Defensive Medicine In Oregon:

Estimating Prevalence & Costs

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Context

This Report was commissioned by the State of Oregon, Oregon Health Authority (OHA). The commission was pursuant to a legislative mandate in Section 16 of House Bill 3650 (2011), also known as the Health Care Transformation bill, requiring OHA to study and develop recommendations for medical liability reforms.

About the Authors

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Executive Summary

OVERVIEW

This report summarizes results from a study of defensive medicine in Oregon commissioned by the Oregon Health Authority (OHA), pursuant to a legislative mandate in Section 16 of House Bill 3650 (2011), also known as the Health Care Transformation bill. The study's purpose was to estimate the costs of defensive medicine in Oregon, and to estimate the prevalence and costs associated with overutilization and unnecessary care.

APPROACH

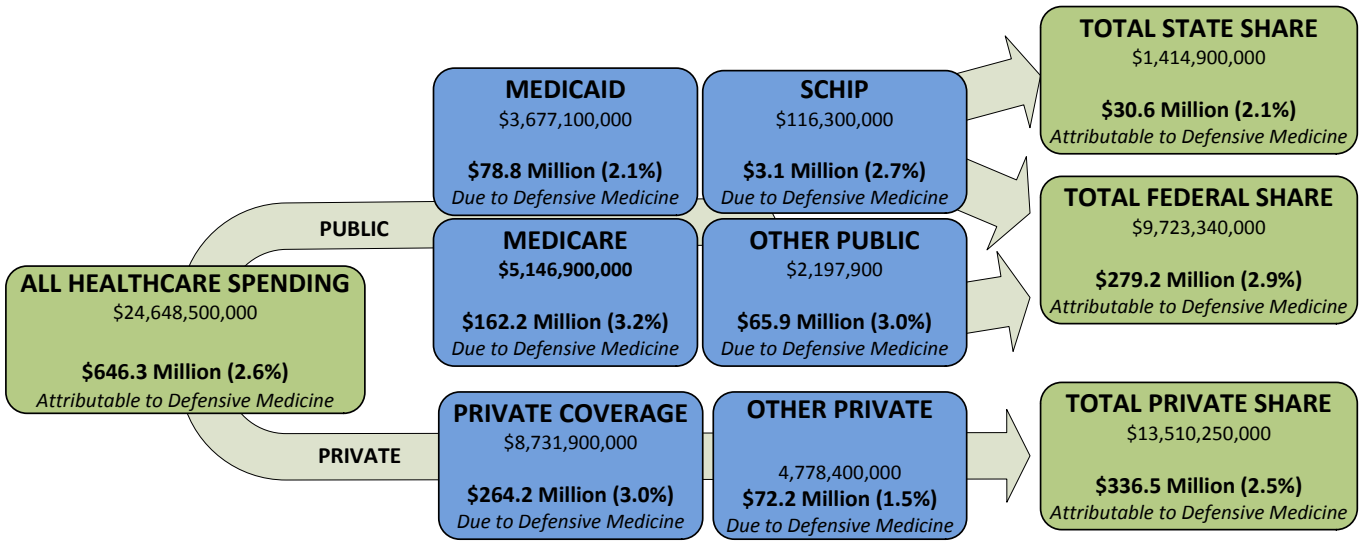
Two distinct approaches were taken to meet the project's objectives.

- **MEDICAL EXPENDITURES DATA:** To estimate total defensive medicine costs, we took the best estimates from the health economics literature about how much of different types of healthcare spending might be attributable to defensive medicine and applied them to Oregon healthcare expenditures data.
- **PHYSICIAN SURVEYS:** We fielded a statewide survey of 2,600 actively practicing physicians in Oregon. We used survey results to produce estimates on the prevalence of unnecessary care within different types of healthcare services, then generated estimates of the cost associated with that unnecessary care.

KEY FINDING #1: COSTS OF DEFENSIVE MEDICINE IN OREGON

Our analysis of Oregon health expenditures data suggests that annually, approximately **$650 million** in healthcare spending – or about 2.6% of total healthcare spending in Oregon – may be attributable to defensive medicine. Just under half ($310 million) is through public programs, with most of that accounted for by Federal spending through Medicare and the Federal share of CHIP and Medicaid. The direct impact on Oregon's budget is about **$31 million.** We also estimated the likely savings of "direct reform" options, such as caps on non-economic damages, and estimate that such reforms might save the Oregon budget about **$20 million.**

ESTIMATED COSTS OF DEFENSIVE MEDICINE IN OREGON



BOTTOM LINE: Defensive medicine costs are about $646 Million across the entire Oregon economy. Direct costs to the Oregon budget are about $30 million.

KEY FINDING #2: PREVALENCE & COST DRIVERS OF DEFENSIVE MEDICINE

Our analysis of the prevalence of defensive medicine in Oregon relied on a survey of 2,600 active Oregon physicians. We used a "count based" approach to assessing prevalence – physicians were given a list of procedures often associated with defensive practice and asked to count how many had they ordered in their last full month of work, then estimate how many of the orders were for medically unnecessary care. We used those results to estimate the total annual number of "unnecessary" orders for each type of care, and then multiplied the result by the average cost of each procedure to estimate the total costs associated with each type of overutilization. We combined similar procedures into broad categories and produced the following overutilization estimates:

ESTIMATED RATES OF OVERUTILIZATION IN OREGON & ASSOCIATED ANNUAL COSTS

Type of Service	Overutilization Rate	Associated Costs	Percent of Associated Costs
Imaging (X-Rays, CT scans, MRI, Ultrasounds)	16.2%	$141.0 M	19%
Laboratory Tests (CBC, Chem profile, etc)	13.9%	$24.5 M	3%
Specialist referrals or consults	17.2%	$27.3 M	4%
Hospital admissions	8.2%	$552.7 M	74%
TOTAL OVERUTILIZATION & COSTS	13.9%	$745.6 M	100%

The total cost estimates we produced using our survey data differed slightly from our estimates based on health expenditures data ($745 million vs. 646 million). The two approaches are not directly comparable because they use fundamentally different methodologies; however, they actually yield quite complementary results: as a percentage of total healthcare spending, the estimates fall within less than .05% of each other (2.6% vs. 3.0% of total spending).

ASSESSING THE SUBJECTIVITY OF DATA

Our analysis of the total costs of defensive medicine used objective data on Oregon healthcare expenditures. However, we used surveys to produce our overutilization estimates, and survey responses can be notoriously subjective depending on the context within which questions are asked. We wanted to ensure our estimates of overutilization were as scientifically valid as possible, so we embedded an experimental design into our assessment of overutilization rates in Oregon. This experiment, described on page 12 of the report, allowed us to assess the degree to which the salience of defensive medicine as an issue influenced physicians' survey-based estimates of overutilization. We ultimately found that our "count-based" approach to estimating overutilization rates yielded highly reliable results.

KEY TAKEAWAYS

We approached estimating the costs and prevalence of defensive medicine in Oregon using two distinct methods that yielded complementary results. Our surveys of Oregon physicians suggest that, within the most common categories of care usually associated with defensive practice, as many as **14% of physician orders may be medically unnecessary**. Our analysis of expenditures data suggests that an estimated **$650 million** in total costs of care may be attributable to defensive medicine statewide, though most of these costs flow through private insurers or federal payments; the Oregon state budget's share is about **$31 million.** Both analyses agree that **unnecessary care in hospital settings** is the most important driver of defensive medicine costs, accounting for 74% of costs associated with overutilization.

The costs of defensive medicine should probably not be seen as entirely "recapturable." Not all unnecessary care can be attributed to the malpractice environment, and no known malpractice reform scenario would reduce defensive medicine to zero. Applying the best available estimates on the likely savings of direct malpractice reforms (such as damage caps) to Oregon expenditures data suggests that such reforms might reduce total healthcare expenditures by **$345 million** across the entire Oregon economy. However, most of this reduction would be fall under federal or private expenditures – **direct savings to Oregon's budget would be an estimated $20 million.**

Project Overview

OVERVIEW

This report summarizes results from a study of defensive medicine in Oregon. The study was designed with three specific goals:

1. Estimate the costs of defensive medicine in Oregon and the likely impacts on Oregon's budget;
2. Identify the rates and key drivers of unnecessary care and utilization due to defensive medicine; and
3. Recommend criteria for the evaluation of reductions in unnecessary care and utilization.

DEFINITIONS

Studying "defensive medicine" is complicated by the fact that there is no universally accepted, standard definition of what defensive medicine actually means. Broadly, defensive medicine has been described as any deviation from sound medical practice induced primarily by the threat of liability.[1] A more precise definition from the defunct U.S. Congress Office of Technology Assessment (OTA), conceptualizes defensive medicine as occurring "when doctors order tests, procedures, or visits, or avoid certain high-risk patients or procedures, primarily (but not solely) because of concern about malpractice liability."[2] This report is primarily informed by the latter definition, but we recognize that there is no single, universally accepted agreement about what defensive medicine really means.

APPROACH

We took two approaches to accomplish the project's goals:

MEDICAL EXPENDITURES DATA: We used National Health Expenditures (NHE) data to obtain estimates of total health care spending in Oregon in a variety of categories. We then reviewed research that had applied statistical modeling to national health expenditures data in order to estimate the proportion of spending attributable to defensive medicine, and applied those "best estimates" against the Oregon-specific health care spending data. This approach, along with our principal findings from this analysis, is further explored beginning on page 5.

PHYSICIAN SURVEYS: We also fielded a statewide survey of actively practicing physicians in Oregon. We sent a representative random sample of 2,600 physicians across the state surveys designed to assess specific types of clinical decision making that have been associated with defensive practice in other studies; data were used to produce estimates of overutilization due to defensive practice and associated costs. We embedded an experimental approach into our design to assess the potential "subjectivity" of these survey-produced estimates. Additional information about our approach and findings is available beginning on page 11.

KEY FINDINGS

Our report is organized into three distinct parts:

- **Part 1** presents our estimates of the **cost of defensive medicine** in Oregon and potential savings from reform.
- **Part 2** presents our estimates of **overutilization** and the **key drivers of costs** associated with overutilization. Here, we also explore Oregon physicians' subjective assessments of the likely impact of various reform options.
- **Part 3** presents our **recommendations for monitoring and evaluating** changes in defensive medicine practices in the context of any potential changes to Oregon's malpractice environment.

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[1] Studdert, Mello, Sage et al. 2005. Defensive Practive Among High-Risk Specialist physicians in a Volatile Malpractice Environment. JAMA, 293:21, 2609-2617.

[2] U.S. Congress Office of Technology Assessment. Defensive medicine and medical malpractice [Internet]. Washington (DC): OTA; 1994 Jul [cited 2012 Jan 8]. available from: http:// http://biotech.law.lsu.edu/policy/9405.pdf

Part 1.

Cost Estimates

KEY QUESTIONS

We wanted to estimate the costs of defensive medicine in Oregon's health care delivery system and understand the degree of impact defensive medicine costs have on Oregon's health care budget and the health care market in general.

OVERALL APPROACH

We used a two-step approach to estimating of the cost of defensive medicine in Oregon. First, we reviewed existing research to find the best estimates of the fraction of spending within distinct categories of health care attributable to defensive medicine. We focused on estimates that deployed persuasive strategies to isolate the effect of the medical malpractice environment on health care spending, rather than looking at simple trends that might be confounded by other factors driving spending growth. Second, we applied those estimates to *Oregon-specific health care expenditures data,* and then aggregated the resulting costs across health care expenditure categories to produce a global estimate of the cost of defensive medicine in Oregon. We drew on National Health Expenditures (NHE) data to produce these Oregon-specific cost estimates. It is important to note that these results are inherently subject to substantial uncertainty: the share of health care use that is "because of" the malpractice liability system cannot be directly observed.

FINDING GOOD ESTIMATES OF DEFENSIVE MEDICINE COSTS

It is difficult to ascertain directly how much health care can be attributed to medical malpractice pressures: tests do not come labeled as "primarily to avert a potential lawsuit." Studies have taken many approaches to isolating defensive medicine costs within the larger framework of health expenditures data.

The most basic approach would be to simply look at variation in health care expenditures across states, comparing those with and without reforms like damage caps and assessing whether physicians in the states without damage caps tended to order more tests. The fundamental problem with such a comparison is that many other things might differ between the states (including the characteristics of patients and physicians), so attributing differences in care patterns to the damage caps themselves could be misleading. Furthermore, states with higher health care costs might be more likely to enact damage caps - leading to reverse causation.

Several studies have taken a more sophisticated statistical approach to isolating the effect of the legal environment on the practice of medicine. For our estimates of defensive medicine costs, we drew on studies that utilized multivariate regression models look at how variation in the growth of health care expenditures across states are related to characteristics of the malpractice environment while controlling for potentially different characteristics of patients and doctors in those states. These studies also include state and time fixed effects (to sweep out anything that makes, say, California different from Texas or 1982 different from 1995) to isolate the effects of the malpractice system on defensive medicine. Mello, Chandra, and Gawande[3] synthesize the best of this research to provide estimates of the degree of defensive medicine in hospitals and physician services.

[3] Mello, Chanda, Gawande, Studdert. 2010. National Costs of the Medical Liabilty System. HEALTH AFFAIRS 29:9.

Hospital spending estimates: The most relied-upon study on defensive medicine in this area suggests that about 5.4% of hospital costs can be attributed to defensive medicine.[4] The study's authors, Kessler and McClellan, examined spending on Medicare beneficiaries (for whom comprehensive claims data are available) hospitalized for cardiac conditions and evaluated how that spending changed over time in states that adopted direct and indirect tort reforms. The authors concluded that that direct reforms reduced hospital spending by 5-9%, but that indirect reforms had little effect. The key methodological strength of this study is that it takes into account patient characteristics and persistent differences between states in other confounding factors, helping to isolate the effect of the liability system itself.

Physician services spending estimates: A reliable study on defensive medicine as a portion of physician services spending estimates that about 1.4% of expenditures in this category can be attributed to medical malpractice. Baicker, Fisher, and Chandra[5] examined the relationship between Medicare spending on physicians for different services and malpractice liability pressures. They focused on growth in spending in the 1990s and malpractice payments or premiums, again taking into account state characteristics that might influence both, and found that the 11% increase in malpractice payments was associated with a 1.1% increase in Medicare reimbursements. Mello et al.[3] then used these figures to estimate that $5.4-8.2 billion in physician services in 2008 could be attributed to defensive medicine.

Weaknesses of existing studies: While these studies represent the state of the art approach to quantifying defensive medicine costs, it is still important to note that even the authors of the studies acknowledge they cannot be absolutely certain they have successfully isolated defensive medicine. These studies also rely on assumptions about the growth of malpractice pressures, are focused primarily on a Medicare population that may have different underlying litigiousness from other populations, and rely on data largely from an earlier time period.

OREGON EXPENDITURES DATA

We used data on health expenditures in Oregon by service type and payer compiled by the Centers for Medicare and Medicaid Services' National Health Expenditures (NHE) (https://www.cms.gov/nationalhealthexpenddata). Spending in Oregon broken down by broad service categories was available through 2009; this breakdown is available for total spending, spending by Medicaid, and spending by Medicare. National health expenditures were available through 2010, and are further broken down into more detailed payer types.

To produce expenditures estimates for Oregon in 2010, we took the available figures for Oregon (based on state of provider) for 2009 spending overall and by Medicare and Medicaid and inflated them to 2010 dollars using the growth rate of national health expenditures within each category of care. We then divided up the spending attributable to "other" (non-Medicaid, non-Medicare) payers using the shares attributed to those payers in the National Health Expenditures.

PARAMETERS: Our estimates of total expenditures in Oregon may look somewhat different than others. There are several reasons for this. First, we excluded dental spending from total healthcare expenditures – including dental would have increased total spending in Oregon by about $1.5 billion, but would not have impacted our resulting estimates of the total cost of defensive medicine in Oregon. Little is known about defensive practice in dental care, so we have not attempted to estimate those costs.

When constructing costs estimates, we also based our cost estimates for Oregon based on the location of the *provider* (which makes the most sense for assessing a local malpractice environment). Other estimates of total spending that rely on NHE data often use the location of *patients (*which makes sense for assessing, for example, total spending within a program). In reality the differences in totals produced by the two approaches are fairly small.

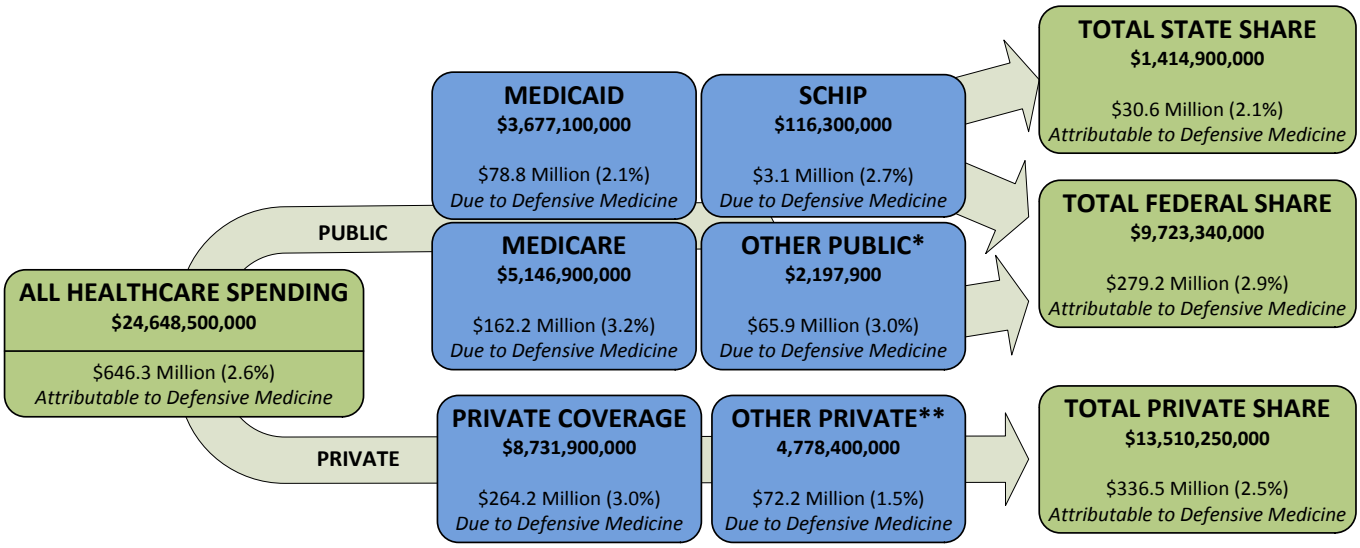
[4] Kessler DP, McClellan MB. Do doctors practice defensive medicine? Quarterly Journal of Economics 1996;111:353-390

[5] Baicker K, Fisher E, Chandra A. 2007. Malpractive Liability Costs and the Practice of Medicine in the Medicare Program. Health Affairs, 26:3, 841-852.

OVERALL COSTS OF DEFENSIVE MEDICINE

To estimate the global costs of defensive medicine in Oregon, we applied the best studies' estimates about the fraction of health care expenditures attributable to defensive medicine in various spending categories to health expenditure data for Oregon, broken out by comparable categories. Overall, we estimate that annually, approximately $650 million in healthcare spending – or about 2.6% of total spending – may be attributable to defensive medicine in Oregon, with just under half that ($310 million) through public programs and the remainder from private payers (Exhibit 1). Of the share of spending through public programs, the vast majority is Federal spending through Medicare and the Federal share of CHIP and Medicaid; Oregon's share of Medicaid and SCHIP accounts for about **$30 million.**

Exhibit 1. Defensive Medicine in Oregon: Estimated Total Costs and State Share

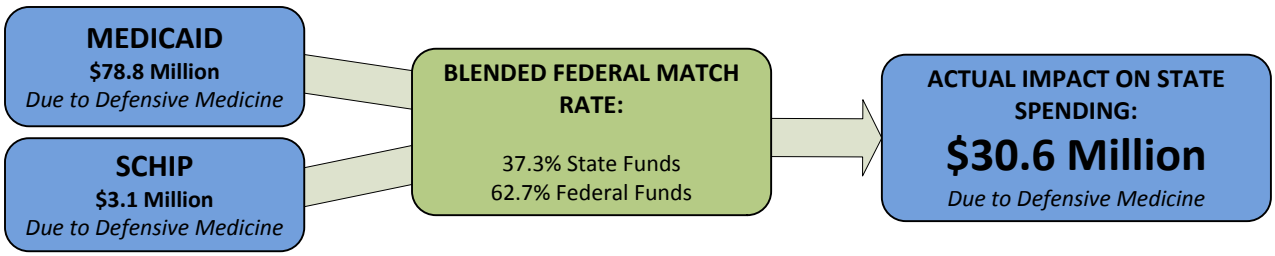


*"Other public" includes Department of Defense and Veterans Affairs spending, along with some smaller programs.
**"Private Coverage" includes ESI & individual market coverage. "Other Private" includes all other private expenditures.

IMPACT ON OREGON BUDGET

Of the roughly half of health care spending (and defensive medicine) attributable to public programs, 46% is through the federally-funded Medicare program. Medicaid and CHIP are jointly financed by Oregon and the Federal government, with Oregon's share of the programs accounting for 37.3% of their total cost (Exhibit 2)[6]. Thus, defensive medicine accounts for $30.6 million spent by the state. Only reductions in this portion of defensive medicine could accrue to state budgets; the remainder would reduce federal and private health care spending.

Exhibit 2. Estimated Costs of Defensive Medicine for Oregon's State Healthcare Budget

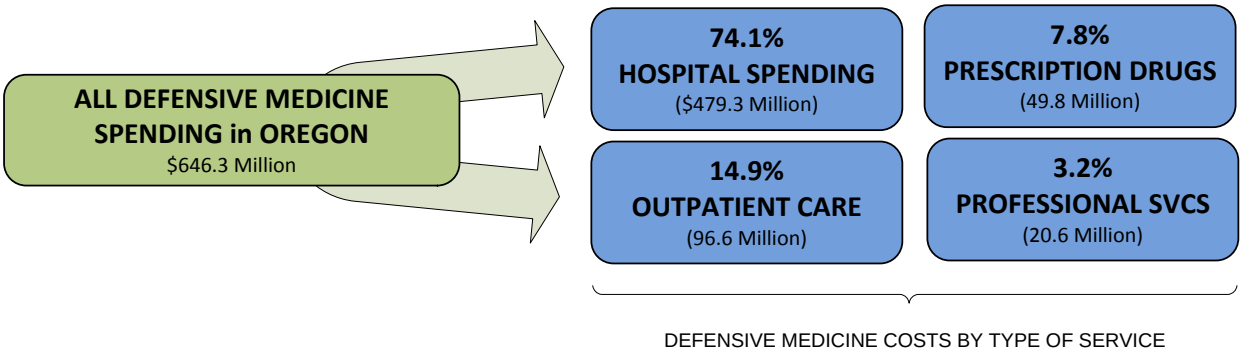


[6] We used Oregon's blended match rate for Medicaid and CHIP for this calculation. Oregon's share of program costs is actually lower under the ARRA, which increased the federal share of Medicaid and CHIP to 72.87% and 73.92%, respectively.

COSTS BY SERVICE TYPE

Different types of health care services are likely to be driven by defensive medicine to different degrees: the literature suggests, for example, that 5.4% of hospital expenditures are attributable to defensive medicine, compared to 1.4% of outpatient expenditures. To better understand *where* defensive medicine costs occur in Oregon, we computed total defensive medicine costs in Oregon within each of four major types of services, then computed the total share of defensive medicine spending accounted for by each service type (Exhibit 3). The mix of spending by payer and across types of service in Oregon is not substantially different from national averages.

Exhibit 3. Distribution of Defensive Medicine Spending in Oregon across Four Service Types



By applying the best available estimates of fractional costs attributable to defensive medicine within distinct categories of health care expenditures, we were also able to break down defensive medicine costs within each type of service separately for private spending and for public programs like Medicare, Medicaid, SCHIP, and other programs (Exhibit 4).

Exhibit 4. Estimated Costs of Defensive Medicine in Oregon by Service Type
All figures in millions of 2010 dollars

		Public Share				Private Share	
	Total	Medicare	Medicaid	SCHIP	Other	Private Insurance	Other Private $
Service Type							
Hospital Care	**8,876.7**	**2,363.2**	**1,267.2**	**40.8**	**1,015.7**	**3,465.0**	**724.9**
--Defensive Med Share (5.40%)	*479.3*	*127.6*	*68.4*	*2.2*	*54.8*	*187.1*	*39.1*
Outpatient Care	**6,946.5**	**1324.0**	**470.9**	**41.9**	**545.4**	**3,434.5**	**1,129.9**
--Defensive Med Share (1.39%)	*96.6*	*18.4*	*6.5*	*0.6*	*7.6*	*47.7*	*15.7*
Professional Services	**1,040.0**	**177.9**	**89.8**	**2.7**	**33.0**	**392.9**	**343.6**
--Defensive Med Share (1.98%)	*20.6*	*3.5*	*1.8*	*0.1*	*0.7*	*7.8*	*6.8*
Prescription Drugs	**2,513.3**	**649.6**	**102.4**	**15.3**	**120.9**	**1,092.0**	**533.0**
--Defensive Med Share (1.98%)	*49.8*	*12.9*	*2.0*	*0.3*	*2.4*	*21.6*	*10.6*
Other Types of Spending*	**5,272.0**	**632.1**	**1,746.9**	**15.7**	**482.9**	**347.5**	**2,046.9**
*--Defensive Med Share**	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total Spending	**24,648.5**	**5,146.9**	**3,677.1**	**116.3**	**2,197.9**	**8,731.9**	**4,778.4**
--Def Med Share	646.3	162.4	78.8	3.1	65.5	264.2	72.2

*"Other types of spending" includes nursing home care, home health, and durable and non-durable equipment.

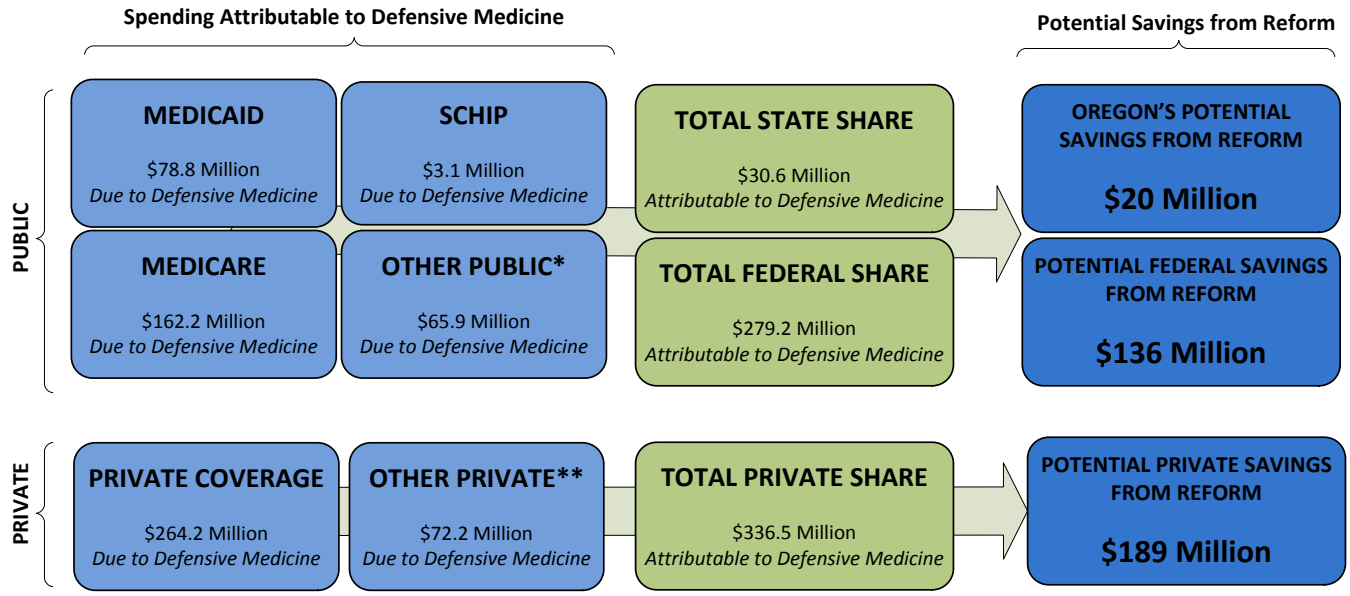
Note on Estimates for Prescription Drugs & Other Spending: There is little existing evidence on how responsive prescription drug spending and other types of spending are to malpractice pressures. We have assumed here that prescription drug spending is more closely related to hospital and outpatient spending, so have attributed the average share of those two to this category. The relationship between hospital/outpatient spending and other categories is less clear, so we have not attributed any share of them to defensive medicine. If we had assumed that there was no defensive medicine in drug use, our estimates would be $50 million lower, whereas if we had assumed that 1.98% of other spending was also attributable to defensive medicine our estimates would be $105 million higher.

WHAT DO WE KNOW ABOUT POTENTIAL SAVINGS FROM REFORM?

While many researchers have sought to identify the likely effects of changes to the malpractice liability system on the practice of defensive medicine – and on overall health care costs – such efforts are inherently subject to a great deal of uncertainty. Indeed, different studies produce very different estimates. Overall, the Congressional Budget Office's (CBO) current judgment about the association between tort reforms like damage caps and the use of health care services is that "the weight of the empirical evidence now demonstrates a link."[7]

The CBO has also estimated that direct reforms such as tort caps might decrease per-capita health spending by as much 1.4%, which would equate to an overall reduction of over **$300 million** in health care spending in Oregon. However, since most of this spending occurs through private insurers or Medicare, the state would realize a much smaller savings: an estimated **$20 million** (exhibit 5).

Exhibit 5. Likely Impacts of Reform on Healthcare Expenditures in Oregon



The best evidence on specific reforms is presented below:

NON-ECONOMIC DAMAGE CAPS:

Oregon already has some "direct" tort reforms, including a partial ban on punitive damages, no mandatory pre-judgment interest, and collateral source reform, but for the most part does not cap non-economic damages (a previously established $500,000 cap was ruled unconstitutional, but with several broad exceptions).

[7] Congressional Budget Office. Medical Malpractice Tort Limits and Health Care Spending; 2006.

The best known study on the potential impacts of damage caps used Medicare expenditure data and found that states with damage caps (and other "direct reforms") had 5.4% lower Medicare hospital payments.[8] However, the research is not uniform -- a more recent analysis of Medicare expenditures found that these reforms had no significant effect on hospital expenditures.[9] CBO (2007) analysis suggested that caps on non-economic damages could decrease overall spending per capita by 1.4%.

ATTORNEY FEE LIMITS:

Oregon does not currently have a statutory cap on attorney's fees. Overall, the existing evidence - including CBO estimates - does not support a relationship between fee limits and defensive medicine.

JOINT & SEVERAL LIABILITY REFORM:

Joint-and-several liability reforms increase physicians' liability relative to hospitals, so could in theory increase defensive medicine practice by physicians. However, the empirical evidence for this effect is tenuous. The CBO estimated that joint-and-several liability reform was associated with an increase in general and Medicare health care spending per capita, as well as hospital spending per capita. However, a second study found no such relationship.[10]

OTHER REFORMS:

There is little empirical evidence on the likely impacts of other reform options such as collateral source-rule reform, pre-trial screening periods, periodic payments, or statute of limitations reforms.

Exhibit 6. Summary of Oregon's Current Malpractice Environment

Statute of Limitations	Two years
Joint & Several Liability	Oregon has a limited form of JSL.
Non-Economic Damage Caps	A $500,000 cap was established by the legislature but ruled unconstitutional (with broad exceptions).
Statutory Cap on Attorney's Fees	No cap
Periodic Payments	OR does not require the periodic payment of future damages.
Collateral Source	Trial court can deduct from a verdict benefits received from third parties for the injury or death, but these cannot include life insurance or insurance benefits.
Pre-Judgment Interest	Not available in tort actions when damages cannot be easily ascertained until litigation.
Punitive Damages	Cannot be awarded against physicians and nurses, but can be awarded against hospitals.

COST ANALYSIS: FINAL CONCLUSIONS

Applying the best available estimates about the share of healthcare spending attributable to defensive medicine to Oregon expenditures data suggests that defensive medicine may drive a sizeable amount of spending—over $600 million; or 2.6% of annual healthcare spending in Oregon. However, the vast majority of that spending occurs through private insurers, Medicare, or other programs outside the state's budget – our estimate of the "impact" of defensive spending on Oregon's budget is around $30 million per year.

No package of reforms will reduce defensive medicine to zero, so this $30 million is best not seen as entirely "recapturable." The CBO estimates that a package of direct reforms such as damage caps might reduce expenditures; applying their estimates to Oregon data suggests around $20 million in potential savings to Oregon's budget. However, even this estimate may prove too high given that Oregon already has some direct reforms in place.

[8] Kessler D, McClellan M. Do Doctors Practice Defensive Medicine? Quarterly Journal of Economics 1996;111:353-90.

[9] Sloan FA, Shadle JH. Is There Empirical Evidence For "Defensive Medicine"? A Reassessment. Journal of Health Economics 2009;28:481-91.

[10] Hellinger FJ, Encinosa WE. The Impact of State Laws Limiting Malpractice Damage Awards on Health Care Expenditures. American Journal of Public Health 2006;96:1375-81.

Part 2.

Prevalance & Key Drivers of Defensive Medicine

KEY QUESTIONS

Defensive medicine can impact health care in two major ways: o*verutilization* and *avoidance. Overutilization (*sometimes called *"assurance behavior")* occurs when physicians supply services with no medical value because they are concerned about malpractice, resulting in increased costs to the system. *Avoidance* effects occur when physicians avoid taking on certain types of procedures or patients because of malpractice concerns, and can result in impeded access to certain types of care or for certain populations.[11]

We wanted to capture both the overutilization and avoidance effects of defensive medicine. Our approach was designed to answer three broad types of questions:

- How common is defensive medicine in Oregon?
- What are the key cost drivers around overutilization in Oregon?
- Among Oregon physicians, what specific factors act as the principle drivers of defensive practice?

OVERALL APPROACH

We used surveys of physicians to assess the prevalence and impacts of defensive medicine in Oregon. Other studies have used physician surveys for similar assessments outside of Oregon; where possible we replicated measures to provide comparability and a benchmark for physician experience in Oregon.

SAMPLING: We used physician licensing data to draw a representative random sample of 2,600 physicians from all practicing physicians in Oregon. Previous studies have done good work identifying the types of physicians most susceptible to defensive practice; we oversampled these high-risk specialties (including emergency medicine, OB/GYN, Radiology, Orthopedic surgery, and Neurological surgery). Blended results were then weighted back to reflect the actual distribution of specialties among practicing Oregon physicians.

MEASURES: We designed questions to capture four broad types of information:

- *Clinical decision making:* We asked a series of questions about physicians' clinical decision making, designed to directly assess potential overutilization and avoidance effects of defensive practice.
- *Malpractice vulnerability:* We asked physicians if they had been the subject of a malpractice claim, and also to assess their malpractice coverage along several dimensions.
- *Assessment of potential reforms:* We asked physicians to assess potential malpractice reforms.
- *Other information:* We assessed physicians' overall job satisfaction and other key descriptive information about their practice, including employment status, years practicing medicine, and practice setting characteristics.

RESPONSE RATES: After excluding retired, inactive, or non-Oregon resident physicians, we sent out 2,372 surveys and had received 1,182 back at the time of this report, a **50% response rate.**

[11] Studdert, Mello, et al 2010. Defensive Medicine Among High Risk Specialist Physicians in a Volatile Marketplace Environment. JAMA, 293:23, 2609-2617.

ASSESSING SURVEY SUBJECTIVITY & FRAMING EFFECTS

Surveys are often criticized as "subjective," and indeed, a broad methodological literature makes it clear that variations in wording, response options, question order, or the context within which questions are asked can affect responses.[12] The impact of context on survey responses is sometimes referred to as a "framing effect."

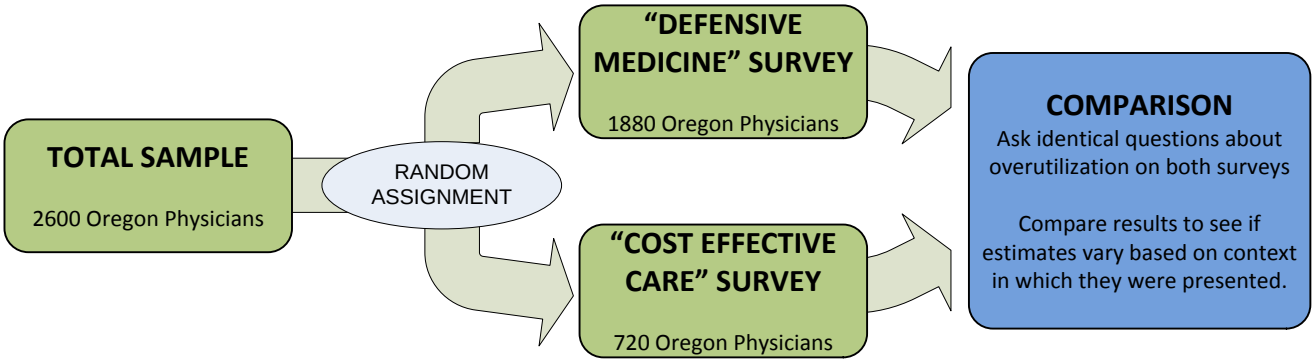
Although understanding the subjective concerns of physicians in regard to defensive medicine is a worthy goal in its own right, we were also interested in producing high-quality, reliable estimates on the prevalence of overutilization in Oregon. To assess how much subjectivity was introduced into our data by "framing" effects, we embedded an experimental design into our research wherein we asked multiple types of questions about overutilization and presented those questions within two distinct contexts:

- **A "Defensive Medicine" Survey:** Some physicians in our sample received a "defensive medicine" survey, and were asked to provide data on overutilization within the specific context of a survey about defensive medicine and medical liability concerns. This approach maps to that taken by several other national surveys of defensive medicine practice among physicians, providing comparable results for OR physicians.

- **A "Cost Effective Care" Survey:** Other physicians in our sample received a "cost effective health care" survey, and answered the same questions about overutilization in that more general context, without an explicit defensive medicine framing.

Within our sample of 2,600 physicians, we *randomized* which survey each individual physician received. Because of this randomization, any systematic differences in responses between the two groups of physicians should be attributable to the framing effects of the survey. Other possible explanations for different responses between the two groups (such as the particular characteristics of physicians and their practices) should be equally distributed across both groups.

Exhibit 7. Experimental Approach to Assessing Subjectivity and Framing Effects in Estimates of Overutilization



This approach essentially allowed us to assess the role subjectivity and framing effects play in our estimates of overutilization. If, on average, physicians report similar rates of overutilization across both versions of the survey, we gain greater confidence in the resulting estimates of overutilization in the Oregon health care system – there would be little reason to think, for example, that the salience of defensive medicine as an issue may have resulted in inflated estimates of overutilization. If, on the other hand, we see substantial differences in responses between the two survey versions, we gain some insight into how much uncertainty may be present in estimates of overutilization.

Our assessment of how framing effects impacted our overutilization estimates is presented on page 15. Copies of each survey form are available in the *Appendix.*

[12] Dillman, Smyth, & Christian 2009. Internet, mail, and mixed-mode surveys: the tailored design method. Hoboken, NJ: Wiley.

QUESTION #1:
HOW PREVALENT IS DEFENSIVE MEDICINE & OVERUTILIZATION IN OREGON?

We wanted to assess Oregon physicians' self-reported rates of defensive practice and overutilization along a number of common dimensions, then benchmark those results against similar surveys of non-Oregon physicians. We used two distinct approaches to determine the prevalence of defensive practice and overutilization among Oregon physicians.

- First, we asked physicians for *subjective assessments* of how often different types of defensive practice and overutilization occurred, and compared results to similar assessments from the literature.
- Second, we asked physicians to actually provide *counts* of specific types of over-utilization, computed rates of "non-necessary" care for each type, and compared those rates to findings from other literature.

FIRST APPROACH: SUBJECTIVE ASSESSMENTS OF DEFENSIVE PRACTICE

Our first approach was to select six general measures of defensive practice – four "overutilization" measures and two "avoidance" measures – common to the literature and ask respondents to tell us how often concerns about medical liability caused them to engage in each of the listed behaviors. We benchmarked Oregon results against findings from a similar survey of high-risk specialty physicians in PA.

These measures are subjective, in that they ask physicians to rank defensive practice along a continuum without anchoring the assessment to any objectively measurable events. However, they do provide a useful gauge of the overall incidence of defensive practice from physicians' perspective, as well as the opportunity to benchmark Oregon physicians' assessments against other national research (Exhibit 8, below).

Exhibit 8. Subjective Physician Assessments of Defensive Practice in Oregon
Percent of respondents who "sometimes" or "often" engage in the indicated behavior

	ALL Oregon Physicians (n=1182)	High-Risk Oregon Specialists* (n=562)	Comparison Study[13] (High-Risk Physicians in PA)
OVER-UTILIZATION			
--Order more tests than medically needed?	59%	67%	59%
--Prescribe more medications than needed?	32%	37%	33%
--Refer to specialists more often than needed?	45%	43%	52%
--Use invasive procedures more than needed?	19%	21%	32%
AVOIDANCE			
--Avoid conducting certain procedures?	34%	45%	32%
--Avoid caring for high risk patients?	25%	31%	39%
Percent who report engaging in at least some defensive practice	**94%**	**95%**	**92%**

*High risk specialties included emergency medicine, OB/GYN, Radiology, Orthopedic surgery, and Neurology.

Overall, we found that **94%** of Oregon physicians reported engaging in at least some defensive practice, compared to **92%** in our comparison study of PA physicians that used the same question set. According to OR physicians, the most common type of defensive practice was ordering more tests than medically needed (62% of physicians) or referring patients to specialists when it was not medically necessary to do so (48% of physicians). Avoidance effects (such as not caring for certain types of patients) were less common, though still fairly prevalent.

[13] Studdert, Mello, et al 2010. Defensive Medicine among High Risk Specialist Physicians in a Volatile Marketplace Environment. JAMA, 293:23, 2609-2617.

SECOND APPROACH: COUNTS OF OVERUTILIZATION

Our second approach to estimating overutilization was to ask physicians to actually count specific, measurable incidents of overutilization. To accomplish this, we reviewed the literature to find types of care that were most commonly identified with defensive practice, then asked physicians to tell us several things about each one:

- First, we asked physicians to actually count many of each procedure they ordered in their most recent full month of practice.
- Second, for each procedure, we asked physicians to tell us how many of those they ordered were not, in their best judgment, medically necessary.
- Finally, for each procedure, we computed the percentage of total orders that were not medically necessary according to the physicians who ordered them – an "overutilization" rate for each type of care.

We wanted to assess overutilization of specific procedures in Oregon and benchmark results against other studies, so we used methods comparable to a study of high-risk specialists in Massachusetts. While this approach is still based on physician self-report and does include subjective elements, it offers a key advantage over other approaches because it is underpinned by actual, countable events rather than an abstract continuum of choices about frequency.

GLOBAL OVERUTILIZATION RATE: In addition to understanding overutilization of each individual test, we computed a global "overutilization" summary score for each physician. This score represents the percentage of all orders in the last month (among the types we asked about) that were not, according to the physicians' own judgment, clinically necessary. We computed this rate by dividing the total number of "non-necessary" orders by the total number of orders across all the types listed in the table (Exhibit 9).

Exhibit 9. Physician Assessments of Overutilization in Oregon
Percent of Orders Deemed Unnecessary by the Ordering Physician

	ALL Oregon Physicians (n=1182)	Hi-Risk Oregon Specialists* (n=562)	Comparison Study[14] (High-Risk Physicians in MA)
X-Rays	15%	17%	22%
CT Scan	18%	21%	28%
MRI Studies	19%	20%	27%
Ultrasound Studies	14%	15%	24%
Lab Tests (CBC, Chem Profile)	14%	17%	18%
Specialist referrals	16%	16%	28%
Hospital admissions	8%	10%	13%
Global Overutilization Rate (% of all above orders that were not medically necessary)	**14%**	**16%**	**n/a**

*High risk specialties included emergency medicine, OB/GYN, Radiology, Orthopedic surgery, and Neurology.

We found that Oregon physicians generally reported less over-utilization than those in our comparison study of Massachusetts physicians, even when analysis is limited to comparable "high risk" specialist groups. However, overutilization of these procedures was still far from rare in Oregon: nearly one in five diagnostic tests and specialist visits, and one in ten hospital admissions, were not medically necessary according to the physicians who ordered them. Overall, **14%** of Oregon physicians' orders across these seven specific types of care were identified as not medically necessary by the physician who ordered them.

[14] Massachusetts Medical Society (2008). Investigation of defensive medicine in Massachusetts. Informational report I-08. Waltham: MSS. Accessed 12-12-2011, available at: http://www.massmed.org/AM/Template.cfm?Section=Research_Reports_and_Studies2&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=27797.)

MINI-EXPERIMENT TO ASSESS SUBJECTIVITY IN RESPONSES

Given the subjectivity inherent in survey data and the salience of defensive medicine as an issue, we were concerned about the limitations of survey data to produce accurate prevalence estimates of defensive medicine in Oregon. To test the degree of subjectivity in our data, we embedded an experimental design into our study, asking identical questions about overutilization of health care services within two distinct contexts:

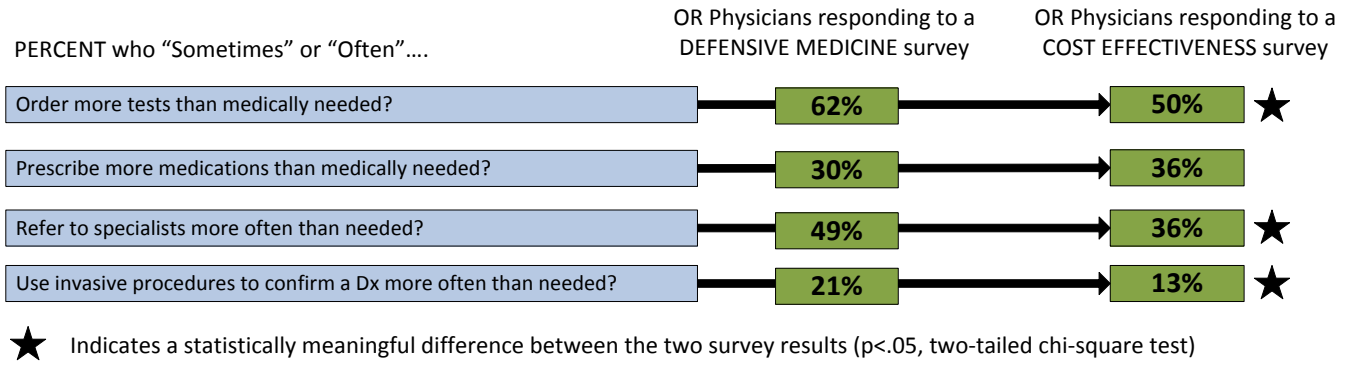
- One group of randomly selected physicians received a "defensive medicine" survey, and were asked to provide data on overutilization within the specific context of defensive medicine and medical liability concerns. Physicians were specifically asked about how often "concerns about medical liability" caused them to engage in specific behaviors.

- A second random subset of physicians received a "cost effective care" survey, and answered questions about overutilization in that more general context, without a defensive medicine framing. Physicians were asked how often they engaged in the same set of behaviors, but medical liability concerns were not specifically mentioned.

FIRST APPROACH: SUBJECTIVE ASSESSMENTS

When we asked physicians to subjectively rate how often different overutilization behaviors occurred using a non-anchored scale (with responses of never, rarely, sometimes, or often), we found significant framing effects: physicians responding to our defensive medicine survey reported different rates of overutilization than physicians responding to a cost effective care survey on three of four measures (Exhibit 10).

Exhibit 10. Subjective Estimates of Overutilization from Two Different Surveys



This method of assessing the prevalence of defensive medicine was almost certainly subject to framing effects, with results varying significantly depending on the context within which overutilization was being assessed. It is important to note that neither estimate should be viewed as a "better" measure of actual overutilization - there is no objective, observable standard by which to choose one set of estimates over the other. In that light, these results are perhaps best viewed as a range of potential estimates about the prevalence of overutilization in Oregon.

SECOND APPROACH: SUBJECTIVE ASSESSMENTS

Our second approach to estimating overutilization was more successful in avoiding framing effects. In this approach, we asked physicians to produce actual *counts* of overutilization. By anchoring responses against countable events rather than a subjective rating system, we hoped to reduce the influence of framing effects and produce estimates of overutilization that were more reliable regardless of context. And indeed, our second approach yielded estimates of overutilization that were comparable regardless of which survey a physician filled out (Exhibit 11).

Exhibit 11. Count-based Estimates of Overutilization from Two Different Physician Surveys

TYPE OF PROCEDURE	PERCENT OF TOTAL ORDERS DEEMED UNNECESSARY BY THE ORDERING PHYSICIAN: OR Physicians on a COST EFFECTIVENESS survey	OR Physicians on a DEFENSIVE MEDICINE survey
X-Rays	15%	15%
CT Scans	15%	19%
MRI Studies	19%	20%
Ultrasound studies	14%	15%
Laboratory Tests (CBC, Chem profile, etc)	14%	14%
Specialist referrals or consults	13%	17%
Hospital admissions	7%	8%
GLOBAL OVERUTILIZATION RATE (includes all of the above)	14%	14%

★ Differences in results were not statistically significant (p<.05, two-tailed chi-square tests)

Given that we found significant framing effects in our first set of measures, we are reasonably confident that our experiment was sensitive to capturing such effects. The fact that we did not find similar effects in the count based measures, then, suggests that such an approach may produce good, stable estimates of overutilization that are relatively free from subjectivity and framing effects -- at least to the extent possible for any survey-based measure.

FINAL ESTIMATES OF OVERUTILIZATION DUE TO DEFENSIVE PRACTICE IN OREGON

We recommend using the count-based results from our defensive medicine survey as the final estimates of overutilization in Oregon. Although these data only capture overutilization within seven specific types of health care, they speak directly to overutilization due to medical liability concerns and offered reliable estimates even when presented to physicians in a context free of the defensive medicine issue.

Overall, we estimate that, across the seven categories of care for which we were able to attain estimates, **14% of physician orders are for care that was not medically necessary**. These estimates may not capture *all* overutilization in Oregon – we were unable to estimate overutilization of prescription medications using the count-based method, for example – but they do cover the care most often identified as susceptible to defensive practice in existing studies.

Exhibit 12. Final Estimates of Overutilization due to Defensive Medicine in Oregon
Percent of Orders Deemed Unnecessary by the Ordering Physician

X-Rays	15%	Laboratory Tests (CBC, Chem profile, etc)	14%
CT Scans	19%	Specialist referrals or consults	17%
MRI Studies	20%	Hospital admissions	8%
Ultrasound studies	15%	**GLOBAL OVERUTILIZATION RATE**	14%

QUESTION #2:
WHAT ARE THE KEY DRIVERS OF OVERUTILIZATION COSTS?

We estimated the overall costs of defensive medicine in our analysis of expenditures data, finding that **$646 million** in total expenditures (**$31 million** in actual state spending) were attributable to defensive medicine. However, we wanted to assess the financial impacts of over-utilization within specific types of care, so we used our survey results to independently produce estimates of costs associated with each type of overutilization. To accomplish this, we:

- Used our survey results (on a representative sample of actively practicing Oregon physicians) to estimate the total number of each procedure ordered annually by practicing physicians in Oregon;
- Used MEPS (Medical Expenditure Panel Study) data to estimate the average cost of each event; [15]
- Multiplied the number of orders times the average cost to approximate total spending within that category;
- Applied our final overutilization estimates to these cost numbers to estimate the total number of dollars spent annually on procedures and tests deemed medically unnecessary by the ordering physicians.

We had two goals with this approach. First, we wanted to understand which types of overutilization were driving most of the costs of unnecessary care. Second, we hoped that applying an independent method of estimating the total costs of overutilization would yield results that could substantiate those from our analysis of expenditures data. Results are summarized in Exhibit 13, below.

Exhibit 13. Estimated Costs of Overutilization by Type of Healthcare Service

	% of Orders Not Necessary	Est. Annual Orders*	Average Per-Unit Cost **	Financial Impact of Overutilization (in millions)	Percent of Overutilization Costs
X-Rays	15.1%	2,906,492	$63	$27.8 M	4%
CT Scan	19.1%	919,337	$243	$42.6 M	6%
MRI Studies	19.5%	486,410	$506	$48.0 M	6%
Ultrasound Studies	15.1%	1,094,506	$137	$22.6 M	3%
Lab Tests (CBC, Chem Profile)	13.9%	11,222,475	$16	$24.5 M	3%
Specialist referrals	17.2%	1,598,159	$99	$27.3 M	4%
Hospital admissions (short stay)	8.2%	1,034,762	$6,479	$552.7M	74%
TOTAL COSTS				**$745.6M**	**100%**

* Computed based on physician reporting of number of orders on our survey, with results weighted to represent all active OR physicians.
** We used Oregon's APAC database and national MEPS data[15] to estimate the average cost of procedures. For hospital stays, we assumed that "unnecessary" hospitalizations would be relatively short, and used the MEPS average cost for shorter stays (1-2 days) rather than applying the average cost for ALL hospitalizations regardless of length of stay.

LIMITATIONS OF OUR SURVEY-BASED APPROACH TO ESTIMATING COSTS

Using survey data to estimate costs in this way relies on certain assumptions and bears with it certain limitations. Most importantly, we had to estimate the average cost of hospital care for "unnecessary" hospitalizations. Because there is no objective way to capture the cost of an "unnecessary" admission, we had to select a "best available" estimate for these costs. An overall average of hospital stay costs would include the sort of very long, high-cost stays that drive up an average, but are probably unlikely to result from an unnecessary admission. Therefore, we assumed unnecessary hospital admissions tended to result in short stays and used the average cost for short (1-2 day) stays from the most recently available MEPS (Medical Expenditure Panel Survey) data. The overall average cost of stay for all hospital admissions is considerably higher and would result in much larger cost estimates.

[15] MEPS is a large-scale ongoing survey of families, individuals, providers, and employers across the United States designed to capture complete data on health care utilization and costs. Data are available http://meps.ahrq.gov/mepsweb/index.jsp

A second limitation of using survey data to estimate costs is that we have to rely on point estimates from survey responses to get an overutilization rate for each type of service. In addition to the potentially subjective nature of such responses, all point estimates produced by surveys have margins of error around them -- thus, for example, the "true" number for unnecessary hospital admissions may be somewhat lower or higher than the 8.2% indicated on our survey. Particularly with high-cost items like hospital admissions, even relatively small changes within the survey's margin of error can result in substantially different cost numbers.

KEY COST DRIVERS

With these limitations in mind, we found that, based on what physicians told us in our survey, **unnecessary hospital admissions** were responsible for **74%** of estimated total overutilization costs across these categories of health care. Various types of diagnostic imaging accounted for another 19% of total costs, while excess laboratory testing and specialist referrals represented only a relatively small fraction of overutilization costs. This finding is broadly consistent with the results of our analysis of expenditures data (page 8), which found that 74% of the costs attributable to defensive medicine occurred in hospitals. Taken together, these findings suggest that reform focused on preventing unnecessary hospital care may have the greatest potential to make significant cost impacts.

COMPARING ESTIMATES OF OVERUTILIZATION COSTS

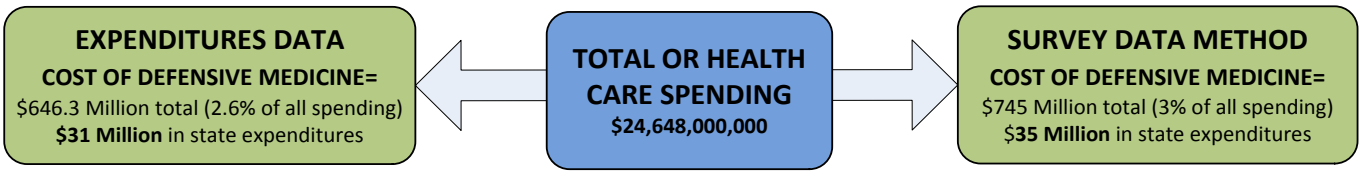
We ultimately approached estimating the costs of overutilization in two ways:

- First, we took the best estimates from the economics literature about the fractional costs of various types of care attributable to defensive medicine and applied them to Oregon-specific expenditures data (page 7).
- Second, we used survey data to estimate total orders and unnecessary utilization among seven of the most common types of overutilization, applied data on the average costs of that care, and estimated the total "cost" associated with overutilization within each type of care (page 17).

The two methods should not necessarily be directly comparable, since they rely on fundamentally different approaches, categorize costs into different bins, and don't always include the same types of things. For example, while our survey estimates include most of the biggest "bins" of overutilization identified in previous research, we were unable to estimate the costs of prescription drug overutilization; the expenditures data did apply some estimates of overutilization to prescription drug spending.

Despite this, however, it is broadly reassuring that the estimates produced via the two methods are roughly comparable (Exhibit 14) – within one-half of one percent as a fraction of total healthcare spending in Oregon. We would recommend using the expenditures data as the "official" cost estimate, while the survey estimates are perhaps more useful as a means to understand the distribution of defensive medicine costs across specific types of care.

Exhibit 14. Estimates of Defensive Medicine & Overutilization Costs using Two Distinct Methods



FINAL PREVALENCE AND COST ESTIMATES OF OVERUTILIZATION

Because their prevalence and cost estimates are so similar, we recommend combining our four distinct imaging components into a single item to create a more parsimonious picture of overutilization and associated costs. By combining our prevalence and cost estimates, we are able to produce the following "snapshot" of the degree of utilization associated with defensive practice in Oregon and the costs associated with that overutilization (Exhibit 15).

Exhibit 15. Final Estimates of Overutilization Rates & Associated Costs

Type of Service	Overutilization Rate	Associated Costs	Percent of Associated Costs
Imaging (X-Rays, CT scans, MRI, Ultrasounds)	16.2%	$141.0 M	19%
Laboratory Tests (CBC, Chem profile, etc)	13.9%	$24.5 M	3%
Specialist referrals or consults	17.2%	$27.3 M	4%
Hospital admissions	8.2%	$552.7 M	74%
TOTAL OVERUTILIZATION & COSTS	**13.9%**	**$745.6 M**	**100%**

These estimates represent the best data we can produce with our survey-based approach to estimating overutilization and associated costs.

QUALITY OF ESTIMATES

Prevalence: A common critique of survey-based attempts to measure defensive medicine effects is that rates of overutilization may be over reported because of subjectivity and framing effects. We took a "count based" approach to measuring overutilization and used an experimental design to calibrate our estimates against another survey that did not present the questions in a defensive medicine context. We did not see systematic variation between responses in the two surveys, giving us good confidence that we have produced reliable estimates of overutilization within the limits of a survey methodology.

Cost: Our cost estimates represent the best data we can produce given our approach, but there are several limitations that should be acknowledged. Most notably, we had to make some assumptions about what the average cost of care for an "unnecessary" hospital admission might look like. And second, the point-based prevalence estimates we used to compute the costs associated with unnecessary care are based on survey responses, and, like any survey response, they carry an inherent "margin of error." Variation in these responses, even within the survey's margin of error, can impact our estimates. However, we still believe they are useful as a general gauge of how the costs of defensive practice are allocated across different types of care.

QUESTION #3:
WHAT ARE THE KEY DRIVERS OF OVERUTILIZATION AMONG PHYSICIANS?

In addition to understanding the prevalence and cost of overutilization in Oregon, we wanted to understand what types of factors were statistically associated with high rates of over-ordering among physicians. We took two approaches to answering this question.

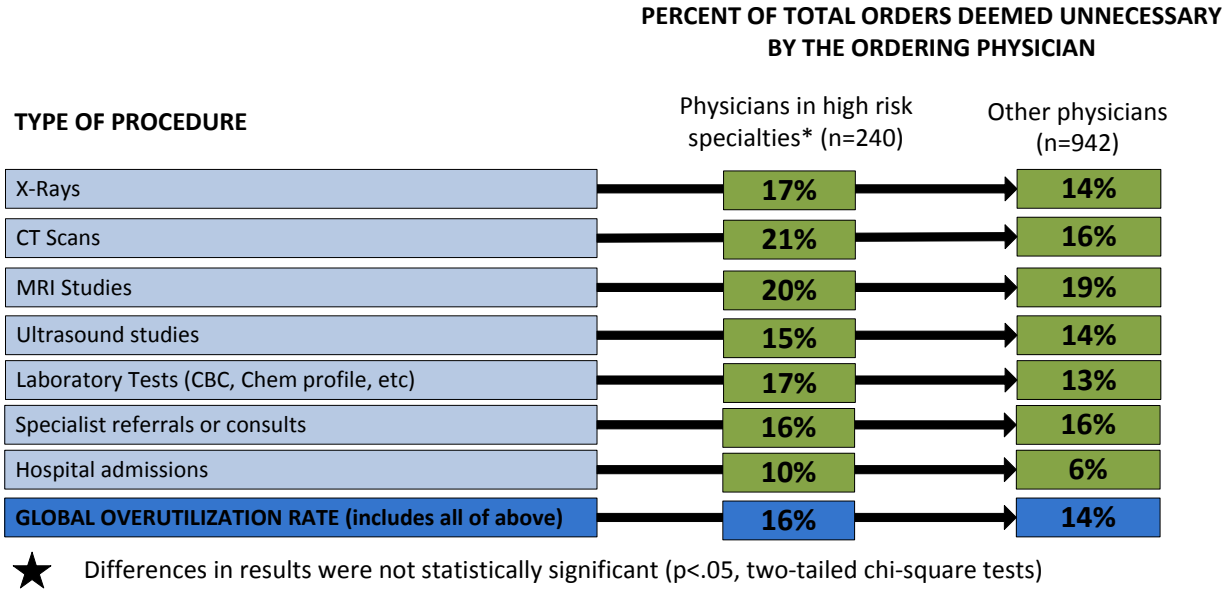
- First, we examined the relationship between various physician or practice characteristics and our measures of overutilization. We wanted to understand whether there were clear patterns of overutilization, perhaps representing a greater susceptibility or sensitivity to defensive practice among certain types of physicians.

- Second, we used m*ultivariate regression analysis* to understand the statistical relationship between physician and practice characteristics and defensive medicine. This method allows us to understand which specific characteristics best predict whether physicians engage in defensive practice while controlling for the influence of other factors.

PHYSICIAN SPECIALTY & OVERUTILIZATION

The existing literature on defensive medicine has largely focused on a relatively small number of high-risk specialties, including emergency medicine physicians, OB/GYNs, Radiologists, Orthopedic surgeons, and Neurological surgeons. We compared rate of overutilization among physicians within those high risk specialties to other physicians, but did not observe statistically meaningful differences in defensive practice (Exhibit 16).

Exhibit 16. Comparative Overutilization among Physicians in High-Risk Specialties



* High risk specialties included emergency medicine, OB/GYN, Radiology, Orthopedic surgery, and Neurology.

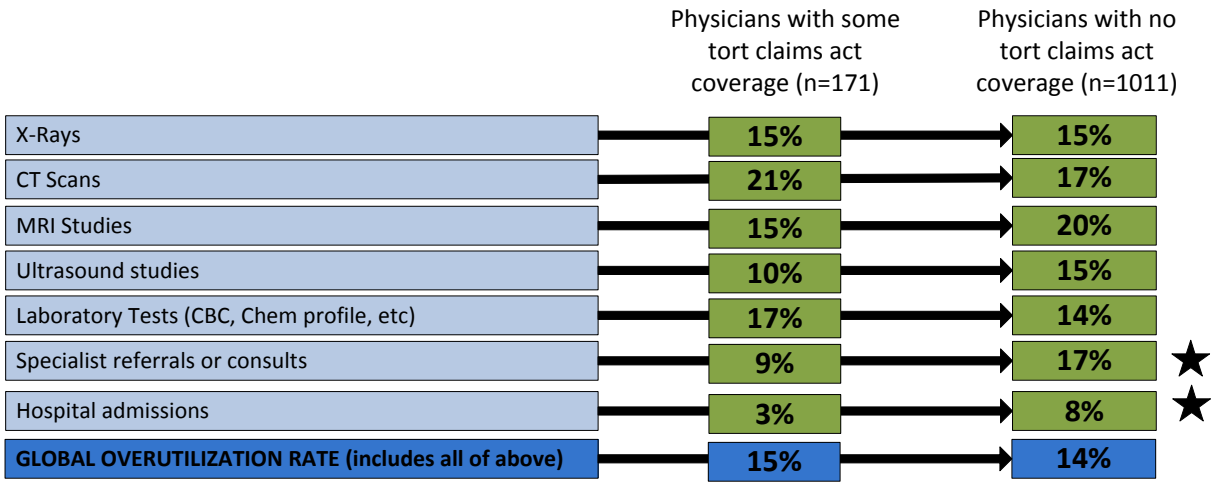
TORT CLAIMS ACT COVERAGE & OVERUTILIZATION

We wanted to assess whether physicians subject to the tort claims act had different overutilization rates than those who were not. We had no perfect way to test this idea. The closest proxy available to us was to identify physicians whose primary practice setting included some tort claims coverage (essentially, affiliations with OHSU and the VA) and compared their overutilization rates to those of physicians in other settings.

We did find some differences in overutilization among physicians practicing in settings with tort claims coverage – a markedly reduced tendency to order unnecessary specialist referrals and hospital admissions. This propensity did not carry over to the use of diagnostic imaging or lab tests (Exhibit 17).

Significant caution should be taken in interpreting this data: since the number of settings with tort claims coverage is limited to, essentially, two institutions, results could represent *place effects* -- something specific about working at those institutions – rather than reflecting a specific effect of tort claims coverage. Given that unnecessary hospital admissions drove nearly 3/4 of defensive medicine costs in Oregon, additional work in this area may be warranted. However, we would recommend development of a new study that is more deliberately designed to isolate the effects of tort claims act coverage.

Exhibit 17. Overutilization Among Physicians With and Without Tort Claims Act Coverage

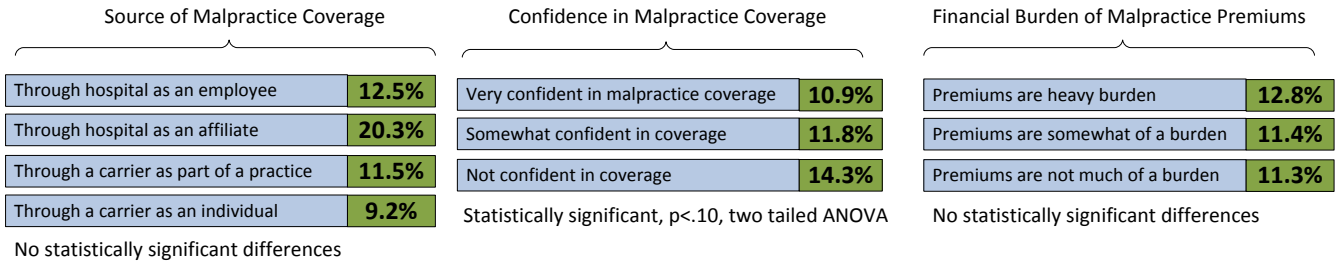


★ Indicates a statistically meaningful difference between the two survey results (p<.05, two-tailed chi-square test)

MALPRACTICE COVERAGE & OVERUTILIZATION

We wanted to know whether the characteristics of physicians' malpractice coverage were associated with their overutilization rates. In each case, we looked at whether our global overutilization measure (the percent of all orders that were deemed medically unnecessary) varied significantly according to characteristics of a physciians' malpractice coverage. We found little evidence of large differences, though there was a moderately significant association between physicians' confidence in their malpractice coverage and their overutilization rates (Exhibit 18).

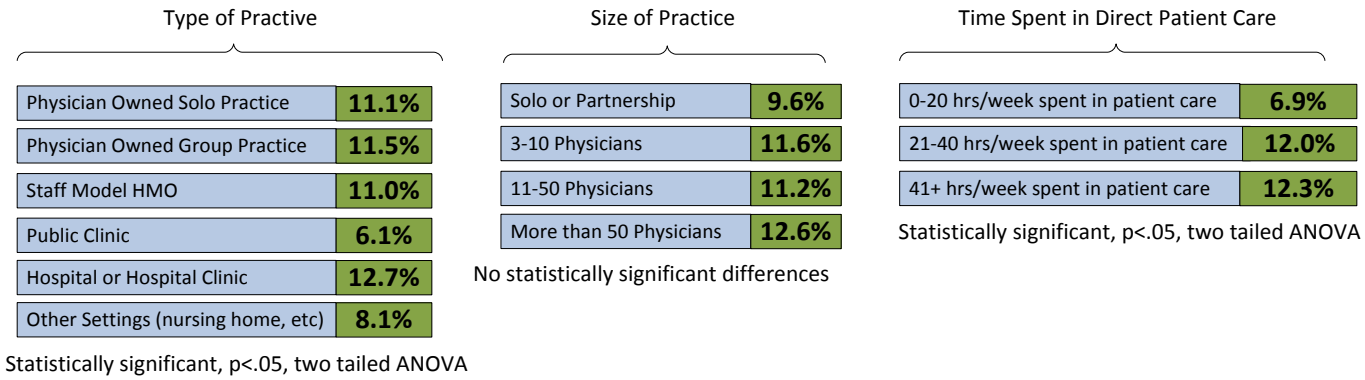
Exhibit 18. Rates of Overutilization by Malpractice Coverage Characteristics
Scores represent the percent of all orders deemed medically unnecessary by the ordering physician



PRACTICE CHARACTERISTICS & OVER-UTILIZATION

We wanted to assess whether characteristics of a physicians' practice environment might be associated with rates of overutilization. We found that overutilization did vary significantly by type of practice, with physicians in hospitals most likely to overutilize and physicians at public safety net clinics reporting the *lowest* rates of overutilization. We also found that physicians who spend less time in direct patient care also reported lower rates of overutilization (Exhibit 19).

Exhibit 19. Rates of Overutilization by Malpractice Coverage Characteristics
Scores represent the percent of all orders deemed medically unnecessary by the ordering physician

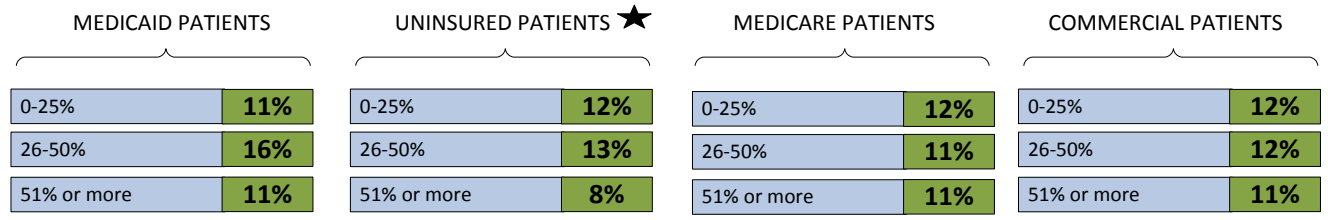


PATIENT INSURANCE & OVERUTILIZATION

We wanted to know whether the insurance makeup of a physicians' patient load was associated with his or her overutilization rates. To determine this, we asked physicians to estimate the approximate mix of their cases across four major types of insurance – commercial, Medicare, Medicaid, and other – as well as the percent of patients in their practice who were uninsured. We then examined variation in our global overutilization score (representing overutilization across all types of care we measured) by the mix of patients' insurance types to assess whether patient insurance had any impact on overutilization. If physicians tended to, for example, practice more defensively with Medicaid or uninsured patients (perhaps because they perceived those patients as more litigious, or for some other reason) , we would expect to see more overutilization among physicians with a heavy load of those patients.

We found relatively little systematic variation in overutilization based on patient panel mix, with one key exception: uninsured patients. Physicians with a heavy load of uninsured patients reported *less* overutilization than physicians with fewer uninsured patients (Exhibit 20). This is consistent with our finding above (in exhibit 16) that physicians practicing in public safety net clinics reported the lowest rates of overutilization.

Exhibit 20. Overutilization by Patient Insurance Mix
Scores represent the percent of all orders deemed medically unnecessary by the ordering physician

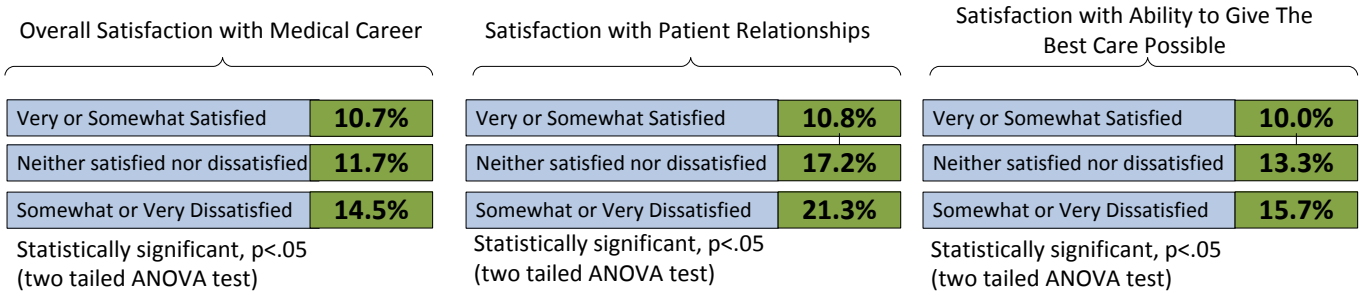


★ Indicates statistically significant variation in overutilization based on percent of patients of this type (p<.10, two tailed ANOVA)

PHYSICIAN SATISFACTION & OVERUTILIZATION

We also examined the relationship between physician job satisfaction and defensive practice, and found a significant relationship between overutilization rates and career satisfaction among OR physicians. Doctors who tended to report high rates of overutilization also tended to report lower career satisfaction (Exhibit 21).

Exhibit 21. Overutilization & Physician Career Satisfaction
Scores represent the percent of all orders deemed medically unnecessary by the ordering physician



MULTIVARIATE ANALYSIS: PREDICTORS OF DEFENSIVE PRACTICE AMONG OREGON PHYSICIANS

We wanted to determine which factors were the most strongly associated with defensive practice in Oregon. To accomplish this, we classified physicians into two categories – those who reported any overutilization due to medical liability concerns and those reported none (using our count-based approach). We then used **logistic regression analysis** to construct a multivariate model identifying the factors that best predict with whether or not a physician engaged in defensive medicine.

POTENTIAL PREDICTORS OF DEFENSIVE PRACTICE: We tested a wide variety of factors for inclusion in our statistical model, including membership in a high risk specialty, percent of patients with Medicaid insurance, whether the physician has ever been named in a malpractice suit, the physicians' level of confidence in their liability insurance, the physicians' perceived financial burden of their liability insurance, the source of a physician's the primary layer of liability insurance, years in practice, hours per week involved in direct patient care, type of primary practice setting, employment status at primary practice, size of primary practice, number of patients seen per week, and career satisfaction.

At least one key potential driver of overutilization is not accounted for in our models: the malpractice environment. Because all physicians in our sample live in Oregon, they are subject to the same general malpractice environment.

MODEL BUILDING: Each variable was tested in univariate logistic regression model as an independent variable predicting defensive practice, and were subsequently considered for inclusion in a multivariate regression if the univariate models were considered significant with a p-value less than 0.10. The univariate predictors that reached this threshold of significance were history of malpractice suits, confidence in liability insurance, financial burden of liability insurance, source of the primary layer of liability insurance, years in practice, hours per week involved in direct patient care, primary practice setting, employment status at primary practice, size of primary practice, and number of patients seen per week.

Using these variables as a starting point, we created a multivariate logistic regression model predicting defensive medicine practice. Variables that were not significant in the multivariate model were iteratively removed until only variables with significant predictive power with a p-value less than 0.10 were included. A model was also created using an information-based stepwise model selection algorithm that confirmed the results of this process. A final stepwise model selection was carried out to identify the specific categorical responses to the survey questions included in the model best predicting defensive medicine practice, and these were used to set the baseline and measured effects in the model. The resulting model represents the factors that best predict defensive practice among Oregon physicians:

Exhibit 22. Predictors of Defensive Medicine Practice among Oregon Physicians
Results of Multivariate Logistic Regression Analysis

	Value	Odds Ratio	Confidence Interval	P-Value
Baseline (Intercept)	-	4.0188	2.05-7.89	0.0000
Financial Burden of Liability Insurance Premiums	Little to None	referent	-	-
	Some or More	2.2192	1.28-3.86	0.0047
Patients Seen Per Week	0-50	referent	-	-
	51+	1.9775	1.18-3.33	0.0103
Source of Primary Liability Insurance	Hospital or Practice	referent	-	-
	Purchased Individually	0.3476	0.17-0.70	0.0034
Years in Practice	0-5	referent	-	-
	6+	0.4903	0.24-0.99	0.0495

INTERPRETATION: We found that four distinct factors predict defensive practice in OR physicians:

- **Financial Burden of Malpractice Premiums:** Physicians whose premiums are burdensome to pay were ***12% more*** likely (OR=2.22, p=.005) to engage in defensive practice than baseline physicians who did not find their premiums burdensome.
- **Patient Workload:** Physicians who saw 50 or more patients per week were ***10% more likely*** (OR=1.98, p=.010) to engage in defensive practice than baseline physicians who saw fewer patients per week.
- **Source of Liability Insurance:** Physicians who purchased their liability insurance individually were ***22% less*** likely (OR=0.35, p=0.003) to engage in defensive practice than baseline physicians whose insurance was through a hospital or practice.
- **Years of Practice:** Physicians who had 6+ years in practice were ***14% less*** likely (OR=0.49, p=0.049) to engage in defensive practice than baseline physicians who had been in practice for 5 or less years.

QUESTION #4:
WHAT TYPES OF REFORMS DO PHYSICIANS THINK WILL WORK?

We wanted to capture Oregon physicians' assessments of how likely different malpractice reform options were to reduce the role malpractice concerns play in their clinical decision making. To accomplish this, we included some questions about potential reform options in our *defensive medicine* survey.

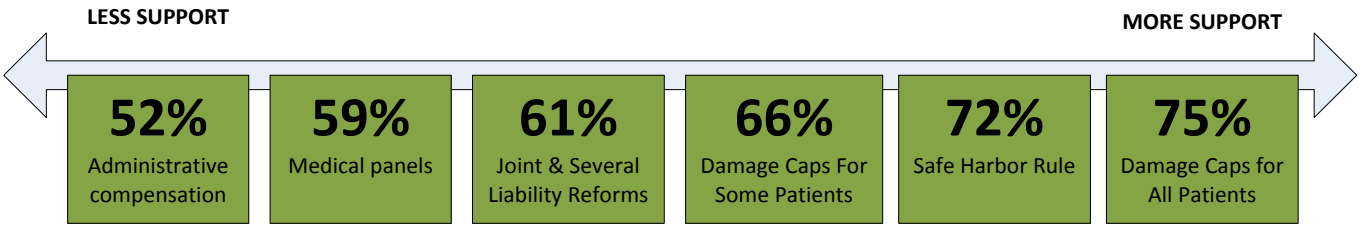
Because we were primarily interested in whether reform would impact defensive practice (as opposed to any other potential impacts of savings from reform), we asked physicians to tell us how likely it was that each of the following reform options would reduce the impact of medical liability on their clinical decision making:

- A safe harbor rule with medical guidelines as the standard of care
- Caps on medical liability across all types of patients
- Caps on medical liability for subsets types of patients (such as those enrolling in a CCO)
- Changes in how joint and several liability is handled
- Binding or non-binding medical panels
- An administrative compensation system

OVERALL PHYSICIAN SUPPORT FOR VARIOUS REFORM OPTIONS

Overall, we found the broadest support for damage caps and safe harbor rules. Physicians were less optimistic that medical panels or administrative compensation systems would reduce the impact of medical liability concerns on their decision making, though support for those options was still relatively high (Exhibit 23).

Exhibit 23. Physician Assessments of Various Reform Options
Percent Indicating that the reform would be somewhat or very likely to reduce medical liability concerns



VARIATION IN SUPPORT AMONG DIFFERENT TYPES OF PHYSICIANS

We found that physicians' reform preferences were not monolithic. We looked at statistically meaningful variation in support for reform along a wide range of physician characteristics, including:

- **PRACTICE CHARACTERISTICS** including type and location of practice, size of practice, insurance mix of patients, and whether the physician was an owner (or partial owner) of the practice;
- **PERSONAL CHARACTERISTICS,** including how long the physician had been practicing medicine;
- **PATIENT WORKLOAD,** including how many patients the physician sees in a typical week and how many hours per week he or she spends in direct patient care;
- **MALPRACTICE HISTORY,** including whether the physician has ever been named in a suit;
- **COVERAGE CHARACTERISTICS,** including how the physician gets their liability coverage and their assessment of how well their coverage protects them.

SAFE HARBOR LAWS

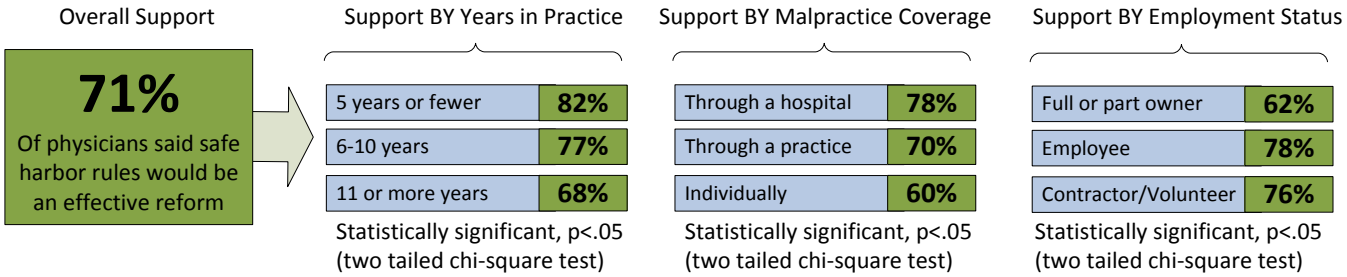
First, we explored physician support for safe harbor laws more deeply with a set of additional questions about the specific impacts on adherence to clinical guidelines and patient safety (Exhibit 24).

Exhibit 24. Physician Support for Safe Harbor Laws

How likely is it that a safe harbor rule with clinical guidelines as the standard of care would…	**Very Likely**	**Somewhat Likely**	**Not too Likely**	**Not at all Likely**
Reduce the impact of medical liability concerns on your clinical decision making? (n=793)	28%	44%	21%	7%
Increase your adherence to clinical guidelines? (n=785)	33%	49%	14%	6%
Result in improved patient safety due to better guideline adherence? (n=786)	24%	45%	24%	6%
Be an effective approach to medical liability reform? (n=784)	24%	47%	23%	5%

We then examined whether support for safe harbor laws varied according to the types of characteristics identified above. We did find an underlying pattern of variation: newer physicians and those who were employees or contractors were far more optimistic about safe harbor laws than more tenured physicians or those who were owners of their own practices (Exhibit 25).

Exhibit 25. Support for Safe Harbor Laws by Physician Employment Status



VARIATION IN SUPPORT FOR OTHER REFORMS

We explored variation in physician support for each of the reform ideas presented in our survey. Overall, support was high across the board for all potential reform options, and we found only a few consistent patterns of variation worth exploring further.

- **Malpractice Insurance:** Physicians' malpractice coverage was a key driver of support for all types of reform. For example, physicians with low confidence in their malpractice coverage were much more likely to report that damage caps would reduce the role of malpractice concerns in their clinical decisions (89%) than those with high confidence (68%). This Likewise, physicians whose premiums were seen as a heavy financial burden exhibited much higher levels of support for caps (91%) than those who did not feel their premiums were particularly burdensome (67%). These patterns held true across all potential types of reform.

- **Patient Workload:** Physicians who spent more of their time in direct care or who see more patients exhibited much stronger support for reform options than those who see fewer patients. For example, physicians who see 50 or more patients per week, 81% supported damage caps. Among physicians who see fewer than 50 patients in a typical week, support was lower (69%).

OTHER REFORM IDEAS

We presented a number of potential reform options to physicians, but we also wanted to hear about any other ideas they might have. Each survey included an open-ended question where physicians were asked to write a free-form response offering their best ideas

- On our **defensive medicine survey,** physicians were asked for their best ideas about how best to reduce the impact of medical liability concerns on their clinical decision making.
- On our **cost effective care** survey, physicians were asked a more general question about their best ideas for reducing unnecessary procedures, without medical liability concerns being specifically called out.

We loaded the verbatim text of these answers into a qualitative data analysis program and analyzed them to identify key patterns, themes, and common responses.

MEDICAL LIABILITY

When asked to offer "other" ideas on reforms that would reduce the impact of medical liability concerns, the majority of respondents simply underscored specific aspects of medical malpractice liability reform. The most prevalent suggestions were:

- Holding lawyers and plaintiffs accountable for lawsuits deemed frivolous (28%)
- Panels or professional juries in legal proceedings (22%)
- Tort Reform/caps on damages (13%)
- Liability Protection (5%)
- Using legally binding arbitration (3%)

A small percentage of respondents offered other suggestions unrelated to legal reform, including:

- Educating physicians on best practices to improve care (4%)
- Implementing a single payer system/universal healthcare (3%)

All other responses were too specific to be effectively categorized.

COST EFFECTIVE CARE

When respondents were given the "Cost Effective Care" version of the survey and simply asked to identify ideas to *reduce unnecessary procedures*, only 12% specifically mentioned malpractice liability reform. Instead, participants commonly offered the following suggestions unrelated to legal reform:

- Malpractice liability reform (12%)
- Building better relationships between doctors and patients (8%)
- Making the price of procedures more transparent (7%)
- Increased education for both doctors and patients on outcomes and best practices (7%)
- Reducing physician profit motives - i.e. doctors should not make referrals for tests on machines they own (7%)
- Better reimbursement (6%)
- Clearer, evidence based guidelines/standards of care (6%)

Part 3.

Recommendations for Monitoring Defensive Medicine

Since defensive medicine cannot be directly observed, monitoring the effects of any reforms will be challenging. Any reform agenda that seeks to impact defensive practice will necessarily have two major goals:

- Reduce the rate of medically unnecessary utilization; and
- Reduce the costs of care associated with unnecessary utilization.

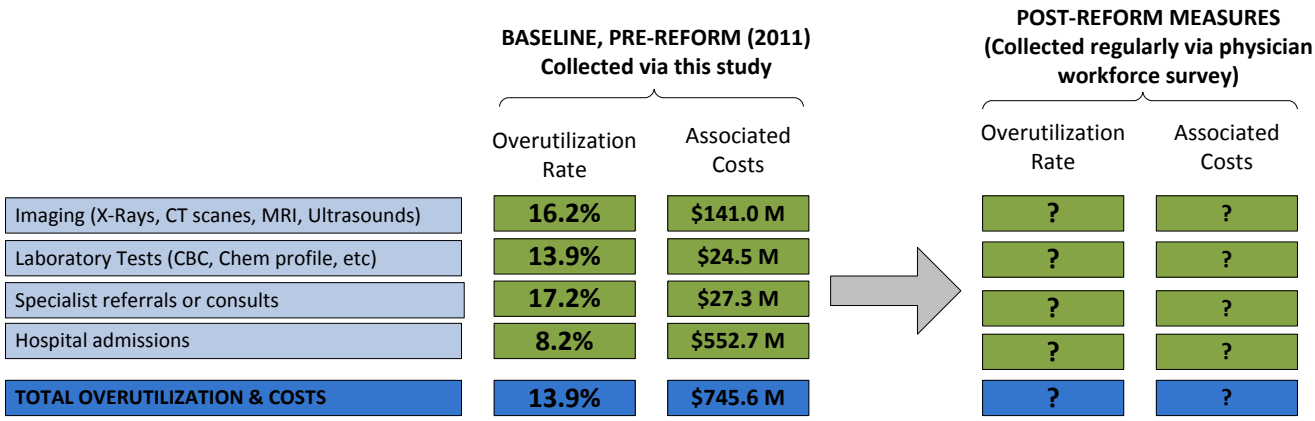
The best approach to monitoring the impacts of reform is to repeatedly measure these two outcomes as directly as possible over time, comparing changes to the baseline (pre-reform) data produced in this report.

RECOMMENDED APPROACH: COLLECT ONGOING DATA THROUGH PHYSICIAN WORKFORCE SURVEY

Of the approaches we employed in this report, survey data hold the most promise as a means to evaluate the impacts of malpractice reform on an ongoing basis. Using a count-based approach, this report identified seven specific types of overutilization and provided prevalence and cost estimates associated with each. Because this data was collected from a representative panel of active physicians and showed good reliability even when presented in different contexts, we recommend using our estimates of overutilization as a "baseline" against which future change can be measured.

We assessed overutilization of four types of diagnostic imaging distinctly, but each revealed roughly comparable levels of overutilization. A more parsimonious set of measures for ongoing evaluation might combine these into a single diagnostic imaging measure, then track overutilization and associated costs across four domains over time (Exhibit 26).

Exhibit 26. Framework for Monitoring Changes in Overutilization & Associated Costs Over Time



COLLECTING DATA: Rather than field a dedicated survey every year or two, we recommend that data on overutilization be collected as part of the existing *physician workforce survey.* The count-based approach to assessing overutilization (whereby respondents estimate their total number of orders within each category of service during a month, and then estimate how many of those orders were not medically necessary) yielded consistent answers without strong framing

effects. If four comparable questions were added to the physician workforce survey using the same approach as our survey, it would be possible to examine trends in overutilization over time and detect the effects of any reform package Oregon implements by comparing scores before and after the reforms.

COST ESTIMATES: Our approach to quantifying the "cost" of overutilization relies on using survey responses to estimate the percent of orders within each service category that are unnecessary, and then multiplying that number by the average cost of the services to yield the total overutilization expenditures associated with that type of service. Since costs of services change over time, it would be necessary (and relatively simple) to normalize costs by accounting for inflation when assessing changes in defensive medicine related expenditures over time.

We also used national MEPS (Medical Expenditure Panel Study) data to estimate the average cost of services. Better, more Oregon-specific data might come from Oregon's All Payer, All claims (APAC) database in future years, but the APAC data was not quite ready for analysis at the time of this report.

ADVANTAGES OF THE PROPOSED APPROACH

BEST AVAILABLE MEASURES: Although survey data are not perfect, there are no known ways to observe overutilization and "defensive practice" that offer a superior approach. Our analysis of claims/expenditures data is more objective, but cannot easily be repeated within the context of an ongoing evaluation: it relies on taking the best estimates from existing literature about how much healthcare spending within different categories may attributable to defensive medicine. Those estimates are themselves based on previous studies that examined variation in healthcare spending over time and across settings with different malpractice environments.

It is possible that total expenditures could be tracked before and after the implementation of reform to see if expected reductions in expenditures appear. However, with the health care system undergoing rapid change along many dimensions, it would be very difficult to confidently attribute any changes in expenditures to malpractice reform as opposed to, say, Medicaid expansions, the implementation of a health insurance exchange, or the adoption of a CCO-focused model of care. Survey measures, on the other hand, can directly assess overutilization of specific types of health care, and if the questions are asked correctly, seem to avoid significant survey framing effects. We were also able to use our survey data to produce cost estimates that were very similar to those drawn from our objective analysis of expenditures data.

GOOD PRE-POST MEASURES: A survey-based approach has the advantage of allowing for a true pre-post assessment, with the baseline results (from this report) compared to results from annual or semi-annual updates that occur after any implementation of malpractice reform.

INEXPENSIVE: Although good survey data can be expensive to collect, the state already has an existing survey of physicians it can leverage – the *Physician Workforce Survey.* If four questions comparable to those used in this project were added to that existing survey, data collection costs could be largely defrayed and it might be possible to evaluate changes in overutilization (and reductions in associated costs) quite inexpensively.

LIMITATIONS OF THE PROPOSED APPROACH

SUBJECTIVITY OF SURVEYS: Even though our "count-based" approach to estimating overutilization showed relatively limited susceptibility to framing effects, it is still based on self-reported data from physicians. If some physicians over-report defensive practice and others underreport it, the average estimate for the population can still be valid as long as there are no systematic patterns underlying those reporting tendencies. However, it is also possible that as a population, physicians tend to systematically misestimate how often they "over-order" certain tests in a direction that skews population-level results. Since the "true" rate of overutilization cannot be directly observed, there is no way to be completely certain that this doesn't happen. However, it is important to note that even if the baseline assessments we collected in this project are too high or low, an evaluation would be assessing *change* in those scores over time.

Conclusions

KEY TAKEAWAYS

We approached estimating the costs and prevalence of defensive medicine in Oregon using two distinct methods that yielded complementary results. Our surveys of Oregon physicians suggest that, within the most common categories of care usually associated with defensive practice, as many as **14% of physician orders may be medically unnecessary**. Our analysis of expenditures data suggests that an estimated **$650 million** in total costs of care may be attributable to defensive medicine statewide, though most of these costs flow through private insurers or federal payments; the Oregon state budget's share is about **$31 million.**

Our distinct approaches showed a high level of agreement in several areas. First, estimates of the total cost of defensive medicine produced independently by the two methods showed roughly comparable results – $650 million from the expenditures data analysis (2.6% of healthcare spending) compared to $745 million (3.0% of healthcare spending) for the survey-based estimates. Both analyses also agreed that **unnecessary care in hospital settings** is the most important driver of defensive medicine costs, accounting for 74% of costs associated with overutilization. With this in mind, reform aimed at preventing or reducing medically unnecessary hospital care stands the best chance of making significant cost impacts.

The costs of defensive medicine should probably not be seen as entirely "recapturable." Not all unnecessary care can be attributed to the malpractice environment, and no known malpractice reform scenario would reduce defensive medicine to zero. Applying the best available estimates on the likely savings of direct malpractice reforms (such as damage caps) to Oregon expenditures data suggests that such reforms might reduce total healthcare expenditures by **$345 million** across the entire Oregon economy. However, most of this reduction would be fall under federal or private expenditures – **direct savings to Oregon's budget would be an estimated $20 million.**

FURTHER QUESTIONS

The authors of this report are available to answer questions or respond to requests for additional analysis. Please contact Bill J Wright (bill.wright@providence.org; 503-215-7184) with any such requests.

Appendix

APPENDIX A: METHODOLOGICAL NOTES

Sample

Our survey sampling frame came from the Oregon Medical Association (OMA) and was made up of a list of all physicians licensed in Oregon (16,345 physicians total). We limited the sampling frame to only physicians who 1) have a medical or osteopathic license, 2) had a practice address in Oregon, and 3) had a mailing address of Oregon or an adjoining state. After these modifications, the sampling frame consisted of 10,847 physicians. The OMA reviewed this list and removed deceased physicians to create a final sampling frame of 10,818 physicians.

The remaining 10,818 physicians were coded into high-risk and non high-risk specialty groups based on their "board certification" specialties as reported by the OMA. Those flagged as high-risk included the specialties of: Emergency Medicine, General Surgery, Obstetrics/Gynecology, Radiology, Orthopedic Surgery, and Neurological Surgery. A simple random sample of 1,200 was drawn from the 8,293 physicians in the not high-risk group and an additional simple random sample of 1,200 was drawn from the 2,525 physicians from the high-risk specialty group.

We also identified physicians with a practice address of a VA hospital/center/clinic and any OHSU address, including affiliated clinics. Physicians with these practice addresses were flagged as our tort coverage group, which consisted of 1,305 of 10,818 physicians, 1050 of which were not in our initial sample. We drew an additional simple random sample of 200 from this subpopulation, bringing our total stratified sample to 2,600 physicians practicing in Oregon.

Weights were computed based on a study participants' probability of inclusion within their respective subsample. For the samples drawn from not-high risk and high-risk specialties these probabilities were 1200/8293 and 1200/2525 respectively. For the additional tort coverage group subsample the probabilities of inclusion were the probability of not being drawn in the initial sample, 7093/8293 and 1325/2525 above respectively, multiplied by the probability of being drawn in the second sample which was 200/1050. The weights were computed by taking the inverse of the final probability of inclusion in the sample (1/{probability of inclusion in sample}) and scaled to sum to the population size or sample size depending on the estimates required.

Survey Fielding and Outreach Protocol

Pre-Survey Communications: Before we began our survey mailings, we sent a blue postcard to alert our sample that they should expect a blue envelope in the mail containing our survey and compensation for their time. The postcard, along with all of our other outreach materials, was designed for our two different survey groups and contained slightly different language depending on which survey group the participant was in. Additionally, we included a brief project overview in the OMA monthly electronic newsletter that was circulated December 1st to encourage participation in the survey and again, alert participants to watch for a blue envelope in the mail.

Mail and Online Survey: The survey fielding and outreach portion of the study was carried out in a 5-week period. We mailed two waves of paper surveys to our sample. The first mailing contained twenty dollars compensation and was mailed the first week of December 2011. The final reminder survey was mailed to all non-respondents the third week of December and did not contain an incentive. At the same time that paper surveys were mailed, all respondents with email addresses in the OMA database were contacted by the OMA with a message to encourage participation and a link

to take the survey online. A final email with the online survey link was sent the first week in January 2012 to encourage any last responses.

Tracking and Outreach: Our tracking and outreach team is responsible for finding participants with bad contact info and for recruiting non-responders. Mail that was returned was sent to tracking to find an updated address. Beginning one week after the first survey mailing, our outreach team members contacted non-responders via phone, email, and fax. When appropriate, they sent online survey links through email and offered to complete the survey over the phone with the physician. They also spoke to clinic managers and physicians' assistants to clarify the project and answer and questions. The outreach team was directed to only seek work and professional contact information for physicians.

APPENDIX B: SURVEY FORMS

The Oregon
Medical Liability Survey

This survey has been commissioned by the *Oregon Health Authority* (OHA) to help policy makers understand how **concerns about medical liability** may impact physicians' clinical decision-making and job satisfaction. Results will be used to inform decisions about health reform in 2012, so your response is critically important.

The survey only takes a few minutes to complete, and results are completely confidential. We understand that your time is valuable. Enclosed, please find **$20** as **compensation for your time**. We will also provide a summary of the survey's findings to each physician who completes the survey.

If you have questions, please contact the study's lead investigator at 1-877-215-0686 or *bill.wright@providence.org.*

PART 1: YOUR SATISFACTION PRACTICING MEDICINE

These first questions help us understand how happy you are in your medical career.

1. Thinking very generally, how satisfied are you with your career in medicine?
   - ❑ Very satisfied
   - ❑ Satisfied
   - ❑ Neither satisfied nor dissatisfied
   - ❑ Somewhat dissatisfied
   - ❑ Very dissatisfied

2. How satisfied are with each of the following specific aspects of your medical career?

	Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
A. Your overall income.....	❑	❑	❑	❑	❑
B. Your relationships with patients.....	❑	❑	❑	❑	❑
C. Your relationships with co-workers.....	❑	❑	❑	❑	❑
D. The balance between work and personal life...	❑	❑	❑	❑	❑
E. The amount of time you have with patients.....	❑	❑	❑	❑	❑
F. Your ability to provide patients with the best possible care.....	❑	❑	❑	❑	❑

3. In the last year, has your satisfaction with your medical career increased, stayed about the same, or declined?
   - ❑ It's increased in the past year
   - ❑ It's stayed about the same
   - ❑ It's declined in the past year

PART 2. MEDICAL LIABILITY & CLINICAL DECISION MAKING

These next questions help us understand the pressures of making clinical decisions in the face of potential patient complaints or the risk of malpractice lawsuits. Remember, your results are completely confidential.

4. In a typical month, about how often do patients ask you for unnecessary or cost-ineffective tests or treatments?

- ❑ Never
- ❑ Seldom (once or twice a month)
- ❑ Occasionally (about once a week)
- ❑ Often (several times a week)
- ❑ Very often (several times a day)

5. Thinking of the past year, how often have concerns about **MEDICAL LIABILITY** caused you to....

	Never	Rarely	Sometimes	Often
A. Order more tests than you otherwise would based on your judgment of what is medically needed?.....	❑	❑	❑	❑
B. Prescribe more medications than you otherwise would based on your judgment of what is medically needed?....	❑	❑	❑	❑
C. Refer to specialists more often than you would based on your judgment of what is medically needed?.....	❑	❑	❑	❑
D. Use invasive procedures, such as biopsies, to confirm a diagnosis more often than was medically needed?.....	❑	❑	❑	❑
E. Avoid personally conducting certain procedures or interventions?.....	❑	❑	❑	❑
F. Avoid caring for high risk patients?.....	❑	❑	❑	❑

6. The next set of questions help us understand how often concerns about **MEDICAL LIABILITY** cause you to order more tests or care than you otherwise would based solely on medical need.

- First, tell us about how many of each you ordered in your last FULL MONTH of work (your best guess is fine). Just put zero for anything you don't order at all.
- Second, give your best estimate as to how many of the ones you ordered were NOT medically necessary, according to your clinical judgment. **IN YOUR MOST RECENT FULL MONTH OF WORK...**

	About how many of each did you order?	Of those, about how many were NOT medically necessary?
A. X-Rays		
B. CT Scans.....		
C. MRI studies.....		
D. Ultrasound studies.....		
E. Laboratory tests (e.g, CBC or chem profile).....		
F. Specialist referrals or consultations.....		
G. Hospital admissions.....		
H. Biopsies or similar invasive procedures..... to confirm a diagnosis		

7. In general, when you make clinical decisions in your practice, how important are each of the following things?

	Very Important	Somewhat Important	Not too Important	Not at all Important
A. The likely out of pocket cost for the patient?.....	❑	❑	❑	❑
B. The overall cost effectiveness of the treatment or test?...	❑	❑	❑	❑
C. How strongly the patient asks for a test or treatment?.....	❑	❑	❑	❑
D. The threat of a possible malpractice suit?.....	❑	❑	❑	❑

8. Have you ever been named in a malpractice suit?
   - ❑ Yes, in the past 3 years
   - ❑ Yes, but not in the past 3 years
   - ❑ No, never

9. How much confidence do you have that your current liability insurance will cover all situations for which you might need coverage?
   ❑ A great deal ❑ Some ❑ Not much ❑ None at all

10. How much of a financial burden are your professional liability insurance premiums?
   ❑ A great deal ❑ Some ❑ Not much ❑ None at all

11. How do you currently get your primary layer professional liability insurance?
   - ❑ Through a hospital you are employed by
   - ❑ Through a hospital you are affiliated with
   - ❑ Directly from an insurance carrier, as part of your practice/group
   - ❑ Directly from an insurance carrier, individually

12. From which insurance carrier do you currently get your primary layer professional liability insurance?
   - ❑ NPMIC (Northwest Physicians Mutual Insurance Company)
   - ❑ CNA (Continental Casualty Company) through the OMA Risk Purchasing Group
   - ❑ The Doctors' Company
   - ❑ Physicians Insurance
   - ❑ Someone else (tell us:_____)

12. How likely is it that each of the following reforms would reduce the impact of medical liability concerns on your clinical decision making?

	Very Likely	Somewhat Likely	Not too Likely	Not at all Likely
A. A safe harbor rule with medical guidelines as the standard of care.....	❑	❑	❑	❑
B. Caps on medical liability across all types of patients.....	❑	❑	❑	❑
C. Caps on medical liability for subsets of patients.....	❑	❑	❑	❑
D. Changes in how joint and several liability is handled.....	❑	❑	❑	❑
E. Binding or non-binding medical panels.....	❑	❑	❑	❑
F. An administrative compensation system.....	❑	❑	❑	❑

G. Other ideas (please tell us): _____

14. How likely is it that a safe harbor rule with clinical guidelines as a standard of care would…

	Very Likely	Somewhat Likely	Not too Likely	Not at all Likely
A. Increase your adherence to clinical guidelines?……	❑	❑	❑	❑
B. Result in improved patient safety due to better guideline adherence?……	❑	❑	❑	❑
C. Be an effective approach to medical liability reform?.....	❑	❑	❑	❑

PART 3. ABOUT YOU & YOUR PRACTICE

These questions help us understand more about who you are and the type of environment you practice in.

15. About how many years have you been practicing medicine?
    - ❑ Less than 2 years
    - ❑ 2 to 5 years
    - ❑ 6 to 10 years
    - ❑ 11 to 20 years
    - ❑ More than 20 years

16. About how many hours per week are you involved in direct patient care activities?
    - ❑ None
    - ❑ 1-20 hours
    - ❑ 21-40 hours
    - ❑ More than 40 hours

17. Which of the following best describes your **primary practice setting** (where you see most of your patients)?
    - ❑ A physician owned solo practice
    - ❑ A physician owned group practice
    - ❑ A staff-model HMO (HMO employee)
    - ❑ A public clinic
    - ❑ Hospital-based (a hospital employee)
    - ❑ A hospital-owned outpatient clinic
    - ❑ A nursing facility
    - ❑ Other (tell us: _____)

18. What is your employment status at your primary practice?
    - ❑ Full owner
    - ❑ Part owner
    - ❑ Employee
    - ❑ Independent Contractor
    - ❑ Volunteer
    - ❑ Other (tell us: _____)

19. About how many physicians are in your primary practice?
    - ❑ Solo practice
    - ❑ Partnership (2 physicians)
    - ❑ 3-10 physicians
    - ❑ 11-50 physicians
    - ❑ More than 50 physicians

20. In a typical week, about how many patients do **YOU** see at your primary practice?
    - ❑ 1 to 50 patients
    - ❑ 50 to 100 patients
    - ❑ 100 to 200 patients
    - ❑ More than 200 patients
    - ❑ Does not apply

21. About what percent of the patients you see have the following types of insurance? *Your best guess is fine.*

%	+	%	+	%	+	%	+	%	=100%
Commercial Insurance		Medicaid Insurance		Medicare Insurance		Other Insurance		No Insurance	

That's all the questions we have!

Thank you for participating in this survey. Please place it in the postage-paid envelope and drop it in the mail. We will send a summary of results from this survey to you in early 2012.

The Oregon
Cost Effective Care Survey

This survey has been commissioned by the *Oregon Health Authority* (OHA) to help policy makers understand how **concerns about cost effectiveness** may impact physicians' clinical decision-making and job satisfaction. Results will be used to inform decisions about health reform in 2012, so your response is critically important.

The survey only takes a few minutes to complete, and results are completely confidential. We understand that your time is valuable. Enclosed, please find **$20** as **compensation for your time**. We will also provide a summary of the survey's findings to each physician who completes the survey.

If you have questions, please contact the study's lead investigator at 1-877-215-0686 or *bill.wright@providence.org.*

PART 1: YOUR SATISFACTION PRACTICING MEDICINE

These first questions help us understand how happy you are in your medical career.

1. Thinking very generally, how satisfied are you with your career in medicine?
   - ❑ Very satisfied
   - ❑ Satisfied
   - ❑ Neither satisfied nor dissatisfied
   - ❑ Somewhat dissatisfied
   - ❑ Very dissatisfied

2. How satisfied are with each of the following specific aspects of your medical career?

	Very Satisfied	Somewhat Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied
A. Your overall income.....	❑	❑	❑	❑	❑
B. Your relationships with patients.....	❑	❑	❑	❑	❑
C. Your relationships with co-workers.....	❑	❑	❑	❑	❑
D. The balance between work and personal life...	❑	❑	❑	❑	❑
E. The amount of time you have with patients.....	❑	❑	❑	❑	❑
F. Your ability to provide patients with the best possible care.....	❑	❑	❑	❑	❑

3. In the last year, has your satisfaction with your medical career increased, stayed about the same, or declined?
   - ❑ It's increased in the past year
   - ❑ It's stayed about the same
   - ❑ It's declined in the past year

PART 2. COST EFFECTIVE CLINICAL DECISION MAKING

These next questions help us understand clinical decision making in the face of potential patient requests, complaints, or other pressures. Remember, your results are completely confidential.

4. In a typical month, about how often do patients ask you for unnecessary or cost-ineffective tests or treatments?

- ❑ Never
- ❑ Seldom (once or twice a month)
- ❑ Occasionally (about once a week)
- ❑ Often (several times a week)
- ❑ Very often (several times a day)

5. Thinking of the past year, how often have patient requests or other pressures caused you to....

	Never	Rarely	Sometimes	Often
A. Order more tests than you otherwise would based on your judgment of what is medically needed?.....	❑	❑	❑	❑
B. Prescribe more medications than you otherwise would based on your judgment of what is medically needed?.....	❑	❑	❑	❑
C. Refer to specialists more often than you would based on your judgment of what is medically needed?.....	❑	❑	❑	❑
D. Use invasive procedures, such as biopsies, to confirm a diagnosis more often than was medically needed?.....	❑	❑	❑	❑

6. The next few questions help us understand how often patient requests or other pressures caused you to order more tests or care than you otherwise would based solely on medical need.
   - First, tell us about how many of each you ordered in your last FULL MONTH of work (your best guess is fine). Just put zero for anything you don't order at all.
   - Second, give your best estimate as to how many of the ones you ordered were NOT medically necessary, according to your clinical judgment.

   IN YOUR MOST RECENT FULL MONTH OF WORK....

	About how many of each did you order?	Of those, about how many were NOT medically necessary?
A. X-Rays		
B. CT Scans.....		
C. MRI studies.....		
D. Ultrasound studies.....		
E. Laboratory tests (e.g, CBC or chem profile).....		
F. Specialist referrals or consultations.....		
G. Hospital admissions.....		
H. Biopsies or similar invasive procedures..... to confirm a diagnosis		

7. In general, when you make clinical decisions in your practice, how important are each of the following things?

	Very Important	Somewhat Important	Not too Important	Not at all Important
A. The likely out of pocket cost for the patient?.....	❑	❑	❑	❑
B. The overall cost effectiveness of the treatment or test?...	❑	❑	❑	❑
C. How strongly the patient asks for a test or treatment?.....	❑	❑	❑	❑
D. The threat of a possible malpractice suit?.....	❑	❑	❑	❑

8. How much of a role do you believe individual physicians should play in helping control health care costs?

❑ A great deal ❑ Some ❑ Not much ❑ None at all

9. How likely is it that each of the following would help reduce unnecessary procedures?

	Very Likely	Somewhat Likely	Not too Likely	Not at all Likely
A. More patient education by health plan.....	❑	❑	❑	❑
B. Reductions in administrative burdens.....	❑	❑	❑	❑
C. Medical liability reforms.....	❑	❑	❑	❑

D. Other ideas (please tell us):_____

PART 3. ABOUT YOU & YOUR PRACTICE

These questions help us understand more about who you are and the type of environment you practice in.

10. About how many years have you been practicing medicine?
- ❑ Less than 2 years
- ❑ 2 to 5 years
- ❑ 6 to 10 years
- ❑ 11 to 20 years
- ❑ More than 20 years

11. About how many hours per week are you involved in direct patient care activities?
- ❑ None
- ❑ 1-20 hours
- ❑ 21-40 hours
- ❑ More than 40 hours

12. Which of the following best describes your **primary practice setting** (where you see most of your patients)?
- ❑ A physician owned solo practice
- ❑ A physician owned group practice
- ❑ A staff-model HMO (HMO employee)
- ❑ A public clinic
- ❑ Hospital-based (a hospital employee)
- ❑ A hospital-owned outpatient clinic
- ❑ A nursing facility
- ❑ Other (tell us: _____)

13. What is your employment status at your primary practice?
- ❑ Full owner
- ❑ Part owner
- ❑ Employee
- ❑ Independent Contractor
- ❑ Volunteer
- ❑ Other (tell us: _____)

14. What is the size of your primary practice?
    - ❑ Solo practice
    - ❑ Partnership (2 physicians)
    - ❑ 3-10 physicians
    - ❑ 11-50 physicians
    - ❑ More than 50 physicians

15. In a typical week, about how many patients do **YOU** see at your primary practice?
    - ❑ 1 to 50 patients
    - ❑ 50 to 100 patients
    - ❑ 100 to 200 patients
    - ❑ More than 200 patients
    - ❑ Does not apply

16. About what percent of the patients you see suffer from a chronic illness? *Your best guess is fine.*
    - ❑ 0-10%
    - ❑ 11-25%
    - ❑ 26-50%
    - ❑ More than 50%

17. About what percent of the patients you see have the following types of insurance? *Your best guess is fine.*

[ ] %	+	[ ] %	+	[ ] %	+	[ ] %	+	[ ] %	=100%
Commercial Insurance		Medicaid Insurance		Medicare Insurance		Other Insurance		No Insurance	

18. What specific policy reforms or changes do you think would help physicians deliver high quality, cost-effective patient care? _____
_____
_____
_____
_____
_____

That's all the questions we have!

Thank you for participating in this survey. Please place it in the postage-paid envelope and drop it in the mail. We will send a summary of results from this survey to you in early 2012.

APPENDIX C: DATA TABLES

Medical Liability Survey – Parts 1 and 2 – Physician Satisfaction and Clinical Decision-Making

Q1 and Q2	Very Satisfied	Satisfied	Neither	Somewhat Dissatisfied	Very Dissatisfied	N
How satisfied are you with…						
--your career in medicine?	41%	45%	5%	7%	1%	824
--your overall income?	33%	50%	7%	9%	1%	825
--your relationships with patients?	58%	37%	3%	2%	0%	824
--your relationships with co-workers?	60%	34%	3%	2%	1%	826
--the balance between work and personal life?	21%	41%	10%	22%	7%	826
--the amount of time you have with patients?	23%	41%	11%	21%	4%	825
--your ability to provide patients with the best care possible?	29%	46%	10%	13%	2%	828

Q3	It's increased	It's stayed about the same	It's declined	N
In the last year, has your satisfaction with your medical career increased, stayed about the same, or declined?				
	12%	53%	35%	829

Q4	Never	Seldom	Occasionally	Often	Very Often	N
In a typical month, about how often do patients ask you for unnecessary or cost-ineffective tests or treatments?						
	7%	25%	33%	30%	6%	819

Q5	Never	Rarely	Sometimes	Often	N
How often have concerns about medical liability caused you to…					
--order more tests than you would based on your judgment of what is medically needed?	11%	27%	44%	18%	819
--prescribe more medications than you otherwise would based on your judgment of what is medically needed?	29%	41%	24%	6%	814
--refer to specialists more often than you would based on your judgment of what is medically needed?	16%	34%	38%	12%	815
--use invasive procedures, such as biopsies, to confirm a diagnosis more often than was medically needed?	38%	41%	17%	4%	811
--avoid personally conducting certain procedures or interventions?	35%	31%	24%	10%	810
--avoid caring for high-risk patients?	50%	25%	18%	7%	811

Q7	Very Important	Somewhat Important	Not too Important	Not at all Important	N
When you make clinical decision in your practice, how important are each of the following…					
--the likely out-of-pocket cost for the patient?	35%	47%	12%	6%	817
--the overall cost effectiveness of the treatment or test?	52%	38%	7%	2%	819
--how strongly the patient asks for the test or treatment?	10%	55%	30%	5%	816
--the threat of a possible malpractice suit?	20%	38%	30%	11%	820

Q8	Yes, in the past 3 years	Yes, but not in the past 3 years	No, never	N
Have you ever been named in a malpractice suit?				
	9%	34%	57%	826

Q9	A great deal	Some	Not much	None at all	N
How much confidence do you have that your current liability insurance will cover all situations for which you might need coverage?					
	49%	43%	6%	3%	822

Q10	A great deal	Some	Not much	None at all	N
How much of a financial burden are your professional liability insurance premiums?					
	13%	40%	20%	27%	814

Q11	Hospital employed by	Hospital affiliated with	Insurance carrier as part of practice	Insurance carrier, individually	N
How do you currently get your primary layer of professional liability insurance?					
	36%	2%	44%	18%	814

Q12	NPMIC	CNA	The Doctor's Company	Physician's Insurance	Other	N
From which insurance carrier do you currently get your primary layer of professional liability insurance?						
	7%	30%	18%	5%	40%	714

Q13	Very Likely	Somewhat Likely	Not too Likely	Not at all Likely	N
How likely is it that each of the following reforms would reduce the impact of medical liability concerns on your clinical decision making?					
--a safe harbor rule with medical guidelines as the standard of care	28%	43%	21%	7%	792
--caps on medical liability across all types of patients	44%	32%	18%	7%	806
--caps on medical liability for subsets types of patients	27%	39%	25%	9%	798
--changes in how joint and several liability is handled	21%	41%	28%	10%	754
--binding or non-binding medical panels	18%	41%	32%	9%	756
--an administrative compensation system	17%	35%	37%	12%	712

Q14	Very likely	Somewhat likely	Not too likely	Not at all likely	N
How likely is it that a safe harbor rule with clinical guidelines as a standard of care would…					
--increase your adherence to clinical guidelines?	33%	49%	14%	4%	785
--result in improved patient safety due to better guideline adherence?	24%	45%	24%	6%	786
--be an effective approach to medical liability reform?	24%	47%	23%	5%	784

Medical Liability Survey – Part 3 - Provider and Practice Characteristics

Q15	
Years practicing medicine (n=823)	
Less than 2 years	2%
2 to 5 years	10%
6 to 10 years	15%
11 to 20 years	28%
More than 20 years	45%

Q16	
Hours per week involved in direct patient care activities (n=823)	
None	2%
1-20 hours	16%
21-40 hours	42%
More than 40 hours	40%

Q17	
Primary practice setting (n=820)	
Physician-owned solo practice	13%
Physician-owned group practice	35%
Staff-model HMO	7%
Public clinic	3%
Hospital-based	20%
Hospital-owned outpatient clinic	11%
Nursing facility	0%
Other	11%

Q18	
Employment status at primary practice (n=815)	
Full owner	26%
Part owner	17%
Employee	47%
Independent contractor	8%
Volunteer	1%
Other	2%

Q19	
Number of physicians are in primary practice (n=817)	
Solo practice	15%
Partnership (2 physicians)	5%
3-10 physicians	36%
11-50 physicians	24%
More than 50 physicians	20%

Q20	
Number of patients seen per week in primary practice (n=818)	
1 to 50 patients	41%
50 to 100 patients	43%
100 to 200 patients	9%
More than 200 patients	2%
Does not apply	5%

Cost-Effective Care Survey – Parts 1 and 2 – Physicians Satisfaction and Clinical Decision-Making

Q1 and Q2	Very satisfied	Satisfied	Neither	Somewhat dissatisfied	Very dissatisfied	N
How satisfied are you with…						
--your career in medicine?	40%	46%	3%	7%	3%	348
--your overall income?	36%	46%	6%	11%	1%	353
--your relationships with patients?	64%	30%	3%	3%	1%	345
--your relationships with co-workers?	60%	31%	4%	4%	1%	348
--the balance between work and personal life?	23%	41%	10%	20%	6%	349
--the amount of time you have with patients?	24%	37%	13%	21%	5%	346
--your ability to provide patients with the best care possible?	31%	45%	10%	11%	3%	345

Q3	It's increased	It's stayed about the same	It's declined	N
In the last year, has your satisfaction with your medical career increased, stayed about the same, or declined?				
	14%	54%	32%	353

Q4	Never	Seldom	Occasionally	Often	Very often	N
In a typical month, about how often do patients ask you for unnecessary or cost-ineffective tests or treatments?						
	9%	30%	34%	23%	5%	348

Q5	Never	Rarely	Sometimes	Often	N
How often have patient requests or other pressures caused you to…					
--order more tests than you would based on your judgment of what is medically needed?	12%	38%	41%	9%	345
--prescribe more medications than you otherwise would based on your judgment of what is medically needed?	21%	43%	29%	7%	344
--refer to specialists more often than you would based on your judgment of what is medically needed?	21%	43%	30%	5%	346
--use invasive procedures, such as biopsies, to confirm a diagnosis more often than was medically needed?	44%	43%	11%	2%	346

Q7	Very important	Somewhat important	Not too important	Not at all important	N
When you make clinical decision in your practice, how important are each of the following…					
--the likely out-of-pocket cost for the patient?	37%	47%	11%	5%	346
--the overall cost effectiveness of the treatment or test?	54%	39%	6%	1%	349
--how strongly the patient asks for the test or treatment?	8%	45%	39%	8%	346
--the threat of a possible malpractice suit?	21%	41%	25%	12%	347

Q8	A great deal	Some	Not much	None at all	N
How much of a role do you believe individual physicians should play in helping control health care costs?					
	57%	39%	3%	1%	339

Q9	Very likely	Somewhat likely	Not too likely	Not at all likely	N
How likely is it that each of the following would help reduce unnecessary procedures?					
--more patients education by health plans?	24%	41%	28%	7%	348
--reductions in administrative burdens?	30%	37%	28%	5%	341
--medical liability reform?	62%	26%	11%	1%	346

Cost-Effective Care – Part 3 - Provider and Practice Characteristics

Q10	
Years practicing medicine (n=352)	
Less than 2 years	1%
2 to 5 years	10%
6 to 10 years	16%
11 to 20 years	24%
More than 20 years	49%

Q11	
Hours per week involved in direct patient care activities (n=352)	
None	4%
1-20 hours	15%
21-40 hours	40%
More than 40 hours	40%

Q12	
Primary practice setting (n=350)	
Physician-owned solo practice	17%
Physician-owned group practice	33%
Staff-model HMO	9%
Public clinic	4%
Hospital-based	17%
Hospital-owned outpatient clinic	9%
Nursing facility	1%
Other	9%

Q13	
Employment status at primary practice (n=348)	
Full owner	32%
Part owner	17%
Employee	44%
Independent contractor	5%
Volunteer	1%
Other	1%

Q14	
Number of physicians are in primary practice (n=346)	
Solo practice	19%
Partnership (2 physicians)	5%
3-10 physicians	32%
11-50 physicians	25%
More than 50 physicians	19%

Q15	
Number of patients seen per week in primary practice (n=348)	
1 to 50 patients	43%
50 to 100 patients	42%
100 to 200 patients	10%
More than 200 patients	0%
Does not apply	5%

Q16	
Percent of patients with chronic illness (n=341)	
0-10%	10%
11-25%	19%
26-50%	25%
More than 50%	46%