analysis published by the West Health Policy Center, if patients, providers, policymakers, health plans and employers have better access to data on the price of health care – and act on that information – national health care spending could be reduced by \$100 billion over 10 years as patients choose less expensive care providers, as providers order fewer or less expensive tests, as some providers lower their prices, and as insurers revise benefit designs.<sup>27</sup> This estimate includes a high degree of uncertainty because existing information about price transparency effects is limited. Savings could be higher or lower. Estimated savings are approximately one-quarter of one percent of anticipated health care spending in that period. In Oregon, a one-quarter of one percent reduction in health care spending would have reduced health care spending by \$80 million in 2014.<sup>28</sup>

As Oregon continues to face high and rising health care costs and insurance

premiums, improved price transparency is one tool that may help to reduce spending. To be effective, transparency must be implemented thoughtfully and accompanied by changes in the health care system that reward patients, providers and insurers for reducing

excessive spending. The following two sections review the evidence on the impact of price information on decisions made by patients, providers and insurers, and illuminate the key challenges standing in the way of an effective approach to transparency.

# Consumer-Oriented Price Transparency

**M**aking information on health care prices available in a straightforward and consumer-friendly format fulfills a basic consumer right and can help patients identify lower-cost providers. In addition to saving money for individual consumers, it may also result in a cumulative reduction in total health care spending. Challenges to achieving those potential savings include the fact that many consumers have limited incentives, under current insurance structures, to consider price when shopping for care, and also that consumers directly control only a small share of total health care spending.

## Price Transparency Gives Patients the Opportunity to Seek Lower-Cost Care

Price transparency gives consumers the opportunity to seek out lower-cost care. That's particularly true for non-emergency care, such as lab work and imaging services. In one study of patients insured through the California Public Employees' Retirement System (CalPERS), some patients reported during interviews that they used CalPERS' price transparency tool to check the price of care or find a cheaper option for frequent MRIs and blood work.<sup>29</sup> A different study that analyzed the price-shopping behaviors of CalPERS patients reported that when patients checked prices for imaging work, their spending for those services was 14 percent lower, though it did not make a major dent in

overall health spending.<sup>30</sup> A third study found that price-shopping by patients insured by 18 large employers resulted in average savings of 14 percent for lab tests and 13 percent for advanced imaging services.<sup>31</sup>

Patients often express interest in learning more about the price of care in advance. In a study that interviewed CalPERS-insured patients, most people expressed a favorable opinion of the concept of shopping for lower-priced care.<sup>32</sup> In 2015, a survey by Public Agenda found that one-third of patients have asked about the price of care in advance – likely to determine if they can afford that care – and one-fifth have compared prices from several providers.<sup>33</sup>

## Patients Make Limited Use of Current Price Transparency Tools

Despite their stated interest in knowing about the price of care, consumers use existing transparency tools at a relatively low rate, likely due to a combination of factors including the limited usefulness of many price transparency tools and health plan designs that often do not reward patients for acting on price information. As a result, current price transparency tools have not led to a reduction in overall spending.

A study of patients insured by Aetna found that only 3.5 percent of patients used Aetna's payment estimator over

the course of two years.<sup>34</sup> Relatively few patients at 18 large employers who gained access to a third-party price transparency tool between 2010 and 2013 searched for prices before receiving care: just 5.9 percent of lab work claims and 6.9 percent of imaging service claims were preceded by use of the price transparency tool.<sup>35</sup> A 2011-2012 study of several hundred thousand employees at two large companies who were given access to price transparency tools found that 10 percent of employees searched for price information at least once in the first year the data were available, but that use of the tool did not result in lower overall spending.<sup>36</sup> A 2014-2015 study of patients insured by CalPERS found a similar rate of use and no reduction in overall spending.<sup>37</sup>

Even patients in high-deductible plans – who would seem to benefit most from finding a lower-cost provider – seem to do only slightly more price-shopping than those in plans with low or no deductible. A 2011-2012 study of patients insured through Aetna revealed patients with higher deductibles were more likely to search the price transparency tool, though in absolute terms the use of the transparency tool was low by all groups, with only 3.5 percent of patients using the tool.<sup>38</sup> Another study measured the extent to which patients with high-deductible plans searched for and used price information for nine types of care in 2007.<sup>39</sup> The researchers compared the prices paid by patients in high-deductible plans versus patients in more traditional plans. The analysis included nine types of care: “arthrocentesis, chest x-ray, colonoscopy, emergency department visit, flu vaccine, mammogram, office visit, pelvic ultrasound, and preventive visits.” Only for office visits did patients in high-deductible plans seek lower-cost providers (the authors of the study noted that, in this study, price transparency was greater for office visits than for many other

services). However, patients in this study were no more inclined to select lower-cost care before versus after reaching their annual deductible. A third study found patients with greater cost-sharing requirements did more than other patients to seek out lower-cost providers in two of the three categories studied.<sup>40</sup> Patients who had to pay a larger share of costs obtained slightly greater savings for lab work (16.4 percent versus 14.1 percent) and advanced imaging (15.0 percent versus 13.6 percent) than patients who did not have a cost-sharing requirement. Patients on high-deductible plans had smaller cost savings for office visits (0.8 percent versus 2.3 percent).

Patients’ low rate of using transparency tools to learn about prices and very limited response to what they learn likely reflect multiple influences. Insurance plans often are designed in such a way that when a patient visits a lower-cost provider, most or all of the savings accrue to the insurer, not the patient, who may have the same co-pay regardless of how much the provider charges to the insurance company.<sup>41</sup> For patients on high-deductible plans, the complexity of understanding how much savings they will experience by choosing a lower-cost provider may make price-shopping not worth their while. Factors other than price – such as patients’ perception of quality and loyalty to current care providers – are powerful influences on consumers’ decisions about where to seek medical care, and are not affected by small financial incentives.<sup>42</sup>

Within current incentive structures, patients seem more willing to shop for imaging, lab work and other one-time services than to consider price when selecting a primary care physician. In interviews, patients insured through CalPERS expressed greater willingness to price-shop for imaging and lab work than for a primary care physician.<sup>43</sup> Patients may be more willing

to shop for discrete services because they do not perceive a difference in quality from one provider to another, nor does loyalty to a current care provider come into play.<sup>44</sup> (For a discussion on the relationship between price and quality of care, see “Consumers May Use Price as a Measure of Quality,” p. 15.) In terms of quality of care, patients’ reluctance to switch primary care doctors as easily as they change providers for lab work or imaging may have positive implications for health outcomes if it means that patients visit the same primary care provider consistently, improving the continuity and coordination of care.<sup>45</sup> An analysis of the price searching behavior of Aetna patients found that, relative to the number of procedures performed, patients were most likely to check the price of a tonsillectomy, total knee replacement, hernia repair, cataract or lens procedure, or childbirth than to search for the price of office visits.<sup>46</sup> In the study of Aetna subscribers, price searches for the price of a primary care office visit ranked 16<sup>th</sup> in the first year the price transparency tool was available, and 43<sup>rd</sup> the second year.<sup>47</sup>

### **Price Transparency for Consumers May Help Reduce Total Health Care Spending**

Price-shopping by consumers may have an impact on total health care spending, even if modest relative to rising costs. Patients can help obtain some savings by selecting lower-cost providers. In turn, patients’ choices about where to receive care may lead some health care providers to lower their prices to remain competitive, creating additional savings. Under current insurance and payment incentives, these effects are modest.

The direct cost savings from consumer behavior is limited because patients control only a fraction of health care spending.

Some care may occur on an emergency basis, when price-shopping isn’t possible, or it may be ordered in a hospital setting, where the provider has more influence. An estimated 40 percent of health care spending by patients with employer-sponsored insurance is for care that is shoppable, and only 7 percent of total spending is both shoppable and paid out-of-pocket by patients.<sup>48</sup> This limits the direct impact on total health care spending of patients’ decisions to select a lower-cost care option.

Increased attention to price by patients may influence overall health care spending through another mechanism: If providers become aware that patients are weighing and responding to price when choosing care, then higher-cost providers may choose to lower their prices to remain competitive. This can deliver system-wide cost savings. For example, higher-priced providers of MRIs in five metropolitan areas lowered their prices after an insurance company began an aggressive price-transparency effort involving elective MRIs.<sup>49</sup> In addition to telling patients about less expensive options for MRIs, the insurance company assumed the burden of acting on that information. When patients were pre-approved for an MRI with a particular provider, staff at the insurance company called the patient to offer information on nearby, less expensive options and, if the patient agreed, helped schedule a new appointment. There were two results on spending. First, the total cost of MRIs dropped by \$200, or 19 percent, per patient in the group who received information about prices, compared to patients who were not offered such price transparency. Second, higher-priced providers realized that they were no longer competitive and lowered their prices. As a result, the cost of an MRI dropped even for patients who were not given price information and did not reschedule to a lower-cost facility.

## Potential Downsides of Price Transparency for Consumers

Improved price transparency for patients includes the potential drawback that consumers may misinterpret price data, improperly using it as a proxy for quality and end up choosing more expensive care. This potential problem can be addressed by presenting data on both price and quality, thus empowering consumers to make informed choices about the value of their care.

## Consumers May Use Price as a Measure of Quality

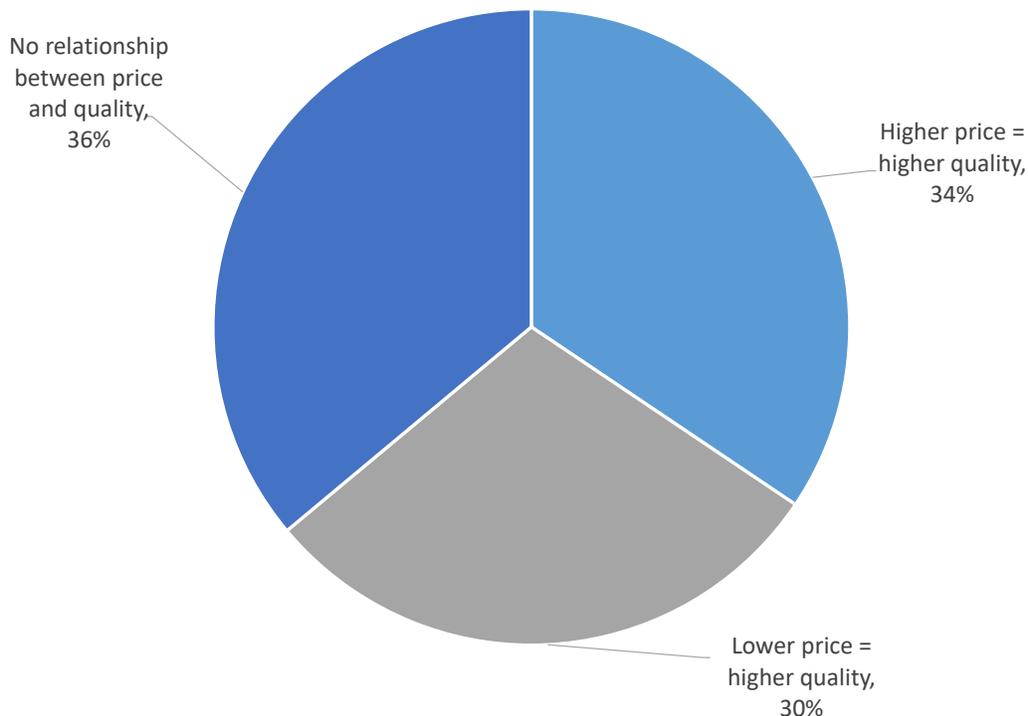
Though the price of care does not reliably indicate the quality of care, not all patients may understand this. Particularly in the absence of data about the quality of care, consumers may perceive price as a

substitute indicator of quality, and thus use price transparency data to select more, rather than less, expensive care. This problem can be mitigated by adjusting how price information is presented.

Medical researchers have found no consistent link between the cost and quality of health care. One synthesis of 61 studies on this question found evenly divided results – 34 percent of studies found a positive correlation between quality and price, 30 percent found a negative correlation, and 36 percent found no correlation.<sup>50</sup> (See Figure 3.)

Despite evidence that price and quality of care are not correlated, both research and real-world observations suggest a sizeable minority of patients may conflate the two measures. For example, researchers at MIT gave 82 study participants identical

**Figure 3. Studies Have Found No Consistent Relationship between Health Care Prices and Quality<sup>51</sup>**



placebo pills, but told half the group that the pills cost \$2.50 each and the other half of the group that the pills cost \$0.10 each.<sup>52</sup> Participants who were told they received a pill worth \$2.50 were more likely to report that the pill reduced the pain of the electric shocks they received as part of the experiment.<sup>53</sup> Another study found that while a majority of patients did not think price was a measure of quality, a sizeable minority did. In a 2014 survey, participants were asked in multiple

different ways whether there was a connection between health care price and quality. Depending on how the question was posed, 58 to 71 percent of adults did not believe that there was a link, and 21 to 24 percent did believe there was a connection.<sup>54</sup> Respondents were more likely to say there was no connection between cost and quality when asked whether high prices were a sign of high quality than when they were asked whether low prices were a sign of low quality.<sup>55</sup>

## Little Data on Whether Knowing the Price Deters Patients from Seeking Care

Some in the health care world have worried that patients may be scared away from receiving care once they know its likely price. However, this concern is not well-founded in research about price transparency. There is no clear evidence that knowing the price of treatment causes patients to avoid seeking care at a higher rate than already occurs when patients anticipate care will be expensive but lack concrete information.

A 2017 Gallup poll found that 29 percent of Americans have already postponed seeking health care due to concerns about cost, even though a majority of that group had serious untreated medical issues.<sup>60</sup> Some fear that if patients are presented with the price of care in advance, even more people will choose to postpone treatment, or delay it for long enough that it will be less effective.<sup>61</sup>

There is little data addressing this question. Anecdotally, in the first six months after the Henry County Health Center in Mount Pleasant, Iowa, began providing self-pay patients estimates of price in advance of any elective procedure, only two patients chose to postpone their care because of out-of-pocket expenses.<sup>62</sup>

Patient anxiety over the unknown cost of care may be as much of a deterrent as price transparency. A study of the price variability of dental procedures in Los Angeles found that “anxiety over high out-of-pocket expenses and difficulty accessing pricing information are the top two barriers to getting needed care.”<sup>63</sup>

In other words, the problem is not that knowledge of the price deters patients from seeking care. Rather, the high price of care itself is the issue.

Observations of consumers who have access to price data also suggest some of them may use price, at least as it is commonly presented to consumers, as an indicator of quality. In one survey, consumers who had compared prices for medical procedures in the past were three times more likely to believe that higher prices signified better care than people who had never searched for this information.<sup>56</sup> It is not clear if people who believe price indicates quality were more likely to search for price information, or if searching for price data caused patients to believe it indicated quality. Either way, it suggests some consumers may mistakenly perceive that price information reveals information about quality.

Additionally, in the year after two companies made a price transparency tool available to some of their employees, average outpatient health care spending increased by a small but statistically significant amount among the employees who had access to the tool, compared to spending by those who did not, perhaps because they used price as a proxy for quality.<sup>57</sup>

However, thoughtful design of price transparency tools can reduce the extent to which consumers are inclined to use price as a measure of quality. Researchers at the University of Oregon presented subjects with a list of physicians and asked them to choose the one with whom they would make an appointment. Information about each doctor's price and quality of care was presented in a variety of ways. When patients were given more information about treatment quality and the provider's responsiveness to patient preferences, they were less likely to choose the most expensive option.<sup>58</sup> The format in which price was displayed also mattered; participants were more likely to choose the lowest-cost providers when they were marked with three stars for being "careful with your health care dollars" than when they were labelled with a single dollar sign.<sup>59</sup> If patients have access to information about both the price and quality of care, either in a combined measure of value or as two separate indicators, they will be better able to make informed decisions about the overall value of their care.

# Price Transparency for Providers and Insurers

**G**reater transparency of prices may enable providers and health insurance plans to help reduce total health care spending. There are few clear-cut examples of price transparency alone prompting providers to lower their prices.<sup>64</sup> However, increased knowledge of prices, coupled with systemic changes that make it easier or more rewarding for providers to act on that information, may reduce total spending. In some settings, price transparency may cause providers to order fewer or less expensive tests. Improved price transparency may also help health insurance companies design insurance plans that control costs by promoting less expensive providers. As insurance plan incentives change, some higher-cost facilities may reduce their charges to remain included in insurance plans.

## Price Transparency May Help Providers Use Financial Resources More Wisely When Ordering Tests and Procedures

Doctors, nurses and other care providers influence or directly make a large share of health care decisions and spending. However, health care providers typically have limited information about how much patients or insurers will be asked to pay for care, such as lab tests or imaging work, ordered or recommended by the provider. Multiple research studies suggest that knowing the price of lab and imaging work can influence providers' decisions

in a hospital setting and help lower the cost of providing care. There is insufficient evidence to determine the impact of price transparency on providers' decisions outside of hospitals.

Numerous studies, conducted primarily in hospitals and often with doctors who are still in training, have found evidence that knowing the price of lab and imaging tests prompts providers to order cheaper or fewer tests. Dr. Celine Goetz and colleagues reviewed articles published from 1982 to 2013 evaluating the impact of price transparency on clinician behavior. That review found that seven of nine clinical studies that examined the influence of price transparency on providers' test-ordering decisions showed price information prompted providers to order less expensive tests or reduce the number of tests they ordered.<sup>65</sup> For example, when the price of lab tests was shown to health care providers as they ordered lab tests at Johns Hopkins Hospital, the number of ordered tests declined by 8.6 percent, which reduced charges by \$400,000 over six months.<sup>66</sup> The researchers who designed the study did not tell providers why price information appeared on test order forms or do any educational outreach, such as about the need for wise use of financial resources.

In three of the seven studies reviewed by Dr. Goetz that found that providers ordered cheaper or fewer tests, researchers also evaluated the question

of whether this change harmed patient health.<sup>67</sup> They concluded that the shift in test orders had no impact on the quality of patient care.

Showing the price of medication to providers may also influence what medicines they choose to prescribe. The analysis by Dr. Goetz looked at six studies that evaluated the impact of showing the price of medication to providers.<sup>68</sup> Two of three studies that observed physicians' behavior revealed that providing price information reduced spending on medication, though the studies were limited to anesthesia drugs. In three survey studies (rather than observations of actual prescribing practices), providers chose lower-priced medication when the price of various options was disclosed. (All three survey studies were conducted outside of the U.S.)

Outside of hospitals, such as in primary care settings, price transparency has not been demonstrated to change how providers order lab tests and imaging, though this has been less studied than price transparency in hospitals. One large Massachusetts medical group appears in three different studies, all of which suggest price transparency has little to no effect, even though Atrius Health is an accountable care organization, meaning it is paid on a per-patient basis for delivering high-quality, coordinated care to some of its patient population (and would, therefore, be more likely to be sensitive to the costs of individual services).<sup>69</sup>

- A study published in 2016 examined what happened when some Atrius primary care and specialist providers were shown prices for lab tests and imaging studies.<sup>70</sup> Approximately 400 clinicians were shown the median price that Atrius was paid for each test. Another 400 could see the median price when a test was conducted at an

Atrius-owned facility or at an external facility, with Atrius-based testing \$365 cheaper. After a year, the ordering behavior of those two groups was compared to providers who had not been shown any prices. Neither type of price information had any impact on how often clinicians requested common procedures and imaging studies, or whether they ordered from Atrius-owned facilities.

- In a separate interview-based study, most physicians at Atrius said that knowing price information did not meaningfully change their test-ordering patterns. Only one-quarter of those interviewed said they had been influenced, but only in small ways.<sup>71</sup> Primary care providers noted that the price information was useful when discussing options with patients.
- A smaller 2010-2011 study of Atrius found some limited impact from price transparency.<sup>72</sup> Physicians who were shown the price of 27 common tests reduced the rate at which they ordered five of those tests, potentially reducing costs by \$45 per 1,000 patient visits per month.

There are several reasons why the introduction of new price transparency may not have shown any impact on clinic-based practitioners' behavior. The researchers who conducted the larger, more recent study argue that these were experienced providers who were already aware of the approximate costs of various procedures and imaging services. Clinicians previously had access to prices on paper, and as providers in an accountable care organization that is paid a flat fee for treating some patients, the clinicians had already incorporated their knowledge of test prices into their behavior.<sup>73</sup> In addition, physicians' relative unresponsiveness to price transparency

in these three studies may reflect the fact that they have multiple competing priorities when deciding how to treat patients, including trying to respond to patient requests (a larger factor than in a hospital setting) and longer experience

seeking to meet practice-group financial goals.<sup>74</sup> Accurately untangling the impact of greater price transparency from the effect of these other factors and from experienced clinicians' prior knowledge of prices is challenging.

## Price Transparency Can Support Efforts to Empower Patients and Providers

Regardless of the effects on how clinicians deliver care, most providers say that they want to see price data. In interviews, most physicians who had recently begun seeing price information alongside frequently ordered tests and procedures reported that they appreciated seeing the information, or didn't object to seeing it.<sup>75</sup> They also expressed a desire to have price data that is specific to each patient, rather than seeing more generic price estimates.

One reason physicians may want price information is because it enables them to talk more easily with patients about the cost of care. The modern model of patient-centered care calls for equipping patients with enough information that they can make informed decisions about their treatment options. Cost is one element that patients will likely want to consider when evaluating different treatment paths.<sup>76</sup> More than three-quarters of physicians who were interviewed in one study thought it was their responsibility to initiate conversations about price with patients to help them make informed decisions, balancing cost concerns and clinical benefits.<sup>77</sup> Though physicians say such conversations are important, they do not happen regularly. In various studies, 14 to 44 percent of patients report having discussed the cost of care in the past year with their health care provider.<sup>78</sup>

Providers may also want to talk to patients about the cost of care because it may improve patients' satisfaction with their care.<sup>79</sup> For example, the Henry County Health Center, in Iowa, found that patient satisfaction increased after the health center increased price transparency and simplified billing.<sup>80</sup>

Price transparency may also allow physicians to follow guidelines for best practices as laid out by their care organization or professional society. Health care organizations that receive bundled payments – a flat fee for treating a patient with a particular condition – may encourage physicians to evaluate the price of tests before ordering.<sup>81</sup> The ethics manual for the American College of Physicians, for example, states that “Physicians have a responsibility to practice effective and efficient health care and to use health care resources responsibly. Parsimonious care that utilizes the most efficient means to effectively diagnose a condition and treat a patient respects the need to use resources wisely.”<sup>82</sup>

## Insurers May Be Able to Design Health Care Plans to Better Control Costs

Access to detailed health care price information may enable insurers and large employers who self-fund their health insurance plans to negotiate lower rates from higher-price providers, or to design insurance plans that control costs by encouraging consumers to use less expensive providers. If consumers respond to the new financial incentives in health insurance plans and increasingly visit lower-priced providers, higher-cost facilities may reduce their prices to remain attractive to patients. However, new insurance plans need to be designed thoughtfully to ensure they do not dissuade patients from seeking needed care.

Improved price transparency for the public, providers and elected officials may enable insurers to act on what they already know: The cost of medical care varies widely from one provider to another, without correlated differences in the quality of care. In markets with a large enough pool of providers, insurers may choose to exclude the highest-priced doctors, hospitals or other facilities from their insurance offerings, or may seek to negotiate better prices from higher-price providers. After New Hampshire implemented statewide price transparency policies that included a consumer-friendly website, Anthem Blue Cross Blue Shield, the biggest insurer in the state, announced it was dropping Exeter Hospital from its plans.<sup>83</sup> Exeter, the most expensive hospital in the state according to price transparency data, responded with an offer to slow its rate increases, and when Anthem rebuffed that offer Exeter Hospital agreed to a contract that reportedly included rate cuts. It is not entirely clear what factors influenced Anthem's or Exeter's decisions in this dispute, but it may be that greater availability

of price information for the public and policymakers made it easier for Anthem to challenge Exeter Hospital. One study that involved interviews with multiple health care experts and stakeholders concluded that greater "public transparency efforts highlighting wide variation in hospital prices," was a large reason why "the balance of plan-provider negotiating power began shifting significantly in New Hampshire." In particular, "price comparisons made available by HealthCost [New Hampshire's price transparency website] and subsequent public reports helped shine the spotlight on Exeter's outlier status."

Price transparency may make it easier for insurance companies to create incentives that encourage consumers to use lower-priced providers. As information about price variation becomes more accessible to consumers, insurers may wish to design plans that guide consumers to act on this information. Two insurers in New Hampshire created tiered-pricing plans several years after the state improved health care price transparency.<sup>84</sup> Researchers who interviewed health care experts and stakeholders reported that "respondents viewed the state's focus on price transparency as facilitating or accelerating benefit-design changes." The tiered-pricing plans reward members for choosing high-value providers and charge patients much higher out-of-pocket fees for using the most expensive laboratories and outpatient surgery centers, which are usually affiliated with hospitals. For example, if patients insured through Anthem choose to have lab work done at free-standing facilities that the insurance company has classified into its lowest-price tier, they pay nothing out-of-pocket. At the least-expensive surgery facilities, patients pay fees that range from \$75 to \$100, versus full deductible and co-insurance fees at the most expensive providers. This tiered pricing incentive enabled Anthem

to offer lower premiums than insurers who did not use tiered pricing. (Tiered pricing, however, can put rural residents at a disadvantage. See “Changes to Health Insurance Incentives Could Disadvantage Patients in Rural Areas,” p. 24.)

Consumers have responded to the financial incentives like those offered by Anthem in New Hampshire by avoiding higher priced hospital-based labs and surgery centers in favor of lower-priced facilities. As patients have reduced their use of higher-priced options, hospitals have responded in several ways to lower their prices.<sup>85</sup>

- Some hospitals have agreed to reduce their prices for lab services, outpatient surgery and other care. This has enabled those facilities to qualify for inclusion on insurers’ list of lower-priced facilities and to attract a higher patient volume.
- Three hospitals jointly established a lower-priced ambulatory surgery center located away from any hospital. Another hospital in the state set up a new urgent care center. These new clinics charge less than their hospital-based counterparts, though they are not fully price competitive with free-standing centers.

In California, a combination of price transparency and financial incentives for consumers to choose lower-cost providers caused some higher-priced hospitals to lower their prices. CalPERS, which insures 1.3 million patients, examined historic pricing information for its patients’ knee- and hip-replacement surgeries.<sup>86</sup> It found a five-fold variation in prices that was unexplained by differences in quality of care, leading it to establish reference pricing for those surgeries. CalPERS agreed to cover the cost of knee- and hip-replacement surgeries up to a certain price; above that

price, patients were required to pay any additional charges. In response to this policy, 21.2 percent more patients used lower-price hospitals and fewer patients opted for higher-price hospitals. Higher-price hospitals responded by cutting their prices by an average of 34 percent for CalPERS patients, though that overall reduction masks the fact that half of the higher-price hospitals raised their prices, a continuation of an existing trend of higher annual prices, and half lowered them. (The average cut was much larger than the average increase.) The study concludes that the significant drop in prices “combined with the reductions in patient volumes” at more expensive facilities produced meaningful savings for CalPERS. (Note that the CalPERS patient population is more stable than many other insurance plans, which makes it easier for the insurer to educate patients about how reference pricing works and perhaps produces a stronger patient response to reference pricing.)

If designed correctly, tiered-pricing plans and reference pricing do not function the same as high-deductible health care plans, which may have the undesirable effect of causing patients to avoid needed care. Patients with high-deductible health insurance plans that do not help them identify high-value providers may delay or avoid seeking necessary care.<sup>87</sup> To avoid undesirable effects of placing a greater financial burden on consumers, new insurance plans need to be designed carefully and not be so complex that patients avoid seeking needed care.

## Potential Downsides of Price Transparency for Providers

Improved price transparency for providers may have several downsides. These include a concern that increased availability of data on prices could cause providers to increase charges, reduce revenue for gen-

eral hospitals, or disadvantage patients in areas with fewer providers.

### Price Transparency Could Cause Providers to Increase Their Prices

A major concern about increased price transparency, whether targeted at consumers or providers, is that it could lead providers to increase their prices. This could happen through two paths. First, physicians, hospitals and other providers could become less willing to offer a lower price to large-volume insurers. Providers engage in this practice, called selective contracting, because it gives them a larger patient volume and ensures they are included in the plans offered by major insurers. However, if the prices negotiated through selective contracting are included in price transparency data, other insurers may begin to demand similar deals. Providers may not be able to offer that same discount to every insurer and thus may avoid offering it to any insurer.<sup>88</sup> Second, price transparency may make it possible for each provider to know what other providers charge, and therefore for them to raise prices in lockstep.

The Federal Trade Commission (FTC) has expressed concern about both of these possible consequences. In 2015, the FTC released comments encouraging the Minnesota state legislature to be cautious about requiring too much health care transparency because it could reduce bidding and negotiations, leading providers to collude tacitly on prices.<sup>89</sup>

A study by WestHealth Policy Center, however, argues that policymakers can establish guidelines that would prevent the anti-competitive impacts that concern the FTC. Health care providers could be required to release data that are more than a year old, for example, so that they can adjust prices to attract new patients without their competitors immediately

finding out.<sup>90</sup> Though year-old data are less useful to patients (because providers and insurers may negotiate new rates annually), a comprehensive list of year-old prices may be a way to offer patients a sense of the relative prices charged by various providers and create a starting point for patients to seek more current and personalized price estimates. Another approach is to provide more recent price information in a way that is useful to consumers but difficult for competitors to use. For example, as a basic consumer principle, consumers should be able to look up or ask their provider or insurer for the price of a specific procedure, and ideally be able to learn the amount covered through their health insurance plan, not just an average payment figure. For this to provide some benefit for consumers, neither the provider nor insurer would need to publish a current full list of negotiated prices for all types of procedures. Providing actionable price estimates at the point of service if requested by individual consumers would be more useful for individual consumers than health care market competitors.

An additional approach policymakers could use to mitigate anti-competitive consequences enabled by price transparency is to end existing practices that may increase prices, such as “most-favored nation” agreements. In such agreements, insurers require providers to promise that they won’t offer a lower price to any other health plan, thereby limiting the competitive potential of other insurers. Greater price transparency would enable insurers to enforce most-favored nation agreements, but that anti-competitive risk goes away if such agreements are banned.<sup>91</sup> (Even in the absence of greater price transparency, most-favored nation agreements are far more likely to increase health care prices than to lower them and thus should be prohibited.<sup>92</sup>)

There have been few real-world studies of whether transparency increases or decreases medical prices, simply because health care price transparency in the United States is relatively new and its scope is limited. Short-term analyses, each looking at just one or two years, found that transparency programs in California and New Hampshire had no impact on prices.<sup>93</sup> Given the dearth of examples to study in the health care realm, economists have looked to other industries for examples of what might happen. The Danish concrete industry is offered up as an example of how increased transparency can raise prices dramatically. Concrete suppliers in Denmark used to charge different prices to each customer until 1993, when federal authorities began requiring companies to publish their invoices.<sup>94</sup> Over the next year, prices rose up to 20 percent.<sup>95</sup> Of course, other experts question how applicable the Danish concrete market is to the American health care industry.<sup>96</sup>

### Increased Price Transparency Could Threaten Important but Unprofitable Services

Another concern about increased price transparency is that by spurring providers to reduce their prices for some services, general hospitals will lose their ability to “cross-subsidize” critical but unprofitable services by charging more for their profitable services.<sup>97</sup> General hospitals provide a wide array of services, some of which are provided regardless of a patient’s ability to pay for care, such as trauma care, neonatal intensive care, and inpatient psychiatric services. Because these critical services are not adequately funded through government public health programs, general hospitals often resort to charging more for services where patients have greater ability to pay, and using that extra income to subsidize critical services. Specialized hospitals, which have the option to offer only

profitable, often elective, services, do not need to cross-subsidize any services, and are therefore able to offer their services for a lower price.<sup>98</sup> They potentially can draw patients away from general hospitals, undermining these institutions that provide critically important care.

A 2006 study by researchers at Brandeis University raises the concern that medical price transparency will harm general hospitals by forcing them to lower prices to compete with specialized hospitals and limit their ability to cross-subsidize other services.<sup>99</sup> The Brandeis researchers speculate that increased health care price transparency could force general hospitals to reduce wages and abandon unprofitable services to stay in operation.

However, the Healthcare Financial Management Association argues, in its Price Transparency Task Force report, that this should not be construed as an argument against price transparency. Instead, separate policy solutions may be needed to ensure increased price transparency does not jeopardize necessary yet unprofitable services.<sup>100</sup> Such solutions could include government subsidies or a special assessment on insurers to provide sufficient funding to keep critical facilities open. Another option would be to allow trauma centers, neonatal intensive care units and other medical facilities that are deemed essential to public health to collect extra fees from patients who are not paying out-of-pocket. Oregon’s existing “certificate of need” program could help ensure these new subsidies or fees do not result in construction of additional, unneeded facilities.

### Changes to Health Insurance Incentives Could Disadvantage Patients in Rural Areas

An additional concern about increased medical price transparency is that potential

cost savings may not be available to patients who live in rural areas with few providers. In New Hampshire, for example, improved price transparency prompted some insurance companies to create tiered plans that eliminate all out-of-pocket expenses for visits to labs and slash fees for outpatient surgery centers that are independent from hospital systems, but charge patients significantly more if they visit a higher-priced provider.<sup>101</sup> While this

enables insurers to offer less expensive health care plans, subscribers who live in rural parts of the state have to drive hours to the nearest low-cost provider or pay much higher out-of-pocket fees. Insurance plan design might need to be tailored to the limitations of areas with fewer providers, or perhaps consumers in those areas could be exempted from tiered pricing plans. Other strategies may be needed to address the high cost of care in rural areas.

# Improving Health Care Price Transparency in Oregon

Oregon has already taken several important steps toward improving health care price transparency. The state's all payer-all claims database collects information on most health care spending in Oregon, while its hospital median price report represents an initial commitment to increasing consumers' access to health care prices.

However, there is far more that the state could do to make health care prices fully available to patients, providers and insurers, to fulfill the basic consumer right to price information, and to begin to realize the potential savings in health care spending that transparency can enable.

## Oregon Health Care Prices Have Limited Transparency

Though Oregon has established several price transparency tools, Oregon consumers currently have a limited ability to learn the price of health care in advance of receiving treatment. Similarly, individual providers rarely know how much the services they provide or recommend for a patient will cost.

## All Payer-All Claims Database

In 2009, Oregon passed legislation creating an all payer-all claims database that collects detailed data on medical and pharmacy spending by commercial insurance companies, Medicaid and Medicare.<sup>102</sup>

The database includes information on 80 percent of health care spending in Oregon. Information in the state's all payer-all claims database is not accessible to consumers. Instead, it is used by researchers and policymakers. Researchers have used the spending information in the database to document price variation between hospitals, and state agencies have used it to study various elements of health care in Oregon.<sup>103</sup>

Oregon could do more with this tool. In other states, all payer-all claims databases have been put to broader uses, for example, allowing employers and health plans to identify higher-cost providers and craft policies to encourage patients to visit lower-cost providers. Oregon policymakers should explore the potential ramifications of allowing employers and health plans greater access to the database.<sup>104</sup>

## Oregon Hospital Guide

Oregon provides patients with some basic information on hospital prices through a state-published report, produced annually as required in price transparency legislation adopted in 2015.<sup>105</sup> The report includes the median amount paid to each hospital by private insurers for the most common inpatient and outpatient procedures. The law also requires the state to post the information on a consumer-friendly website, but the state has not done so yet. (The Oregon Association of Hospitals and Health Systems posts this

information on a website it operates.<sup>106</sup>) However, the data are not very useful for patients.

First, the price information included in the state's hospital payment report is the median amount paid by private insurers for each procedure, and does not include patients' out-of-pocket contributions.<sup>107</sup> How much a procedure actually will cost depends on a patient's insurance plan, which determines how much the patient pays out-of-pocket and how much the insurance company will pay directly to the care provider. To be truly useful to consumers, the information would need to be tailored to each patient's insurance plan and coverage level.

Second, the report includes price information for hospital-based procedures only, though hospital care accounts for less than 40 percent of Oregon's health care spending.<sup>108</sup> This means patients can't learn about the likely price of a visit to a specialist, a procedure at a surgery center, or any other care received outside of a hospital. In addition, the prices listed for hospital care do not necessarily include all the care that a patient might receive at a hospital, such as the services of an anesthesiologist or pathologist who is an independent contractor rather than an employee of the hospital.

## Other Tools

Health care price information is available through additional avenues. Patients can call a provider directly and ask for an estimate, and retail clinics may post price information. These sources are not always perfect: providers may be unable to offer an estimate or refuse to commit to delivering the service at a fixed price, while the information presented by clinics may not be specific to a patient's insurance plan. Many health insurance companies offer online price-shopping tools that

are customized to reflect how much patients will owe based on their particular health insurance plan design.<sup>109</sup> Some large employers offer health care price information to their employees through the websites of third-party providers, such as Castlight and Change Healthcare.

## Recommendations for Improved Transparency

Oregon already collects extensive information about health care prices through its all payer-all claims database and offers median hospital price information to consumers, but it can do far more to improve price transparency for patients, providers and others.

Simply making data available likely will not do enough to protect consumers from paying too much for health care services. Patients need access to information that is relevant and that they can act upon. Information should be presented in a format that will result in patients and providers using health care resources more wisely. In addition, it may need to be accompanied by financial incentives that encourage patients to use lower-price providers and motivate higher-price providers to lower their prices.

**For patients, true price transparency includes several elements that are lacking from Oregon's existing transparency tools. Policymakers, providers and insurers should seek to include these elements as they improve health care price transparency for consumers.**

- Price estimates should include the full cost of an episode of care or the average cost of care ordered by a clinician. For example, the price of hospital-based care should include all costs billed by the hospital itself, plus the cost of care from unaffiliated

providers such as anesthesiologists. For care from a primary care physician, patients may find it helpful to know the average price of lab tests, imaging and other services typically ordered by each doctor. One 2016 research paper found that lower-price physicians order lower-price additional care, saving patients and insurers 8.5 percent compared to higher-price physicians.<sup>110</sup> The results were not linked to geography or patient health status. The study suggests that patients who select a lower-price physician may achieve greater reductions in health care spending than indicated by the simple price difference between physicians.

- To ensure that patients are able to meaningfully compare and choose between health care options, information about the quality of care should be displayed alongside price information. This will limit the risk of patients assuming that more expensive doctors are inherently higher quality. A study conducted by researchers at the University of Oregon found that when price information is accompanied by “strong quality signals,” such as ratings of how well each provider accommodates patients’ preferences, consumers are significantly less likely to choose the highest cost option.<sup>111</sup> Additionally, study participants who were presented with the strongest indicators of quality were more likely to feel confident in their choice of health care provider.<sup>112</sup>

**Oregon policymakers could take steps to improve price transparency for consumers.**

- As a basic consumer right, patients should be able to ask for and receive information on the likely price of care at the “point of purchase,” such

as the doctor’s office, hospital or imaging facility, as well as online. Oregon could require that health care providers supply a price estimate upon request, with the caveat that medical complications may increase the price.

- Patients should be able to obtain price estimates for all types of care and services, including that received at hospitals, clinics, primary care physicians, specialists, dentists, labs and imaging centers. Oregon already collects much of this information in its all payer-all claims database and could expand data collection to include additional types of providers.
- The scope of Oregon’s yet-to-be-developed hospital price transparency website should be expanded to include price information from all providers included in the all payer-all claims database. The expanded scope of information could begin with the categories of health care that consumers are most willing to shop for, such as lab work and imaging studies.
- Price information presented from the all payer-all claims database should ideally be as specific as possible to each patient’s particular insurance. Integrating patient-level information into a single, statewide website would be technologically very difficult. Instead, Oregon policymakers could require the website to present median price by payer, procedure and provider, much as New Hampshire’s price transparency website does.<sup>113</sup>
- To make it easier for patients to obtain more detailed information than is presented on the state’s price transparency website, the website could also include links to each major insurer’s website so that

patients can obtain more personalized information directly from their insurer. In particular, the insurance company could help the patient understand how much of the price would need to be paid by the patient versus the insurer, depending on how much money the patient has spent so far toward the annual deductible and out-of-pocket maximum.

- Using data in the state’s all payer-all claims database, Oregon could explore the possibility of establishing benchmark prices for a wide range of procedures. These reference prices, which could be established regionally to account for variation in charges in different parts of the state, would give consumers a benchmark against which to evaluate a price estimate from a provider and provide patients with a sense of how much they might pay for quality care.
- Oregon should remove barriers that may limit the comprehensiveness of third-party price transparency websites, such as Castlight, HealthSparq and ClearCostHealth. For example, the state could ban gag clauses that prohibit insurance companies and providers from revealing the prices they have negotiated with each other. Such gag clauses can limit the information available in price transparency tools.

**Policymakers could also pursue options to improve price transparency for providers.**

- Oregon should explore requiring hospitals to include the price of laboratory and imaging tests in electronic health record systems so that providers can see price information when ordering. Displaying how much Medicare pays for each test would allow providers to gain a

sense of the relative price of each test or procedure and evaluate it on that basis.<sup>114</sup>

- Oregon should also consider how the state could expand upon the information technology system that allows all emergency departments in the state to share information with each other. Oregon’s Emergency Department Information Exchange program links all 59 of the state’s hospitals and provides information on patients who have especially high use of emergency services. The fact that all hospitals in Oregon have a common information technology tool offers an opportunity to share more data over that network. Perhaps this existing platform could be expanded for use by staff throughout the hospital to access price information on frequently ordered tests and common referrals.

**Oregon should improve the usefulness of its all payer-all claims database for researchers looking for opportunities to reduce health care spending.** The state could include standard provider identifiers in its all payer-all claims database. Currently, the information submitted to the all payer-all claims database shows the identification number assigned to each provider by each payer, but it is not possible to match records on a provider across multiple payers.<sup>115</sup> This limits the usefulness of the database for researchers who want to understand pricing patterns across the market.

**Oregon should pursue measures to ensure that greater price transparency does not have the undesirable consequence of increasing prices or undermining services that are critical to public health.** The state should ban “most-favored nation” agreements between providers and health insurers, in which a provider, after negotiating a price with an

insurer, agrees not to offer any competing insurer a lower price. The effect of most-favored nation clauses in contracts is to discourage providers from offering deeper price discounts, essentially setting a price floor for health care services. Greater price transparency makes it easier for the

insurer to confirm that the provider does not violate this agreement. Most-favored nation agreements can inflate health care prices even with current, limited price transparency. Banning such contract clauses could help providers negotiate prices with insurers.

# Notes

1 Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, *National Health Expenditure Data: Health Expenditures by State of Residence*, June 2017, available at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsStateHealthAccountsResidence.html>.

2 Chapin White et al., West Health Policy Center, *Healthcare Price Transparency: Policy Approaches and Estimated Impacts on Spending*, May 2014, available at <http://8637-presscdn-0-19.pagely.netdna-cdn.com/wp-content/uploads/2017/07/Price-Transparency-Policy-Analysis-FINAL-5-2-14.pdf>.

3 Assumes one-quarter of one percent is annual average savings. Oregon spent \$31.9 billion on health care in 2014: See note 1.

4 Anna Sinaiko and Meredith Rosenthal, "Examining a Health Care Price Transparency Tool: Who Uses It and How They Shop for Care," *Health Affairs*, (35(4):662-670, doi: 10.1377/hlthaff.2015.0746, April 2016.

5 Christopher Whaley et al., "Association between Availability of Health Service Prices and Payments for These Services," *JAMA*, 312(16):1670-1676, doi: 10/1001/jama.2014.13373, 22/29 October 2014.

6 Sze-jung Wu et al., "Price Transparency for MRIs Increased Use of Less Costly Providers and Triggered Provider Competition," *Health Affairs*, 33(8):1391-1398, doi: 10.1377/hlthaff.2014.0168, 2014.

7 Leonard Feldman et al., "Impact of Providing Fee Data on Laboratory Test Ordering: A Controlled Clinical Trial," *JAMA Internal Medicine*, 173(10):903-098, doi:10.1001/jamainternmed.2013.232, 2013.

8 Ha Tu and Rebecca Gourevitch, California HealthCare Foundation and Robert Wood Johnson Foundation, *Moving Markets: Lessons from New Hampshire's Health Care Price Transparency Experiment*, April 2014, available at <http://www.chcf.org/~media/MEDIA%20LIBRARY%20Files/PDF/PDF%20M/PDF%20MovingMarketsNewHampshire.pdf>.

9 Kathryn A. Phillips, David Schleifer and Carolin Hagelskamp, "Most Americans Do Not Believe that There Is an Association between Health Care Prices and Quality of Care," *Health Affairs*, 35(4):647-653, doi: 10.1377/hlthaff.2015.1334, April 2016.

10 Judith H. Hibbard et al., "An Experiment Shows that a Well-Designed Report on Costs and Quality Can Help Consumers Choose High-Value Health Care," *Health Affairs*, 31(3):560-568, doi: 10.1377/hlthaff.2011.1168, March 2012.

11 Marina Lao, Director, Office of Policy Planning; Deborah L. Feinstein, Director, Bureau of Competition; and Francine Lafontaine, Director, Bureau of Economics, Federal Trade Commission, Letter to The Honorable Joe Hoppe and The Honorable Melissa Hortman, Minnesota House of Representatives, *Re: Amendments to the Minnesota Government Data Practices Act Regarding Health Care Contract Data*, 29 June 2015, available at <https://www.ftc.gov/system/files/>

documents/advocacy\_documents/ftc-staff-comment-regarding-amendments-minnesota-government-data-practices-act-regarding-health-care/150702minnhealthcare.pdf.

12 Office of Health Analytics, Division of Health Policy & Analytics, Oregon Health Authority, *Oregon Hospital Payment Report: 2015*, 1 July 2017, archived at <https://web.archive.org/web/20180210013155/http://www.oregon.gov/oha/HPA/ANALYTICS/HospitalReporting/2015%20Hospital%20Payment%20Report.pdf>.

13 Office of Health Analytics, Division of Health Policy & Analytics, Oregon Health Authority, *Oregon Hospital Payment Report: Outpatient Surgeries 2015*, 1 July 2017, archived at <https://web.archive.org/web/20180219040124/http://www.oregon.gov/oha/HPA/ANALYTICS/HospitalReporting/2015%20Hospital%20Payment%20Report%20-%20Outpatient.pdf>.

14 “Reducing Waste in Health Care” (Health Policy Brief), *Health Affairs*, doi: 10.1377/hpb20121213.959735, 13 December 2012.

15 See note 1; and U.S. Bureau of Economic Analysis, *Total Gross Domestic Product for Oregon [ORNGSP]*, via FRED, Federal Reserve Bank of St. Louis, accessed at <https://fred.stlouisfed.org/series/ORNGSP>, 2 January 2018.

16 See note 1.

17 The Consumer Price Index in the Portland-Salem area rose 26 percent from 2004 to 2014, per U.S. Department of Labor, Bureau of Labor Statistics, *CPI Historical Table, Portland-Salem OR-WA*, July 2017, available at [https://www.bls.gov/regions/west/or\\_portland\\_msa.htm](https://www.bls.gov/regions/west/or_portland_msa.htm).

18 Health insurance premium increase is calculated for family coverage. Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services, *Medical Expenditure Panel Survey- Insurance Component State and Metro Tables, Table II.D.1 for 2004 and 2014*, accessed 2 January 2018, available at [https://meps.ahrq.gov/mepsweb/data\\_stats/state\\_tables.jsp?regionid=4&year=-1](https://meps.ahrq.gov/mepsweb/data_stats/state_tables.jsp?regionid=4&year=-1); United States Census, *Historical Income Tables: Households — Table H-8*, accessed 2 January 2018, available at <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html>.

19 Exhibit 6.2 in Gary Claxton et al., Kaiser Family Foundation, *2015 Employer Health Benefits Survey*, 22 September 2015, archived at <https://web.archive.org/web/20180210013441/http://files.kff.org/attachment/report-2015-employer-health-benefits-survey>.

20 Exhibit 7.7 in Gary Claxton et al., Kaiser Family Foundation, *2015 Employer Health Benefits Survey*, 22 September 2015, archived at <https://web.archive.org/web/20180210013441/http://files.kff.org/attachment/report-2015-employer-health-benefits-survey>.

21 Bureau of Labor Statistics, *Employer Costs of Employee Compensations, Historical Listing, National Compensation Survey*, March 2004-September 2017, archived at <https://web.archive.org/web/20180210013533/https://www.bls.gov/web/ecec/ececqrtn.pdf>.

22 Katherine Baicker and Amitabh Chandra, National Bureau of Economic Research, *The Labor Market Effects of Rising Health Insurance Premiums, Working Paper 11160*, February 2005, archived at <https://web.archive.org/web/20180210015521/http://www.nber.org/papers/w11160.pdf>.

23 \$717 million is what the state of Oregon spent; employees contributed additional funds. The Pew Charitable Trusts and the John D. and Catherine T. MacArthur Foundation, *State Employee Health Plan Spending: An Examination of Premiums, Cost Drivers, and Policy Approaches*, August 2014, archived at <https://web.archive.org/web/20180209010141/http://www.pewtrusts.org/~media/assets/2014/08/stateemployeehealthcarereportseptemberupdate.pdf?la=en>. \$5,957 million in general fund expenses, per National Association of State Budget Officers, *State Expenditure Report: Examining 2013-2015 State Spending*, 2015, archived at [https://web.archive.org/web/20180209010350/https://higherlogicdownload.s3.amazonaws.com/NASBO/9d2d2db1-c943-4f1b-b750-0fca152d64c2/UploadedImages/SER%20Archive/State%20Expenditure%20Report%20\(Fiscal%202013-2015\)S.pdf](https://web.archive.org/web/20180209010350/https://higherlogicdownload.s3.amazonaws.com/NASBO/9d2d2db1-c943-4f1b-b750-0fca152d64c2/UploadedImages/SER%20Archive/State%20Expenditure%20Report%20(Fiscal%202013-2015)S.pdf).

- 24 See note 1.
- 25 Note that non-retail pharmaceutical spending is included in hospital and clinical expenditure figures. See note 1.
- 26 Josh Cothran, California Health Care Foundation, *U.S. Health Care Spending: Who Pays?*, September 2017, accessed 23 October 2017, archived at <https://web.archive.org/web/20171023195250/http://www.chcf.org/publications/2017/09/data-viz-hcc-national>.
- 27 See note 2.
- 28 See note 3.
- 29 Hannah Semigran et al., "Patients' Views on Price Shopping and Price Transparency," *American Journal of Managed Care*, 23(6), 26 June 2017, archived at <https://web.archive.org/web/20180210020010/http://www.ajmc.com/journals/issue/2017/2017-vol23-n6/patients-views-on-price-shopping-and-price-transparency>.
- 30 Sunita Desai et al., "Offering a Price Transparency Tool Did Not Reduce Overall Spending Among California Public Employees and Retirees," *Health Affairs*, 35(8):1401-1407, doi: 10.1377/hlthaff.2016.1636, August 2017.
- 31 See note 5.
- 32 See note 29.
- 33 David Schleifer, Carolin Hagelskamp and Chloe Rinehart, Public Agenda, *How Much Will It Cost? How Americans Use Prices in Health Care*, March 2015, archived at [https://web.archive.org/web/20180208225738/https://www.publicagenda.org/files/HowMuchWillItCost\\_PublicAgenda\\_2015.pdf](https://web.archive.org/web/20180208225738/https://www.publicagenda.org/files/HowMuchWillItCost_PublicAgenda_2015.pdf).
- 34 See note 4.
- 35 See note 5.
- 36 Sunita Desai et al., "Association Between Availability of a Price Transparency Tool and Outpatient Spending," *JAMA*, 315(17):1874-1881, doi:10.1001/jama.2016.4288, 2016.
- 37 See note 30.
- 38 See note 4.
- 39 Neeraj Sood et al., "Price-Shopping in Consumer Director Health Plans," *Forum for Health Economics & Policy*, 16(1):19-21, 2013, archived at <https://web.archive.org/web/20180210020211/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4204109/>.
- 40 See note 5.
- 41 See note 4.
- 42 See note 29; and Anna Sinaiko, "How Do Quality Information and Cost Affect Patient Choice of Provider in a Tiered Network Setting? Results from a Survey," *Health Services Research*, 42(2):437-456, doi: 10.1111/j.1475-6773.2010.01217.x, April 2011.
- 43 See note 29.
- 44 See note 30.
- 45 Ateev Mehrotra et al., "Patients Who Choose Primary Care Physicians Based on Low Office Visit Price Can Realize Broader Savings," *Health Affairs*, 35(12):2319-2326, doi: 10.1377/hlthaff.2016.0408, December 2016.
- 46 See note 4.
- 47 See note 4.
- 48 Amanda Frost and David Newman, Health Care Cost Institute, *Spending on Shoppable Services in Health Care*, March 2016, archived at [https://web.archive.org/web/20180210020755/http://www.healthcostinstitute.org/files/Shoppable%20Services%20IB%203.2.16\\_0.pdf](https://web.archive.org/web/20180210020755/http://www.healthcostinstitute.org/files/Shoppable%20Services%20IB%203.2.16_0.pdf).

- 49 See note 6.
- 50 Peter S. Hussey, Samuel Wertheimer and Ateev Mehrotra, "The Association between Health Care Quality and Cost: A Systematic Review," *Annual Internal Medicine*, 158(1):27-32, doi: 10.7326/0003-4819-158-1-201301010-00006, January 2013.
- 51 Ibid.
- 52 Rebecca L. Waber et al., "Research Letter: Commercial Features of Placebo and Therapeutic Efficacy," *JAMA*, 299(9):1016-1017, 5 March 2008.
- 53 Ibid.
- 54 See note 9.
- 55 Ibid.
- 56 Ibid.
- 57 See note 36.
- 58 See note 10.
- 59 Ibid.
- 60 Justin McCarthy, "U.S. Women More Likely Than Men to Put Off Medical Treatment," *Gallup News*, 6 December 2017, archived at <http://web.archive.org/web/20180112222645/http://news.gallup.com/poll/223277/women-likely-men-put-off-medical-treatment.aspx>.
- 61 Lisa Rosenbaum, "The Problem with Knowing How Much Your Health Care Costs," *The New Yorker*, 20 December 2013, archived at <http://web.archive.org/web/20180112231006/https://www.newyorker.com/tech/elements/the-problem-with-knowing-how-much-your-health-care-costs>.
- 62 Laura Ramos Hegwer, "Case Studies in Price Transparency," *Healthcare Executive*, November-December 2015.
- 63 David Neal and Cassandra Govan, *U.S. Dental Price Variation and Transparency Research: LA County Report*, July 2013, 2, archived at [https://web.archive.org/web/20180210021047/https://d3ppyoxr8wczcq.cloudfront.net/media/LA%20Region%20Health%20Care%20Price%20Transparency%20Study\\_%20070313.pdf](https://web.archive.org/web/20180210021047/https://d3ppyoxr8wczcq.cloudfront.net/media/LA%20Region%20Health%20Care%20Price%20Transparency%20Study_%20070313.pdf).
- 64 Ateev Mehrotra et al., "Consumers' and Providers' Responses to Public Cost Reports, and How to Raise the Likelihood of Achieving Desired Results," *Health Affairs*, 31(4):843-851, doi: 10.1377/hlthaff.2011.1181, April 2012.
- 65 Celine Goetz et al., "The Effect of Charge Display on Cost of Care and Physician Practice Behaviors: A Systematic Review," *The Journal of General Internal Medicine*, 30(6):835-842, doi: 10.1007/s11606-015-3226-5, 2015.
- 66 See note 7.
- 67 See note 65.
- 68 Ibid.
- 69 Alyna Chien et al., "A Randomized Trial of Displaying Paid Price Information on Imaging Study and Procedure Ordering Rates," *Journal of General Internal Medicine*, 32(4):434-448, doi: 10.1007/s11606-016-3917-6, 2016.
- 70 Ibid.
- 71 Katherine Schiavoni et al., "How Primary Care Physicians Integrate Price Information into Clinical Decision-Making," *Journal of General Internal Medicine*, 32(1):81-87, doi: 10/1007/s11606-016-3805-0, 2016.
- 72 Daniel Horn et al., "The Impact of Cost Displays on Primary Care Physician Laboratory Test Ordering," *Journal of General Internal Medicine*, 29(5):708-714, doi: 10.1007/s11606-013-2672-1,

2013.

73 See note 69.

74 See note 71.

75 Ibid.

76 Peter Ubel et al., "Study of Physician and Patient Communication Identifies Missed Opportunities to Help Reduce Patients' Out-of-Pocket Spending," *Health Affairs*, 35(4):654-661, doi: 10.1377/hlthaff.2015.1280, April 2106.

77 See note 71.

78 See note 76.

79 Gelareh Sadigh et al., "Health Care Price Transparency and Communication: Implications for Radiologists and Patients in an Era of Expanding Shared Decision Making," *American Journal of Roentgenology*, 209:959-964, doi: 10.2214/ajr.17.18360, November 2017.

80 See note 62.

81 See note 2.

82 American College of Physicians, *ACP Ethics Manual Sixth Edition*, accessed 9 February 2018, archived at <https://web.archive.org/web/20180210052811/https://www.acponline.org/clinical-information/ethics-and-professionalism/acp-ethics-manual-sixth-edition/acp-ethics-manual-sixth-edition>.

83 See note 8.

84 Ibid.

85 Ibid.

86 James Robinson and Timothy Brown, "Increases in Consumer Cost Sharing Redirect Patient Volumes and Reduce Hospital Prices for Orthopedic Surgery," *Health Affairs*, 32(8):1392-1397, doi: 10.1377/hlthaff.2013.0188, August 2013.

87 Paul Fronstin, Martín Sepúlveda and M. Christopher Roebuck, "Consumer-Directed Health Plans Reduce the Long-Term Use of Outpatient Physician Visits and Prescription Drugs," *Health Affairs*, 32(5):1126-1134, doi: 10.1377/hlthaff.2012.0493, June 2013.

88 Healthcare Financial Management Association, *Price Transparency in Health Care: Report from the HFMA Price Transparency Task Force*, 2014.

89 See note 11.

90 See note 2.

91 Ibid.

92 Fiona Scott-Morton, Deputy Assistant Attorney General, Antitrust Division, U.S. Department of Justice, *Contracts that Reference Rivals* (speech presented at Georgetown University Law Center, Antitrust Seminar), 5 April 2012, archived at <https://web.archive.org/web/20180209194250/https://www.justice.gov/atr/file/518971/download>.

93 David Cutler and Leemore Dafny, "Designing Transparency Systems for Medical Care Prices," *New England Journal of Medicine*, 364(10):894-895, 10 March 2011.

94 Ibid.

95 Ibid.

96 See note 2.

97 Guy David et al., "Do Hospitals Cross-Subsidize," *Journal of Health Economics*, 37(2014):198-218, doi: 10.1016/j.jhealeco.2014.06.007, June 2014.

98 Stuart H. Altman, David Shactman and Efrat Eilat, "Could U.S. Hospitals Go the Way of U.S.

Airlines?” *Health Affairs*, 25(1):1-21, doi: 10.1377/hlthaff.25.1.11, January/February 2006.

99 Ibid.

100 See note 88.

101 See note 8.

102 Oregon Health Authority, Office of Health Analytics, *Oregon All Payer All Claims Database, An Overview*, 15 June 2017, archived at <https://web.archive.org/web/20180210030315/http://www.oregon.gov/oha/HPA/ANALYTICS/APAC%20Page%20Docs/APAC-Overview.pdf>.

103 Ibid.

104 See note 2.

105 Oregon State Legislature, *Oregon Legislative Information, 2015 Regular Session, SB 900 Enrolled*, accessed at <https://olis.leg.state.or.us/liz/2015R1/Measures/Overview/SB900>, 3 January 2018.

106 The information is posted at <https://oregonhospitalguide.org/>.

107 See note 12.

108 See note 1.

109 See note 2; Kaiser Permanente, *Estimating Your Treatment Costs*, accessed 7 January 2018, archived at [https://web.archive.org/web/20180210030521/http://info.kaiserpermanente.org/html/estimating\\_your\\_treatment\\_costs/](https://web.archive.org/web/20180210030521/http://info.kaiserpermanente.org/html/estimating_your_treatment_costs/); Martha Hostetter and Sarah Klein, “Health Care Price Transparency: Can It Promote High-Value Care?” *Quality Matters*, April/May 2012, archived at <https://web.archive.org/web/20180210030556/http://www.commonwealthfund.org/publications/newsletters/quality-matters/2012/april-may/in-focus>.

110 See note 45.

111 See note 10.

112 Ibid.

113 The website is <https://nhhealthcost.nh.gov/>.

114 See note 2.

115 Oregon Health Authority, Office of Health Analytics, *Oregon All Payer All Claims Database (APAC) Frequently Asked Questions*, 15 June 2017, archived at <https://web.archive.org/web/20180210030725/http://www.oregon.gov/oha/HPA/ANALYTICS/APAC%20Page%20Docs/APAC-FAQ.pdf>.