Effective Health Care Program

Technical Brief
Number 19

Public Reporting of Cost Measures in Health

An Environmental Scan of Current Practices and Assessment of Consumer Centeredness

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions and new health care technologies and strategies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses, when appropriate, prior to developing their reports and assessments.

This EPC evidence report is a Technical Brief. A Technical Brief is a rapid report, typically on an emerging medical technology, strategy, or intervention. It provides an overview of key issues related to the intervention—for example, current indications, relevant patient populations and subgroups of interest, outcomes measured, and contextual factors that may affect decisions regarding the intervention. Although Technical Briefs generally focus on interventions for which there are limited published data and too few completed protocol-driven studies to support definitive conclusions, the decision to request a Technical Brief is not solely based on the availability of clinical studies. The goals of the Technical Brief are to provide an early objective description of the state of the science, a potential framework for assessing the applications and implications of the intervention, a summary of ongoing research, and information on future research needs. In particular, through the Technical Brief AHRQ hopes to gain insight on the appropriate conceptual framework and critical issues that will inform future research.

AHRQ expects that the EPC evidence reports and technology assessments will inform individual health plans, providers, and purchasers as well as the health care system as a whole by providing important information to help improve health care quality.

We welcome comments on this Technical Brief. They may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by email to epc@ahrq.hhs.gov.

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Key Informants

In designing the study questions, the EPC consulted a panel of Key Informants who represent subject experts and end-users of research. Key Informant input can inform key issues related to the topic of the technical brief. Key Informants are not involved in the analysis of the evidence or the writing of the report. Therefore, in the end, study questions, design, methodological approaches and/or conclusions do not necessarily represent the views of individual Key Informants.

Key Informants must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their role as end-users, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any conflicts of interest.

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Peer Reviewers must disclose any financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, we may retain individuals with potential nonfinancial conflicts. The Task Order Officer and the EPC work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

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Public Reporting of Cost Measures in Health: An Environmental Scan of Current Practices and Assessment of Consumer Centeredness

Structured Abstract

Background. One of the intended goals of publicly reporting the cost and quality of health care providers is to empower consumers to make informed decisions, thus contributing to improved efficiency of the health care system. While public quality reporting is well documented, less is known about public reporting of costs and the impact it has on consumers.

Purpose. We sought to document current practices for public reporting Web sites that include measures of costs of health care providers, and aimed to assess if these practices are consumer centered.

Methods. Guided by discussions with Key Informants and a targeted literature review, we collected data from active public reporting Web sites in December 2013. We conducted a systematic scan to identify Web sites that report cost measures, and cataloged these measures. We then assessed the degree to which this cost reporting was consumer centered by applying our novel taxonomy, PRICE, that has five domains: (1) price transparency, (2) real comparisons, (3) information on value, (4) connect to care, and (5) ease of use. We assessed each of these domains across three criteria (for a total score of 15) and summarized the data using averages of the sum of criteria (in total and by domain).

Findings. We identified 372 Web sites of which 102 were duplicates and 211 were excluded after two stages of review. State departments of health or state hospital associations operated 75 percent of the 59 Web sites that reported costs at the provider or facility level. All the Web sites reported on inpatient care and 71 percent reported average charges. Only 2 percent of these Web sites reported out-of-pocket costs, 7 percent reported costs using symbols or figures, and 14 percent reported current-year data. The PRICE taxonomy produced a median consumer centeredness score (summed across all domains) of 8 of 15, with a range from 4 to 11. For the included Web sites, ease of use was the highest rated domain (mean of 2.6 out of 3) and information on value was the lowest (0.7 out of 3).

Conclusions. Several factors limit the effectiveness of current public reporting of costs practices. These include a focus on charges (rather than consumers' out-of-pocket expenses), heterogeneity and ambiguity in the cost measures and data sources, and a lack of consumer-centered interfaces that allow the customization of searches that are relevant to consumers. Other limiting factors are the paucity of Web sites that provide cost and quality data, a lack of public awareness, and the need for research demonstrating the impact of publicly reported cost measures.

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Background

Health care in the United States has become unaffordable for many consumers.[1] While national health care reports do not indicate how the cost of health care in the United States compares to other nations,[2] it's clear that this unaffordability reflects the relatively high (and increasingly variable) prices paid in the United States for services.[3] The Patient-Protection and Affordable Care Act of 2010 has applied many measures to curb the costs and improve the quality of health care in the United States. These reforms, in part, are placing increased emphasis on public reporting.[4]

Primarily it is thought that publicly reporting on the cost and quality of health care providers helps consumers make well-informed decisions about care. Public reporting may also improve how health care resources are consumed by promoting the use of treatments that are effective. This being said, the mechanism of action linking public reporting and outcomes may not necessarily require consumer action. Public reporting may promote competition among providers and/or health care systems that care about their reputation or bottom line. Likewise, health insurance plans or self-insured firms may use public reporting data to make more effective decisions on behalf of their members or employees.

Public reporting on health care quality has become increasingly prevalent over the last decade, while much less is known about the frequency and content of public reporting of costs. Cost reporting has become even more important recently as more consumers are choosing high-deductible health plans and plans with reference-based pricing, leaving consumer more exposed to the costs of care.[5-7] Increased transparency regarding health care prices and costs could help consumers make more prudent and cost-effective health care decisions.[8]

For cost reporting to be truly effective, however, these reports need to be consumer centered. This report aims to inform both research and practice by documenting current public reporting of costs practices and assessing if these practices are consumer centered.

Public Reporting

The Institute of Medicine's (IOM) Crossing the Quality Chasm report shaped U.S. health care policy reform in the 21st century.[9] The IOM challenged the U.S. health care system to become increasingly safe, timely, efficient, effective, equitable, and patient centered in order to improve quality. Many of the strategies described in the IOM report involve creating a transparent health care system to better inform consumers and empower them to make better decisions. As a result, we've seen an increased focus in both research and practice to find ways to improve transparency, promote patient-centered care, and enhance consumer decisionmaking (goals that are at the core of health care reform). However, the best path to achieve these goals is uncertain.

One approach to improve transparency has been public reporting, a quality improvement strategy that emerged in the early 1990s.[10, 11] Public reporting refers to an organized effort to provide data about health care services to help consumers and other stakeholders make better-informed decisions about health care. Ideally, public reporting could provide information on the cost and quality of health care for a wide variety of providers. Such information would include cost indicators of price or resource utilization, quality indicators of outcomes and processes, as well as other relevant indicators (e.g., conflicts of interest) associated with physicians, hospitals, clinics, payers, or other health care organizations.

Since the start of public reporting in health care, hospital- and plan-based measures have

predominated, with relatively little public reporting about health-care professionals.[12] A renewed interest in public reporting on health care professionals came with Physician Compare-a federal program that allows consumers to compare physicians and other health care professionals associated with Medicare. However, few data are available on how or if individuals choosing primary care providers use public reporting.

Public reporting is often motivated by wide variations in health care utilization, both geographically and otherwise, as it aims to make such variations more transparent to consumers. Additionally, public reporting may encourage providers to pursue quality improvement in order to elevate their public image and attract consumers. However, the most common reason for public reporting is to help consumers choose the best health care. Ideally, public reporting sets in motion a virtuous cycle by which consumers identify the most suitable health care services and providers for their needs, and providers modify their practice to conform to the needs of health care consumers. Thus, public reporting can help realign the U.S. health care system by removing gaps between consumers' needs and the actions of health care providers. However, one can also imagine (by analogy with other markets) ways in which publicly reported data on providers might encourage decisions that may not be in the best interest of consumers. For example, public reporting may encourage consumers to focus on reputation rather than quality.

The public-reporting field became richer in 2006 when the Bush administration issued an executive order mandating price transparency in health care. As a result, various federal, state, and private approaches have attempted to improve price transparency. The Leapfrog Group introduced measures that address costs, and the Centers for Medicare and Medicaid Services implemented measures on health care efficiency, based in part on recommendations by the National Quality Forum. In addition, there are multiple state and private sector programs evaluating health care efficiency. Even though efficiency (encouraging higher value versus cost) is not the only goal of price transparency, it was the most prevalent interpretation in the early years following this presidential order. Thus, efficiency served as a useful common ground for establishing agreed-upon terminologies and definitions as public reporting of costs became widespread.[14]

Evidence regarding the overall effect of public health care quality and cost reporting has been mixed. Fung et al. concluded that public reporting stimulates quality improvement, but evidence is lacking about its impact on process or outcome measures.[15] Similarly, Ketelaar et al. found insufficient evidence to judge whether public reporting changes the behaviors of consumers, providers, or organizations.[16] Berger and colleagues reviewed the literature on the relationship between public reporting and patient-related outcomes.[4] They found limited but supportive evidence that public reporting has a favorable effect on outcomes, particularly in nursing homes. The authors found little evidence supporting claims that public reporting has an impact on disparities or outcomes in the outpatient setting.

Cost Measures and Consumer Centeredness

Compared to quality, there's a paucity of literature on the public reporting of health care costs. Therefore, little is known about which entities are reporting costs, what measures they use, and how they tailor these to consumers. Similarly, how individuals make use of cost information is unclear. For example, while there have been some experimental data on how cost reporting impacts consumers,[17] there's a paucity of evidence demonstrating whether the data alter consumers' health care choices. Furthermore, it's unclear exactly how health care consumers use

publicly reported cost data (e.g., is it used to supplement materials from other sources or as their sole source of information).

The more fundamental question regarding publicly reported cost data are how and where do consumers most commonly access this information. Again, the work of Hibbard and colleagues offers some insights into this question, but there's a real paucity of evidence on how consumers access or use this information.[17]

To better understand how or if consumers use this information, we need to assess whether this information is consumer centered via surrogate and/or process outcomes. A broad definition of "consumer centered" is "having respect for, and being responsive to the preferences, needs, and values of patients and consumers". For publicly reported cost data to have an impact on consumers and/or the health care system, it should address the consumers' primary need to be better informed so he or she can make better decisions about health care services. Consumer-centered public reporting must also use effective strategies to communicate data to consumers.[19] Data and information must be shared in a way that encourages and supports patients, consumers, and their caregivers to participate in decisionmaking.[20] Presently, it is unclear as to whether public reporting helps consumers chose health care providers. This may be due to deficiencies in the content on Web sites, or their design, or accessibility. We anticipate, however, that advances in measurement, data collection, and information technology should allow for more consumer-centered public reports.[20]

There are limitations to defining consumer centeredness by a combination of surrogate and process outcomes. The advantages to using consumer-based endpoints (such as the number of times consumers access public-reporting Web sites, or how the data affects consumer actions) or health system measures (such as reductions in out-of-pocket or total health care costs) are clear. However, this only tells us which approaches are preferable, not why they are preferable. Furthermore, such approaches only work if there are sufficient numbers of consumers using public-reporting Web sites. In spite of these limitations, however, the goal of using surrogate and process outcomes to describe consumer centeredness is to stimulate research and practice in a way that leads to improvements in the design and implementation of publicly reported cost data.

Objective

In this report, we examine the practices of public reporting of cost measures in health care and the extent to which this reporting is consumer-centered. Broadly, this report is focused on the public reporting of health care costs as a means to promote price transparency. Price transparency are efforts aimed at informing health care consumers (and those who make decisions on their behalf) about the expense they will incur. Price transparency is normally targeted before consumers seek care so they can be empowered to make informed treatment decisions. In this way, our aim is to inform researchers, policymakers, and health care providers about cost reporting practices that might effectively guide patients and other consumers in making decisions about health care.

The scope of this review was limited to services provided by individual health care providers (such as physicians and other providers who charge for their services) and health care facilities (including clinics, hospitals, skilled nursing facilities, home health care providers, and nursing homes) in the United States As such, it excludes public reporting on products such as pharmaceuticals and medical devices, health care insurance plans, and foreign practices. Furthermore, we excluded cost data reported by either a single provider or single facility, as these data do not allow consumers to make comparisons. In addition, we considered cost comparisons to a national or state benchmark insufficient for this report. Our key definitions are in Box 1.

Box 1. Key definitions we used to guide our review

Public reporting of cost data: Data on health care costs of providers that are publicly available to a broad audience of consumers (either free of charge, at a nominal cost, or granted based on group affiliation) and that allow for comparisons within a defined geographic area.

Consumer: Any actual or potential recipient of health care services and their families or advocates who act on their behalf.

Cost measure: A financial measure of cost, charge, reimbursement, payment, or out-of-pocket expenses associated with a visit to a health care provider.

This report is not intended to be a critique of current practices. Similarly, we did not determine which cost measures providers should use, the procedures they should report on, or exactly how consumers should compare providers. Rather, we documented current practices and identified ways that the public reporting of costs could be more consumer centered. We were particularly comprehensive in the number of sites reviewed and the amount of detail described. As this is fundamentally a review, many of the findings exist elsewhere in the literature.

Guiding Questions

In collaboration with AHRQ, we developed two broad guiding questions (GQs). We used additional sub-questions to help define the scope of each of the GQs (Box 2). We refined our approach as we gathered more data about public reporting. Discussions with AHRQ and with Key Informants also guided this study.

GQ1 identifies the entities that produced these Web-based cost reports, where the reports appeared, the services they reported, the level of aggregation in the reports, how they reported cost data (e.g., dollar amounts, symbols, graphs), and how they compared costs across providers.

GQ2 assesses whether the practices for public reporting of costs are consumer centered. Guided by AHRQ and our Key Informants, we defined consumer-centered public reporting as an activity that helps consumers' compare and choose health care providers. Therefore, we developed a definition of consumer-centered public reporting and created a novel taxonomy (PRICE) to evaluate it. We used the published literature to learn how and why consumers use cost data in their decisionmaking (e.g., to avoid additional cost, to assess quality).

Box 2. Guiding Questions (GQ) for the study

GQ 1: What measures of costs about health care providers have been publicly reported?

a. Who produces these reports and where are they available?
b. For what services are costs reported?
c. At what level are the data aggregated (e.g., provider, facility)?
d. How are the cost data reported (e.g., dollar amounts, symbols, graphs)?
e. How are the costs of providers compared (e.g., how many facilities, regional vs. national comparisons)?

GQ 2: Are the cost measures reported in a consumer-centered way?

a. How are consumers instructed to use the data?
b. What techniques are used to guide consumers to interpret the data appropriately?
c. Is there evidence that consumers use the data?
d. Are the data relevant to consumers making health care decisions?
e. Are the data easily accessible and presented in a consumer-friendly way?

Given the lack of research examining whether public reporting of costs is consumer centered, and how this affects health care choices, we needed some flexibility in our GQs. For GQ2 we realized that our sub-questions were not comprehensive enough, so we expanded them.

Furthermore, our study protocol included a third GQ regarding confounding factors that may occur when consumers use publicly reported cost data. Given the lack of studies focusing on this topic, we address this question in the gaps analysis section of this report.

Methods

We abstracted the primary data for this study in December 2013 from Web sites that publicly report cost measures. Our targeted literature review and Key Informants helped us identify these sites, as well as the taxonomy we used to assess consumer centeredness (PRICE). We list the methods and results of the targeted literature review in Appendix A.

Engagement

Consistent with standard EPC practices, AHRQ and our Key Informants provided input to help guide the research and writing of this report. We also sought input from peer reviewers and made the report available for public comment.

We conducted an Internet search of relevant professional organizations to identify Key Informants with expertise in this topic. We initially identified 10 individuals, seven of which agreed to participate. Following AHRQ review and determination of conflicts of interest, we set up two group interviews with the seven Key Informants and provided them with a copy of the proposed GQs. On the first call, in December 2013, we gave an overview of the project and shared our working definitions for key terms. We also invited the Key Informants to share their knowledge of relevant literature and public reporting Web sites, and discussed tools available to measure the consumer centeredness of public reporting Web sites. On the second call, in January 2014, we updated the Key Informants on the project's status, and reviewed our data abstraction instrument, taxonomy for consumer centeredness, and list of semipublic Web sites. We recorded and transcribed the interviews and distributed a summary to all participants. Where possible, we crosschecked Key Informant interviews against available literature and other sources.

We invited Peer Reviewers to provide written comments on a draft report based on their experience in research and practice. We considered these comments when preparing the final report. AHRQ posted the draft report on its Web site for 4 weeks to elicit public comment.

GQ 1: What Measures of Costs About Health Care Providers Have Been Publicly Reported?

We reviewed public reporting Web sites that compared providers within a geographic area, rather than Web sites where a single provider reported its own costs (with or without presenting a benchmark). As this project used evidence synthesis techniques rather than primary data collection, we needed to identify a set of candidate public reporting Web sites. We located these Web sites with the help of AHRQ and Key Informants and through our targeted literature review.

We analyzed public reporting Web sites in three phases. Similar to a literature review, we performed the equivalent of a title/abstract screen phase (where we reviewed all sites initially), a full article screen phase (where we conducted a detailed review of the content of the sites), and a data abstraction phase (where we reviewed the content of sites based on predetermined criteria) (Box 3). We used Microsoft Excel to manage the data from our environmental scan, including the links to the Web sites, during both the screening and data abstraction phases.

In the first phase, two independent reviewers screened Web sites for inclusion. They included a Web site if there were any indicators of a cost assigned to a health care provision or any measure of resource utilization. They excluded a Web site if they both agreed it met one or more of the exclusion criteria (Box 3). We resolved conflicts between reviewers by consensus. One investigator (JB) made the final decision on any persisting disagreements. During this initial review, we prioritized financial measures of costs (i.e., measures involving dollar amounts) and the graphical or pictorial representation of such data. However, we also initially included measures of resource utilization when we thought the data were acting as a proxy measure for costs.

Box 3. Inclusion and exclusion criteria for Web sites review

Stage of review	Inclusions	Exclusions
First-phase screening	✓ Any measure of cost of health care delivery ✓ Measures of utilization (readmission rates, length of stay)	• No measure of any kind of cost • Only shows potential costs for purchasing health insurance plans
Second-phase screening	✓ Cost measures met the following definition: A financial measure of cost, charge, reimbursement, payment, or out-of-pocket expenses associated with a visit to a health care provider or facility ✓ Data on health care costs of providers allowing for comparisons within a defined geographic area	• Only quality measures provided • Not available to the public (requires a login or membership)

During the second phase, two independent reviewers (YC and TK) screened the Web sites for inclusion using explicit definitions of the following terms: “public reporting of cost data,” “consumer,” and “cost measure.” We tightened our definition of “cost measure” to include only those Web sites reporting financial measures of costs. Hence, we excluded resource utilization measures because we could not find a consistent definition, and because many such indicators (e.g., use of antibiotics or length of stay) could also be quality indicators. We recorded a detailed reason for inclusion or exclusion. If the reviewer was unsure about a Web site, or if there was disagreement between reviewers, the lead investigator (JB) made the final decision.

In the final abstraction phase, one reviewer independently abstracted data for each site using a standardized data abstraction form and evaluated the consumer centeredness of the Web site using the taxonomy described in the results section. We conducted a validity test to ensure consistency of abstraction between the independent reviewers (YC and TK) for five Web sites. We resolved inconsistencies through consensus before moving forward with the review of the entire database. For each site, the reviewers (YC and TK) extracted the following information: the Web address, the owner of the Web site, the setting of health care delivery for which information is reported, the presentation of costs, the type of cost measures, the year of reported data, and the level of comparisons. The Web address is the URL for the site, and the owner of the Web site is the party responsible for populating and maintaining the Web site. The settings of health care delivery included, but were not limited to, inpatient, outpatient, nursing home, or emergency room settings. Web sites presented cost as dollar values, unique symbols representing cost measures, or graphs containing cost information. Reviewers extracted the type of cost measures, which included, but were not limited to, average costs, average charges, average reimbursements, and average out-of-pocket expenses. Lastly, reviewers extracted the level at which the Web site can display comparisons (e.g., between facilities, counties, individual providers, or against state and national benchmarks).

GQ 2: Are the Cost Measures Reported in a Consumer-Centered Way?

To assess if publicly reported measures of costs are consumer centered, we developed and applied a novel taxonomy described below in Table 3. We developed this taxonomy using three sources: discussions with our Key Informants, a targeted literature review (Appendix A), and our direct observation and discussion of current public reporting practices. Two reviewers (YC and TK) abstracted a combination of objective and subjective data pertaining to consumer centeredness from the public reporting Web sites, and resolved disagreements by engaging the entire study team. We calculated summary measures for the overall taxonomy and across key domains to gauge which aspects of current public reporting practices are most consumer centered. We did not weight the elements of the taxonomy or domains, but acknowledge that a simple summation implies equal importance of all factors.

Results

GQ1: What Measures of Costs About Health Care Providers Have Been Publicly Reported?

Several articles describe Web sites that publicly report health data. Kullgren et al. describes 62 Web sites reporting State-based health care prices.[21] This study reports that most Web sites listed prices related to inpatient care for medical conditions (73 percent) and surgeries (71 percent), but did not regularly list prices associated with outpatient services. Most Web sites listed billed charges (81 percent) rather than costs, whereas a few Web sites estimated costs based on a specific health plan (8 percent). Sinaiko et al. found that information on total and out-of-pocket costs was available in some markets.[5] Information on public reporting in states that have well-established reporting mechanisms (like New Hampshire) is prevalent in the literature.

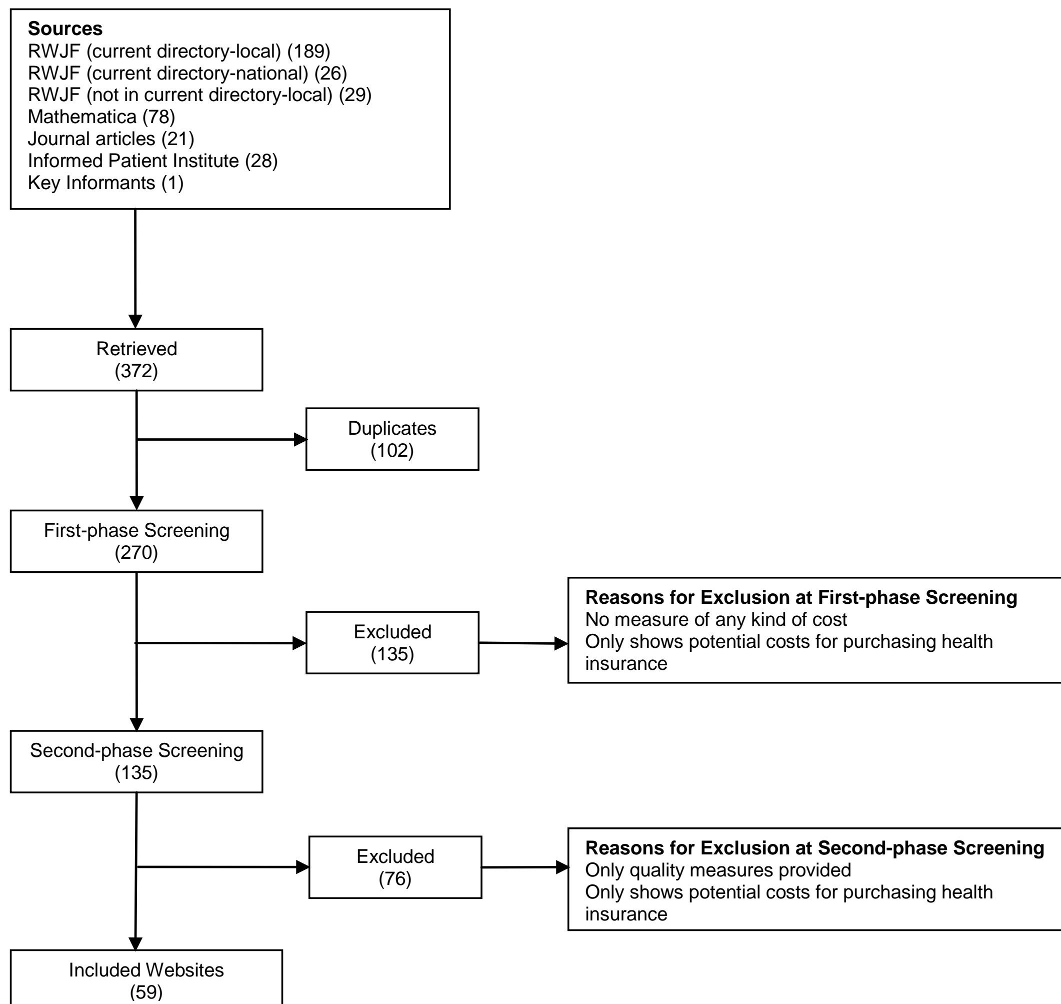
We identified 372 Web sites that compared providers within a geographic area (using 5 sources) (Box 4). During the first phase of review, we triaged 135 of these Web sites for further review. During the second phase of review, we selected 59 of these Web sites for data abstraction and synthesis (Figure 1). Appendix B details all the Web sites that we reviewed.

Box 4. Five sources used in the environmental scan

Source	Description
O'Neil et al., 2010[22]	This report by Mathematica Policy Research focused on the public reporting of community programs, health plans, hospitals, or physicians at the local, regional, state, and national levels. It provided the National Quality Forum with an assessment of public reporting programs in order to facilitate decisionmaking regarding public reporting.
Robert Wood Johnson Foundation, 2013[23]	This is a master list of public reporting Web sites that serves as a directory of Web sites to help consumers find reliable information on health care costs, both locally and nationally. Additionally, we reviewed Web sites that had been excluded by the authors of the RWJF directory (i.e., Web sites that contained old data or that were expected to have information on quality only), as we thought that these Web sites might have been updated since their initial review.
Kullgren et al., 2013[21]	This study described 62 state health care price Web sites and examined ways to improve the utility of publicly reported health care information. It used a systematic Internet search to identify Web sites.
Yegian et al., 2013[24]	This study included a targeted literature review, Key Informant interviews, and a review of selected online cost and quality reporting efforts. It identified the lack of out-of-pocket expense data and quality data (both of which facilitate informed decisionmaking) as potential shortcomings.
Informed Patient Institute (IPI) – Nonprofit organization, 2014[25]	The IPI is an independent nonprofit organization that provides online information about health care quality and patient safety for consumers. IPI does not rate individual health facilities or professionals. Instead, IPI assesses the usefulness of online "report card" sites about doctors, hospitals, and nursing homes. We included a list of links, from the IPI database, to over 30 report cards with cost information.

Data extracted from the final set of 59 Web sites provided insight into the range of information available to consumers (Appendix C). State health departments or state hospital associations owned approximately three-quarters of Web sites. Independent organizations such as Aligning Forces Humboldt, Clear Health Costs, and The Commonwealth Fund owned the remaining quarter of the Web sites. All 59 Web sites provided cost data on inpatient services. Of these, 31 provided information on both inpatient and outpatient services, three only provided daily rates for private or semi-private rooms in nursing homes, and five offered information on emergency room visits or urgent care needs.

Figure 1. Review of public-reporting Web sites



Ninety-eight percent of Web sites provided explicit dollar amounts as cost measures (Table 1). The majority of the Web sites reported cost measures as average charges (71 percent). Only a single Web site, however, provided explicit information on patient out-of-pocket expenses. Furthermore, only one Web site differentiated between costs for insured and uninsured individuals. On the Maine Health Data Organization Web site, consumers could navigate either as an insured patient or an uninsured patient; however, this choice determined which questions the site asked in order to calculate costs. Some Web sites listed the highest and lowest cost providers charged for a visit or a given procedure. The five Web sites providing only Medicare procedure costs indicated the median Medicare payment. Methods of comparison varied but most of the Web sites enabled comparison between hospital facilities. About one-quarter of Web sites allowed for a comparison of costs across selected counties or regions. For some sites, consumers could search for information using their zip code. Many of the sites compared provider or hospital information to state benchmarks, which allowed for comparison on a larger scale (42 percent).

Table 1. Characteristics of Web sites that publicly report cost measures

Characteristics of Web Sites	n	%*
Owner:		
Owned by state health department or state hospital association	44	75%
Setting:		
Provided information on inpatient care	59	100%
Provided information on both inpatient and outpatient care	31	53%
Provided information on emergency care services	5	9%
Provided information on nursing home daily room rates	3	5%
Type:		
Reported costs as dollar amounts	58	98%
Represented costs symbolically	4	7%
Measure of costs:		
Reported average charges	42	71%
Year of data:		
Reported data from 2011 and later	44	76%
Reported data from 2013	8	14%
Comparison:		
Allowed comparison against other providers	59	100%
Allowed comparison against state averages	25	42%

Note: Categories may exceed 100 percent as Web sites may fit one or more categories

As seen in Table 2 and Appendix C, the Web sites we identified offered a wide range of cost measures to their consumers. These sites used common terminology including: charges, costs, payments, prices, and reimbursements, but sometimes used these words to mean different things. "Charges" often reflected an amount listed on a hospital charge master or the amount billed to patients or insurance companies for a visit or service. "Costs" often, although not always, referred to production costs. "Payments" or "reimbursements" referred to what the insurance company or carrier was responsible for paying to the provider or hospital. Many Web sites provided definitions or explanations so consumers could better understand their terminology and data. Some Web sites explicitly stated that the costs reported do not equate to the price that patients pay for health care services. However, none of these sites clearly indicated what patients or insurance companies are responsible for paying for the described services. Some Web sites reported that they equated prices and costs on their sites. In Table 2 we provide a sample of representative definitions from the included Web sites.

Even with the single Web site that reported out-of-pocket costs, only average out-of-pocket costs were reported. This may not reflect the actual out-of-pocket costs that a specific consumer would be responsible for paying. We did not find any Web sites that reported out-of-pocket costs that also included co-payments and deductibles that an individual consumer might have to pay based on his health plan. This is an emerging practice on semipublic reporting sites (Appendix D).

Table 2. Representative cost measures and definitions extracted from Web sites

Measure	Definition	Source
Charges		
Charge	*"… is the amount billed for a service."*	http://www.iowahospitalcharges.com
Average Charge	"*Total charges divided by the number of discharges for the selected service."*	http://www.orpricepoint.org/Help_charge.html
Average Charge per Day	"*Total charges divided by the number of inpatient days for the selected service."*	http://www.txpricepoint.org/Help_acpd.html
Average Billed Charges	"*These data are available through the standard Uniform Billing form, which is utilized by hospitals to bill for their hospital charges … These data identify billed charges, not the actual payments received by the hospital.*"	http://www.chiaunlv.com/Downloads/Choices/choices-2013-general-acute.pdf
Median Charge	"*The midpoint between the highest and lowest charge for the selected service.*"	http://www.txpricepoint.org/Help_median.html
Range of Charges	"[The] *set of charges specified by a maximum and minimum value that a hospital has billed for a particular condition or procedure.*"	http://www.floridahealthfinder.gov/comparecare/glossary.aspx
Cost		
Costs (example 1)	"*…the actual price that health plans pay hospitals for treating a specific condition or performing a procedure, and is NOT what a patient will pay.*"	http://hcqcc.hcf.state.ma.us/Content/FrequentlyAskedQuestions.aspx
Costs (example 2)	"*Allowed rate" of payment to health care providers."*	http://nhhealthcost.nh.gov/methodology-health-costs-consumers
Average Costs	"*… based on charges adjusted to cost using the hospital's specific cost center cost-to-charge ratio.*"	http://www.ahd.com/definitions/free_oputil.html
Range of Costs	"*… range of costs that was reported at a hospital for a particular condition or procedure.*"	http://hcqcc.hcf.state.ma.us *
Payment		
Average Payment	"*Total payments divided by the number of patients for the selected service. The average Medicare payment includes the base payment, diagnosis-related-group for inpatient or Ambulatory Payment Classification for outpatient and, where applicable, additional payments for graduate medical education, indirect medical education, disproportionate share, and capital in accordance with Medicare payment policies.*"	http://www.mhakeystonecenter.org/definitions.htm
Out-of-pocket (OOP)	"*The portion of payments for covered health services required to be paid by the patient, including co-payments, co-insurance, and deductible."*	https://riverview.org/billpay/glossary/
Reimbursements		
Average Reimbursements	"*… the average amount a health carrier paid. These numbers include only care covered where a company had 10 or more reported procedures in a year.*"	http://doraapps.state.co.us/insurance/drg/

* Multiple specific Web sites present this definition within this Web site.

GQ2: Are the Cost Measures Reported in a Consumer-Centered Way?

We found diverse observations in the literature about the consumer centeredness of public reports. Health care consumers desire information that is relevant, such as quality data on physicians and services and cost measures that reflect out-of-pocket expenses.[24] However, publicly reported cost data that confuses rather than informs is not useful to the consumer.[26]

In practice, Web-based reports tend not to distinguish between facility charges and actual costs borne by consumer.[27] According to Christianson et al. there's also wide variation in the information contained in these reports.[28] While the quality and consumer centeredness of the health care information available on Web sites seems to be improving, a recent analysis concluded that cost reporting has not incorporated current knowledge regarding cognitive psychology and health care decisionmaking.[20]

PRICE Taxonomy

Our novel taxonomy (PRICE) assesses the consumer centeredness of Web sites that publicly report health care cost data. As detailed in Table 3, our taxonomy examines these Web sites across five domains: price transparency, real comparisons, information on value, connect to care, and ease of use, and scores each domain using three criteria specific to each domain. We provide a detailed description and the source for each of the criteria in Table 3. Most of the criteria within each domain are independent of each other, but one might consider some domains hierarchical.

Table 3. PRICE taxonomy of the consumer centeredness of Web sites that publicly report costs

Domain	Criteria	Description	Source
Price transparency	Out-of-pocket costs	The data reflect a consumer's personalized out-of-pocket expenses, including insurance status, remaining deductible, and co-pay rates.	8, 20, 29, 30
	Timely cost data	The data are less than 3 years old.	31, 32, Key Informants
	Clear description of costs	The site clearly describes the type of price information being shared (e.g., costs, charges, average vs. median).	21, Key Informants
Real comparisons	Shoppable conditions	The data include non-urgent and non-severe conditions for which consumers want prompt, high-quality attention.	21, 20, 23,Key Informants
	Market comparisons	The site allows consumers to compare providers to other "relevant" providers and not just benchmarks.	31, 32,Key Informants
	Customizable searches	The site has a search capability that can be customized to the consumer's wants and needs (e.g., geography, setting).	31,Key Informants
Information on value	High-value providers	The site guides consumers to higher-value providers.	17, 29, 31,Key Informants
	Quality comparators	The site pairs cost data with quality data (outcome or process measures) or patient experience data on the same page.	8, 17, 21, 30, Key Informants
	Patient ratings/reviews	The site includes ratings, reviews by patients, or both.	20, 31
Connect to care	Address/contact information	The site provides the address and contact details for an individual provider or facility.	Key Informants
	Acceptance of new patients	The site identifies whether a provider or facility is accepting new patients and the types of insurance accepted by the provider or facility.	31
	Logistics	The site provides logistics, such as maps, location, directions, and information on public parking.	20
Ease of use	Simple interface	The site uses a simple, intuitive, and easy-to-navigate user interface for sharing data.	29-31, Key Informants
	Understandable	The site uses plain language and understandable symbols to make relevant information accessible.	29-32,Key Informants
	User support	The site includes sufficient instructions, frequently asked questions, or online or telephone support.	31, Key Informants

Price transparency is a central concept in the public reporting of cost data.[5] Our taxonomy describes price transparency using three criteria: (a) out-of-pocket costs, (b) timely cost data, and

(c) clear description of costs. Consumers need to know out-of-pocket costs in order to make informed decisions about providers and services. To effectively estimate out-of-pocket costs, Web sites must have the functionality to incorporate the consumer's insurance status, remaining deductible, and copayment or co-insurance rates, and out-of-pocket maximum. Timely cost data help ensure that consumers have the most recent information available to make decisions. We considered costs reported since 2011 as timely. A clear description of costs helps consumers better understand the exact nature of the price data the site is reporting (e.g., costs, charges, reimbursements), and whether the value represents a summary statistic, such as the mean or median. To make an informed decision, consumers must understand the types of data being shared. Here we focused simply on whether the site clearly defined the measure to the consumer, recognizing that a consumer's comprehension of the data may also relate to features assessed elsewhere in the taxonomy (e.g., whether the materials are presented in an understandable way). Although we did not consider it when designing the PRICE taxonomy, there's a growing belief that presenting pricing bundles or costs of episodes of care may help consumers make more informed choices.

Real comparisons is a key tenant to the public reporting of provider performance, whether it's the reporting of quality data, cost data, or both.[16, 33] We describe real comparisons in terms of: (a) shoppable conditions, (b) market comparisons, and (c) customizable searches. Shoppable conditions can be subjective and include non-urgent and non-severe conditions for which consumers want prompt, high-quality attention. For these types of conditions, consumers may use cost and quality data as part of their decisionmaking.[30] Market comparisons allow a user to compare a provider or facility against other 'relevant' providers, and not just a static benchmark. Consumers want the ability to compare options easily, and evaluating against benchmarks requires an understanding of the benchmark indicators, which is not necessarily easy for consumers.[31] Customizable searches allow the user to narrow their search to those providers that meet a specific criterion, such as geographic location or setting. This ensures that search results only include providers the consumer might use.

Information on value describes whether consumers receive the maximum benefit from the resources spent. We noted whether sites identify: (a) high-value providers, (b) quality comparators, and (c) patients' ratings or reviews. Web sites that identify high-value providers use explicit labels or symbols to intentionally guide consumers to health care providers that deliver higher value care. Consumers find an explicit indicator helpful in selecting higher-value providers.[17] Web sites with quality comparator functionality pair cost data with quality data, patient experience data, or both. Pairing quality data with cost data are best practice; without quality data, many consumers conclude that higher costs reflect higher quality.[27] The incorporation of patients' ratings or reviews of health care providers into public reporting makes the site interactive and allows consumers to learn about the real experiences of others relating to the cost or value of providers. Most retail and travel Web sites include consumer feedback to help facilitate decisionmaking.

Connect to care is important for helping consumers make the step from decisionmaking to arranging care. Sites that facilitate access to care are those that present: (a) address/contact information, (b) information on acceptance of new patients, and (c) logistics. When a Web site provides address/contact information for a provider or facility, this helps consumers easily access care if they choose that provider or facility. Information that indicates if providers are accepting new patients and what insurance the provider accepts is also helpful. Logistics include information such as maps, location, directions, and information on public parking.

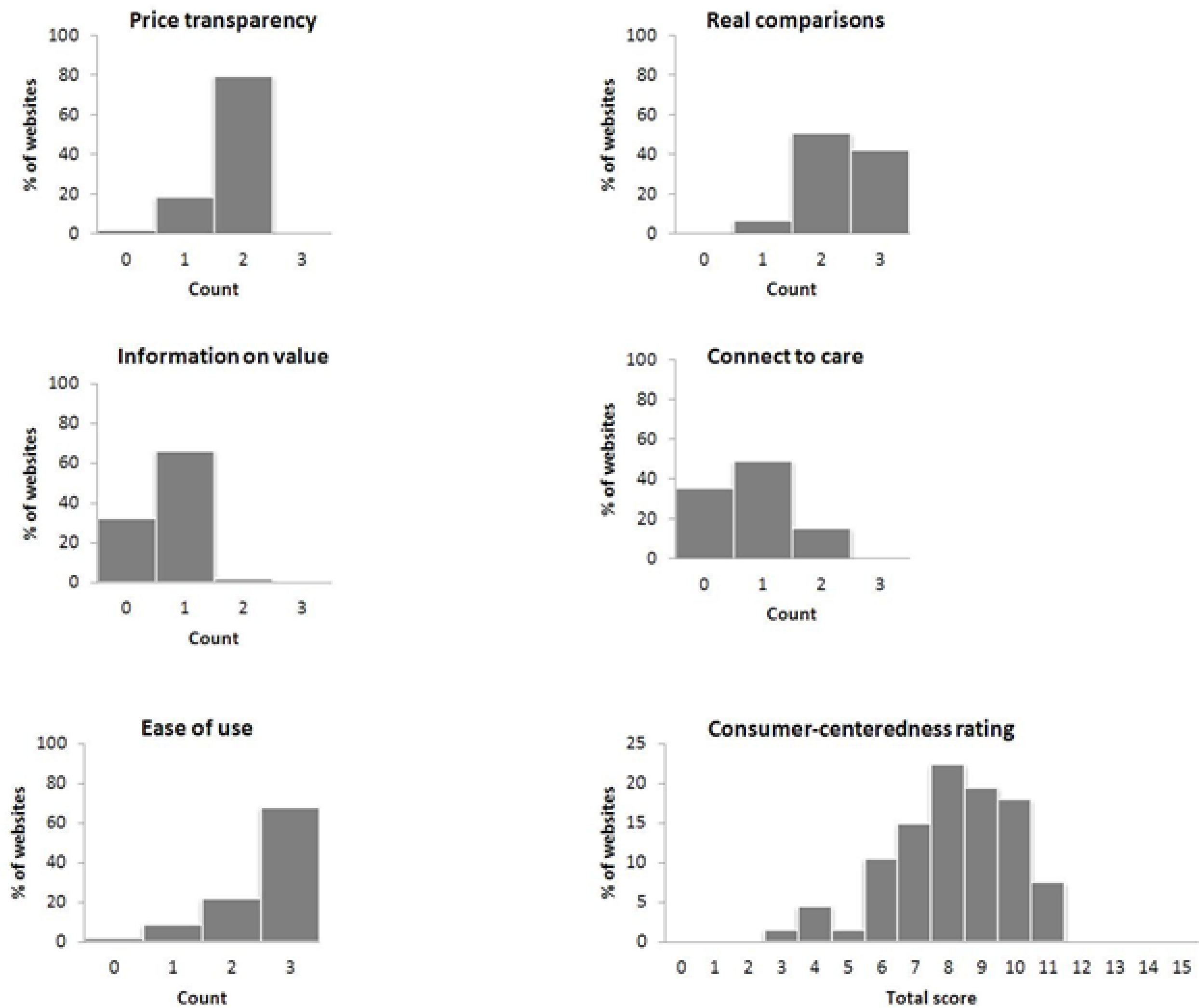
Ease of use is how easily a consumer can navigate a Web site and understand and access the data. This affects whether a consumer will return to the site for future information.[34] We describe

ease of use by gauging whether a Web site: (a) has a simple interface, (b) is understandable, and (c) offers user support. While much of this is subjective, we define a simple interface as one that is intuitive, easy-to-navigate, and utilizes effective Web site design principles.[34]

An understandable site is a site that uses plain language (i.e., language at approximately a 5th grade reading level or less) and simple symbols or graphics for communicating information without biasing consumers' interpretations or actions. Simple language and symbols promote a greater comprehension of the data. User support includes clear instructions, answers to frequently asked questions, and online and telephonic assistance designed to answer common consumer questions or problems.[31]

The percentage agreement between our two reviewers, across all 15 criteria in the PRICE taxonomy, was 83.1 percent, with a kappa statistic of 0.66. Figure 2 shows the distribution of the sum of the 15 items included in the PRICE taxonomy across all 59 Web sites. The mean and median were 8.3 and 8, respectively, and the total ranged from a minimum of 4 to a maximum score of 11. About three-quarters of the Web sites screened (n=45) met at least half of the criteria of the taxonomy.

Figure 2. Consumer centeredness rating of Web sites using PRICE taxonomy



The ease of use (2.6) and real comparisons (2.4) domains had the highest average count across the five PRICE domains, and information on value (0.7) and connect to care (0.8) had the lowest (Table 4). Approximately 80 percent of Web sites met two of the criteria for price transparency and about 40 percent of Web sites met all three criteria for real comparisons. For connect to care, approximately 50 percent of Web sites met only one of the three criteria. Most Web sites did well on the ease of use domain with over 70 percent meeting all three criteria.

Table 4. Count of PRICE domains

PRICE domains	Mean (SD)	0 of 3 (%)	1 of 3 (%)	2 of 3 (%)	3 of 3 (%)
Price transparency	1.8 (0.5)	1.7	19	80	0
Real comparisons	2.4 (0.6)	0	6.8	51	42
Information on value	0.7 (0.5)	32	66	1.7	0
Connect to care	0.8 (0.7)	35	49	15	0
Ease of use	2.6 (0.7)	1.7	6.8	19	73

SD = standard deviation

The percent of Web sites meeting the specific criteria for the PRICE taxonomy is listed in Table 5. Approximately 97 percent of the Web sites offered information on shoppable conditions and clearly described measures of cost. Nearly 90 percent of all the Web sites had a simple and easy-to-navigate interface, and nearly 95 percent used understandable language and symbols to make information accessible. Other criteria that more than half of the sites met include: providing timely data (80 percent), comparing relevant providers (70 percent), facilitating flexible searching for providers (73 percent), pairing cost data with quality data (68 percent), providing contact information for user support (78 percent), and providing an address and contact details for the provider or facility (64 percent).

Table 5. Percentage of Web sites meeting each criterion

Domain	Criteria	n	%
Price transparency	Out-of-pocket costs	1	1.7
	Timely cost data	47	80
	Clear descriptions of costs	57	97
Real comparisons	Shoppable conditions	57	97
	Market comparisons	41	70
	Customizable searches	43	73
Information on value	High-value providers	0	0
	Quality comparators	40	68
	Patient ratings/reviews	1	1.7
Connect to care	Address/contact information	38	64
	Acceptance of new patients	0	0
	Logistics	9	15
Ease of use	Simple interface	53	90
	Understandable	56	95
	User support	46	78

There were several PRICE criteria that we did not commonly find on the Web sites. For example, only the New Hampshire Insurance Department site provided data on out-of-pocket expenses. None of the Web sites provided information on providers' acceptance of new patients or the type of insurance they accepted. In spite of the recent emphasis on high-value or efficient care, we found no Web sites that guided consumers to higher-value providers.

Summary and Implications

Here we first present a summary of the key findings, and then we discuss the strengths and limitations of this report, factors limiting the impact and diffusion of public reporting sites, and the implications for research and policy.

Key Findings

We highlighted the key findings from this report in Box 5. With regards to GQ1, which asks “what measures of costs about health care providers have been publicly reported?”, we reviewed 59 publicly available Web sites that met the inclusion and exclusion criteria. State health departments and state hospital associations hosted about three-quarters of the Web sites. Independent organizations hosted the remaining one-quarter. All of the Web sites reported information on inpatient services and about half of the Web sites reported information on both inpatient and outpatient services. Three Web sites specifically reported on nursing home costs. Very few Web sites reported information on emergency room or urgent care services. Most Web sites reported cost measures as “average charges.” Other reported cost measures included average costs, median charges, median Medicare payments, and a specified range of charges. Only one Web site explicitly provided information on patient’s out-of-pocket expenses, and only one Web site differentiated between costs for insured and uninsured individuals. Nearly all of the reviewed Web sites used dollar amounts to report the cost measures, except one, which used representative symbols. The levels of comparison available to patients varied across Web sites, but the majority of Web sites enabled comparisons between hospital facilities. About one-quarter of the Web sites allowed cost comparisons across selected counties or regions within a state. Many Web sites compared costs to state or national benchmarks.

With regards to GQ2 (Are the cost measures reported in a consumer-centered way?) we developed the PRICE taxonomy. This taxonomy uses five domains to assess consumer centeredness, including price transparency, real comparisons, information on value, connect to care, and ease of use. We rated Web sites using three criteria within each of these five domains, resulting in a maximum score of 15 points per Web site. The mean and median aggregate scores on the PRICE taxonomy were 8.3 and 8.0, respectively, with a range from 4 to 11. About 75 percent of the Web sites met at least half of the criteria detailed in the taxonomy. On average, the Web sites scored highest on the ease of use and real comparisons domains, while scores were lowest for information on value and connect to care. Nearly 80 percent of Web sites scored 2 out of 3 on the price transparency domain, and about 40 percent of the Web sites scored 3 out of 3 on the real comparisons domain. Weaknesses included a lack of information on out-of-pocket expenses and an absence of indicators of high-value providers. Strengths included clear descriptions of costs, definitions of terms when required, simple and understandable displays, and customizable searches on shoppable conditions.

Box 5. Summary of key findings

GQ1: What measures of costs about health care providers have been publicly reported?

- We identified publicly available Web sites owned by state health departments, state hospital associations, and independent organizations.
- The Web sites reported data on inpatient, outpatient, and emergency room or urgent care services. Some only reported data from nursing homes.
- The Web sites reported costs as average charges, average costs, median charges, median Medicare payments, or a specified range of charges. One Web site reported out-of-pocket expenses.
- Web sites made comparisons between hospital facilities, across counties or regions, and to state or national benchmarks.

GQ2: Are the cost measures reported in a consumer-centered way?

- We developed the PRICE taxonomy of consumer centeredness focusing on five domains with three criteria each.
- When assessing the 15 criteria of the PRICE taxonomy, 8.3 was the average number of criteria met by the Web sites, with a median of 8 criteria met.
- The Web sites met the “ease of use” and “real comparisons” criteria most often, and the “information on value” and “connect to care” criteria the least.

Strengths and Limitations

The literature on the public reporting of cost measures is not as well developed as that for the public reporting of quality indicators. This report is a comprehensive review of this emerging field, and it has both strengths and limitations (Table 6).

The taxonomy we developed to assess the consumer centeredness of these Web sites was a notable strength of this project. This novel tool may prove useful in future research, although we recognize that it has not yet been validated. In addition, this taxonomy may be valuable for assessing new Web sites that publicly report cost data and could also serve as a guide to those entities creating these types of Web sites. We opted to equally weight the criteria in the taxonomy, as we had no a priori reason to more heavily value some criteria than others. In future work, we might find that some criteria are indeed stronger contributors to consumer centeredness and require greater weighting. Another strength of this report is the characterization of the diverse measures of cost reported by public reporting Web sites.

This study is notably limited by the lack of consumer engagement or representation. Our Key Informants have a great deal of knowledge and experience with consumer perspectives and helped us identify relevant articles and public reporting Web sites. However, as we did not engage consumers directly, we were unable to collect feedback from actual consumer’s experiences with public reporting Web sites to refine our definition of consumer centeredness.

We excluded semipublic Web sites from our review, because they are only accessible to certain patient populations (such as consumers who have a specific health insurance plan) and they sometimes charge user fees. We did not have full access to these Web sites, and therefore, were unable to systematically assess whether they were consumer centered. We were, however, able to conduct a cursory review of five semipublic Web sites. We outlined the characteristics of those Web sites in Appendix D. There is an obvious gap in the current literature (including grey literature) detailing the content of semipublic Web sites and their consumer centeredness.

Table 6. Strength and limitations of this report

Strengths:	Limitations:
✓ We developed and implemented a novel taxonomy (PRICE) to rate the consumer centeredness of the Web sites. ✓ We attempted to define measures of costs. ✓ This is the most comprehensive list of Web sites that publicly report data on health care costs. The list covers a wide range of Web sites, including those hosted by state hospital associations, state departments of health, and independent organizations. ✓ Although this was an environmental scan, we used a rigorous, systematic approach to search for Web sites and extract data. A double review of Web sites and data abstraction ensured the reliability of the method. ✓ Our multidisciplinary research team provided a wide range of points of view and approaches to the study. ✓ We identified gaps in the literature regarding the assessment/review of semipublic Web sites that report costs. ✓ We engaged Key Informants who helped guide the methods of this report and determine what to look for in the data.	✓ The PRICE taxonomy was not previously validated. We sought to compare our taxonomy to other available grading systems, but identified only one. ✓ To find the Web sites in the list for this report, we used a review methodology including a targeted (rather than systematic) literature review, so there may be Web sites we missed. ✓ We did not include any Web sites from individual providers or individual hospitals. ✓ There was initial conceptual ambiguity in terms of abstracting the cost measures, and some flexibility was necessary in applying a data abstraction protocol. ✓ We did not have access to enough semipublic Web sites to capture the current status of their consumer centeredness. ✓ There was a lack of consumer representation and engagement in developing the review. ✓ There is a lack of data on the effectiveness of publicly reporting cost measures.

Factors Limiting Impact and Diffusion

The impact and broad diffusion of publicly reporting data on costs is limited by several factors. First, the majority of Web sites reported their cost measures as charges, which are not relevant to many consumers, as health plans typically negotiate lower rates. The consumer centeredness of Web sites that do not report out-of-pocket costs is suspect. Web sites that do not directly report out-of-pocket costs are arguably less useful to consumers. Second, many of the cost measures are difficult for consumers to understand, as definitions and data sources vary across these Web sites. Standardizing cost measures and terms, and providing guidance to Web site developers as to what cost measures are most relevant to consumers may improve the impact and diffusion of public reporting of costs. Third, while some Web sites have an easy-to-follow interface, many other are hard to navigate, which limits their impact. For example, some Web sites do not easily allow consumers to choose relevant geographic locations, categories of service (inpatient, outpatient, emergency), conditions, or procedures. Fourth, Web sites that do not provide both cost and quality data can limit a consumer's ability to see how the two measures interrelate (i.e., how to get the most value for your money).

While mandates that require public reporting of costs will likely increase the availability of cost data, the impact and diffusion of this data are limited by a lack of awareness among consumers. Furthermore, mandates do not necessarily guarantee that Web sites report cost data that are relevant to consumers. This is likely because we don't have enough research on public reporting of costs to help guide the development and implementation of these mandates.

In addition to the need for more research on the impact and diffusion of public reporting of costs, Web sites should provide a place for consumers to provide feedback on the usefulness of the data and the Web site. Creating this type of forum where consumers can communicate their needs and suggest how the Web site can best meet those needs would significantly improve

public reporting practices. Consumers would likely continue to visit the Web site if the developers adjusted their data and functionality according to consumer feedback and needs. There may be other ways to collect this information as well, such as consumer focus groups or Web site analytics.

Finally, consumers need to be informed about the availability and relevance of cost and quality data that compare different health care providers.[24] While consumers may be aware of the variation in the quality of health care providers, they may not be aware of the variation in costs. To improve the impact and diffusion of public reporting of costs, we need public awareness programs to inform consumers that variations in cost exist, and that these variations have a large impact on health care and the health care system as a whole.

Implications for Research and Policy

The public reporting of health care cost data is intended to help consumers better understand the variations that exist in these costs.[24] It may also produce market forces that narrow the range of prices, stimulate price competition, and lower costs by encouraging cost-conscious shopping.[5] These possible effects depend on many factors and may work via mechanisms other than consumer empowerment.[35] Third-party vendors that deliver semipublic cost information to consumers (see Appendix D) may be more consumer centered as they are able to report on out-of-pocket expenses that would be anticipated based on an individual's insurance type. This being said, we would expect that any public reporting of the costs of services has some utility to consumers, even if it just makes them more cost-conscious.[24]

One risk, however, is that consumers use these data as a proxy for quality. As indicated by a number of experimental studies[17], consumers tend to equate higher costs with higher quality services or providers, or conversely, that lower costs means poorer quality. These studies indicate that providing quality information along with cost information encourages consumers to choose a combination of cost and quality that yields higher value. This field needs more research that examines how publicly reported cost data (with and without quality data) helps consumers to choose health care providers. Similarly, studies are needed that examine the best way for consumers to provide feedback to Web site developers regarding content and ease-of-use.

Through our literature review and Key Informant interviews, we identified a number of research gaps related to the public reporting of health care cost information. There are little data on the expense of providing consumers personalized cost information on a large scale, specifically the expense associated with developing interfaces, providing services, ensuring accuracy, and guaranteeing privacy. Also, as the majority of public health care cost reporting is online, few if any studies have examined how the digital divide in the United States affects a disadvantaged or older consumer's access to health care cost information, and whether this impacts their ability to obtain high-value care.

We cannot know with certainty why hospitals do not report more explicitly on actual costs of care; it may because their accounting systems do not permit this to happen easily or because it is not in their best interests. Greater attention to why hospitals still use charge masters as references for the costs of health care resources or services might move hospitals away from the use of these data, which are largely uninformative to patients. Efforts towards a continuous data collection process for patient payments for services would yield a database that represents what patients actually pay for health care. This would be truly useful data to consumers.

Future research should look at the public reporting of cost data as an intervention, and measure the effect of these data on patient outcomes and costs. Health services researchers could

examine trends over time as more publicly reported cost data become available to consumers and as the quality and consumer centeredness of the data improve. Researchers will need to find ways to overcome challenges associated with measuring the impact of public reporting on consumers. Further research that develops metrics for evaluating consumer centeredness may be beneficial in improving current practices. A better understanding of which components of consumer centeredness are most important will better inform methods for constructing these metrics. Each domain, and subsequent criteria within each domain, is equally weighted in this report. Empirical studies to determine the value of each of these components are necessary as we move forward, as are evaluations of these metrics that determine their reliability and validity.

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Appendix A. Targeted Literature Review

A targeted review is a type of narrative review that includes a synthesis of both qualitative and quantitative research on cost reporting. This differs from the Web site review described elsewhere in this technical brief. We included key articles identified by experts as well as those identified from a search of electronic databases of published literature.[1-3] We used the literature review to alert us to public Web sites reporting cost data (GQ 1), and to clarify definitions and criteria to assess the consumer centeredness of these Web sites (GQ 2).

We developed a search strategy for MEDLINE, accessed via PubMed®, based on an analysis of the medical subject headings terms and text words of relevant articles (Box A1). We translated this strategy and used it for the other electronic sources. We searched the following databases for primary studies published from 2009 to 2013: MEDLINE®, EconLit, and Scopus.

Box A1. Search string

PubMed ((“public report” [tiab] OR “public reports”[tiab] OR “cost report”[tiab] OR “cost reports”[tiab] OR “report card”[tiab] OR “report cards”[tiab] OR “provider profiling”[tiab] OR “provider profile”[tiab] OR “provider profiles”[tiab]OR “score card”[tiab] OR “score cards”[tiab] OR “cost transparency”[tiab] OR “price transparency“[tiab] OR “pay for performance”[tiab] OR “public performance reports”[tiab] OR “consumer report”[tiab] OR “consumer reports”[tiab])) AND ((cost[mh] OR cost[tiab] OR charge[tiab] OR price[tiab] or utilization[tiab] OR spending[tiab] OR efficiency[tiab])) Filters: Publication date from 2009/01/01 to 2013/12/31; English
Scopus (((TITLE-ABS-KEY("public report") OR TITLE-ABS-KEY("public reports") OR TITLE-ABS-KEY("cost report") OR TITLE-ABS-KEY("cost reports") OR TITLE-ABS-KEY("report cards") OR TITLE-ABS-KEY("report card") OR TITLE-ABS-KEY("provider profiling") OR TITLE-ABS-KEY("provider profile") OR TITLE-ABS-KEY("provider profiles") OR TITLE-ABS-KEY("score card") OR TITLE-ABS-KEY("score cards") OR TITLE-ABS-KEY("cost transparency") OR TITLE-ABS-KEY("price transparency") OR TITLE-ABS-KEY("pay for performance") OR TITLE-ABS-KEY("public performance reports") OR TITLE-ABS-KEY("consumer report") OR TITLE-ABS-KEY("consumer reports"))) AND ((TITLE-ABS-KEY(cost) OR TITLE-ABS-KEY(charge) OR TITLE-ABS-KEY(price) OR TITLE-ABS-KEY(utilization) OR TITLE-ABS-KEY(spending) OR TITLE-ABS-KEY(efficiency)))) AND (TITLE-ABS-KEY("health care") OR TITLE-ABS-KEY("healthcare")) AND (LIMIT-TO(LANGUAGE, "English")) AND (LIMIT-TO(PUBYEAR, 2013) OR LIMIT-TO(PUBYEAR, 2012) OR LIMIT-TO(PUBYEAR, 2011) OR LIMIT-TO(PUBYEAR, 2010) OR LIMIT-TO(PUBYEAR, 2009))
Econlit (TX “public report” OR TX “public reports” OR TX“cost report” OR TX “cost reports” OR TX “report card” OR TX “report cards” OR TX “provider profiling” OR TX "provider profile" OR TX "provider profiles" OR TX “score card” OR TX “score cards” OR TX “cost transparency” OR TX “price transparency“ OR TX “pay for performance” OR TX “public performance reports” OR TX “consumer report” OR TX “consumer reports”) AND (TX cost OR TX charge OR TX price OR TX utilization OR TX spending OR TX efficiency) AND (TX "healthcare" OR TX " health care") Limiters - Published Date: 20090101-20131231

Given that public reporting is a relatively new phenomenon, and that we focused on current reporting practices, we required that articles be published after 2009, address public reporting of costs in U.S. health care, and inform one or both of the GQs. Four trained reviewers independently screened articles at the title and abstract level. We paired reviewers. If both reviewers agreed that an article met one or more of the exclusion criteria, we excluded it (Table A1). For all citations that we promoted on the basis of title and abstract, paired reviewers also conducted a second independent review of the full text of the articles.

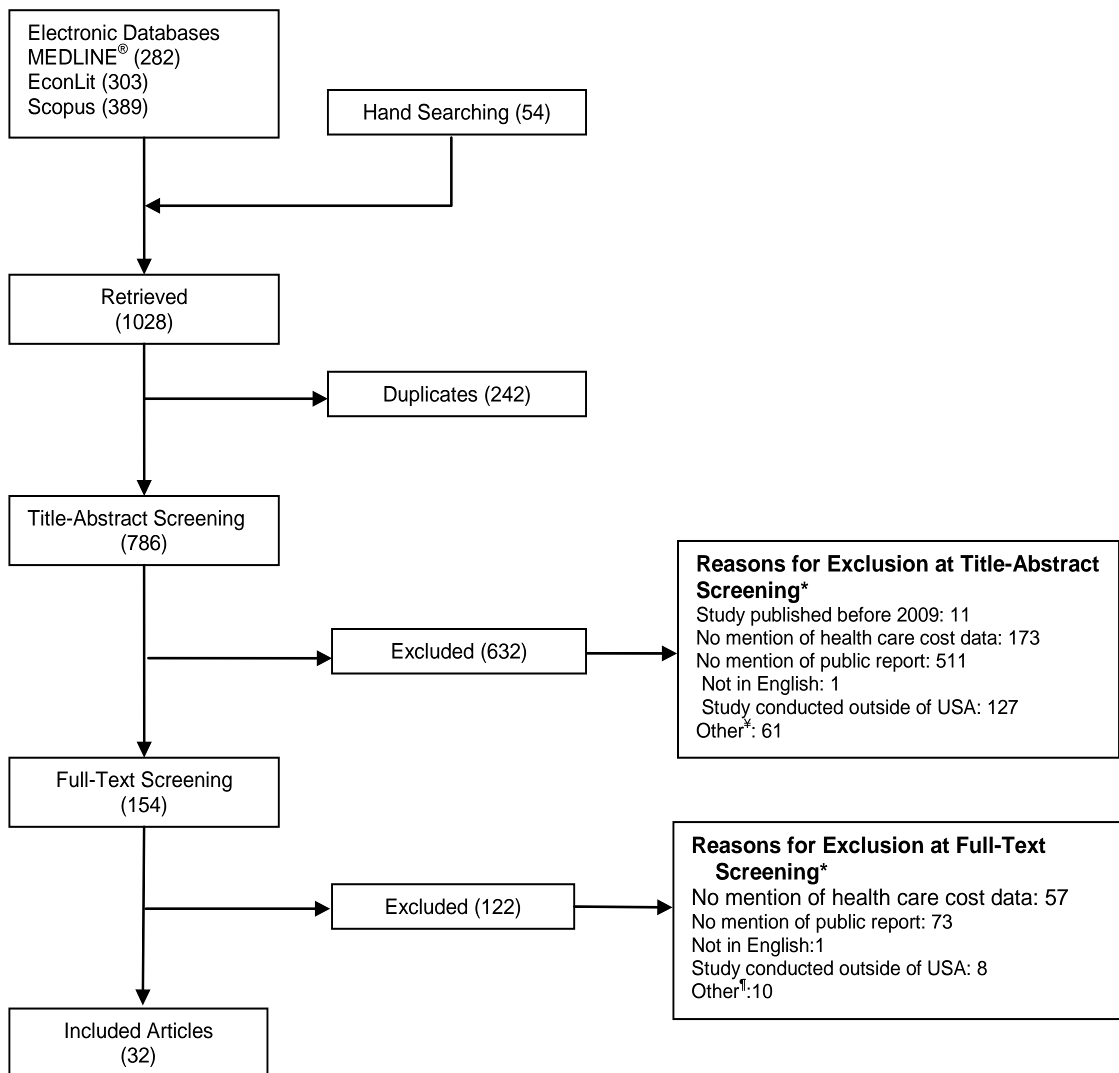
Table A1. Inclusion and exclusion criteria for the targeted literature review

Review Stage	Include	Exclude
Title/Abstract level	✓ Study published after 2009 ✓ Public reports of cost data in health care in the United States	• No mention of health care cost data • No mention of public reporting • Not in English • Study conducted outside of the United States
Full article level	✓ Public reports of cost data in health care in the United States ✓ Address one or more guiding Questions	• No mention of health care cost data • No mention of public report • Not in English • Study conducted outside of the United States

At least two reviewers read the included articles in full (ZB and TK or NN) and summarized the information from articles that answered the two GQs. The intent was to present a summary of the approaches which illuminate the GQs. The methods we used are consistent with generally recognized standards for the conduct of narrative reviews, which are: provide a balanced overview, summarize the main findings of the most important contributions to the literature, make references to supporting theory and assumptions, and provide support for further quantitative review. We summarized key information in tables and described them in the narrative.

The database search yielded 974 titles, supplemented by 54 titles in the hand search. Of these, 786 titles advanced to the title/abstract review stage, and 154 advanced to the full-text screening. We retained 32 articles for the targeted review. Twenty-one of these articles addressed measures of costs that have been publicly reported (GQ 1) and 23 addressed the consumer centeredness of the measures of cost (GQ 2). For full details of inclusion and exclusion, see Figure A1.

Figure A1. Summary of targeted literature review



* Total exceeds the number of citations in the exclusion box, because citations could be excluded for more than one reason

¥Other reasons for exclusion at title-abstract screening phase: no focus on consumers or healthcare, no individual provider level data, pharma related article

¶Other reasons for exclusion at full-text screening phase: health policy review, book review, not relevant to research questions, no focus on consumers

Table A2. Included articles for the targeted literature review by guiding questions

Author, Year	Journal or Publication Names	Type of Article	GQ 1*	GQ 2**
Adamopoulos, 2013	Becker's Hospital Review	News		X
Aligning Forces for quality, 2011	Robert Wood Johnson Foundation	Organizational report	X	X
Aligning Forces for quality, 2012	Robert Wood Johnson Foundation	Organizational report	X	X
Bardach , 2011	Agency for Healthcare Research and Quality	Original Research	X	X
Barlas, 2010	Pharmacy and Therapeutics Community	Original Research		X
Catalyst for payment reform, 2012	Catalyst for payment reform	Organizational report		X
Christianson, 2010	Journal of General Internal Medicine	Original Research	X	X
Dudley, 2011	Agency for Healthcare Research and Quality	Original Research	X	X
Hibbard, 2012	Health Affairs	Original Research		X
James, 2012	Health Affairs	Commentary	X	X
Kaiser health news, 2010	Kaiser Health News	News		X
Kullgren, 2013	Journal of the American Medical Association	Original Research	X	
Luft, 2012	Health Affairs	Commentary	X	X
Mehrotra, 2010	Annals of Internal Medicine	Original Research	X	
Mehrotra, 2012	Health Affairs	Original Research		X
NCSL, 2013	National conference of state legislatures	Organizational report	X	
NYTimes.com, 2012	New York Times	News	X	X
O'Neil, 2010	Mathematica Policy Research	Original Research	X	
Park, 2011	Health Services Research	Original Research	X	
Reinhardt, 2013	Journal of the American Medical Association	Commentary		X
Report to congressional requesters, 2011	Report	Governmental report	X	X
Robinson, 2013	Health Affairs	Original Research	X	
Sick, 2011	American Journal of Medical Quality	Original Research	X	X
Sinaiko, 2011	The New England Journal of Medicine	Commentary	X	
Sinaiko, 2011	Health Services Research	Original Research		X
Sinaiko, 2012	Health Affairs	Original Research		X
Sofaer, 2011	School of Public Affairs, Baruch College	Commentary		X
Swartz, 2010	Robert Wood Johnson Foundation	Organizational report	X	X
Tu, 2009	Issue Brief Center for the Study Health System Change	Organizational report	X	X
Wall, 2013	Indianapolis Business Journal	News	X	
Yegian, 2013	Health Affairs	Original Research		X
Young, 2012	Health Affairs	Original Research	X	

*GQ 1: What measures of costs about health care providers have been publicly reported?
**GQ 2: Are the cost measures reported in a consumer-centered way?

Appendix A References

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Appendix B. List of Web Sites Reviewed

#	Web Sites	Sources	Decision
1.	http://64.64.16.103/wp-content/uploads/2012/09/hospital-cost-report-january-2011-final.pdf	IPI	Excluded
2.	http://adph.org/hai/	RWJF	Excluded
3.	http://afh.org/	Mathematica	Excluded
4.	http://ahq.ipro.org/	RWJF	Excluded
5.	http://betterhealthcleveland.org/	Mathematica	Excluded
6.	http://c354183.r83.cf1.rackcdn.com/MHQP%20Consumer%20Reports%20Insert%202012.pdf	RWJF	Excluded
7.	http://chia.unlv.edu/nevadahealthchoices/html/nevadahealthchoices.htm	RWJF	Excluded
8.	http://clearhealthcosts.com/	IPI	Included
9.	http://communityhealthalliance.org/	Mathematica	Excluded
10.	http://dhss.delaware.gov/dhss/dph/epi/dehospinfrpts.html	RWJF	Excluded
11.	http://epi.publichealth.nc.gov/cd/hai/figures.html	RWJF	Excluded
12.	http://forces4quality.org/alliance/greater-boston#twitter	Mathematica	Excluded
13.	http://gateway.maine.gov/MHDO/healthcost/	RWJF, IPI	Included
14.	http://gateway.maine.gov/mhdo/monahrq/index.html	RWJF	Included
15.	http://gis.oshpd.ca.gov/atlas/	RWJF, Mathematica	Included
16.	http://hcqcc.hcf.state.ma.us/	RWJF, Mathematica	Included
17.	http://health.mo.gov/data/hai/drive_noso.php	RWJF	Excluded
18.	http://health.state.tn.us/Ceds/HAI/index.htm	RWJF	Excluded
19.	http://health.state.tn.us/statistics/specialprojects.htm#hdds	Journal	Excluded
20.	http://health.utah.gov/hda/report/inpatient.php	RWJF	Included
21.	http://healthcarequalitymatters.org/?p=fqc	RWJF	Included
22.	http://healthinsight.org/rankings/hospitals	RWJF, Mathematica	Excluded
23.	http://hospitals.nyhealth.gov/	RWJF	Excluded
24.	http://iha.ncqa.org/reportcard/	RWJF	Excluded
25.	http://info.kyha.com/QualityData/	RWJF	Excluded
26.	http://mhcc.maryland.gov/consumerinfo/hospitalguide/hospital_guide/cost_report.html	RWJF	Excluded
27.	http://mhcc.maryland.gov/consumerinfo/hospitalguide/hospital_guide/reports/facility_comparison/index.asp?currentStatus=H	RWJF	Excluded
28.	http://mhcc.maryland.gov/consumerinfo/hospitalguide/hospital_guide/reports/healthcare_associated_infections/index.asp?currentStatus=H	RWJF, Mathematica, IPI	Excluded
29.	http://mncm.org/reports-and-websites/reports-and-data/	RWJF, Mathematica	Excluded
30.	http://mnhealthactiongroup.org/	Mathematica	Excluded
31.	http://morxcompare.mo.gov/	Journal	Excluded
32.	http://mycarecompare.org/	Mathematica	Included
33.	http://myvbch.org/about-vbch/services/report-cards/	RWJF	Excluded
34.	http://nevadacomparecare.net/	RWJF	Excluded
35.	http://nhhealthcost.usnh.edu/	Journal	Included
36.	http://nmhealth.org/HAI/plans_reports.shtml	RWJF	Excluded
37.	http://nvpricepoint.net/	RWJF	Included
38.	http://ohiohospitalcompare.ohio.gov/	RWJF	Included
39.	http://oregonpatientsafety.org/reporting-programs/	RWJF	Excluded
40.	http://p2quality.com/hospitalReporting.php	RWJF	Excluded
41.	http://provider.bcbs.com/#tab-1-content	RWJF	Excluded
42.	http://pub.azdhs.gov/hospital-discharge-stats/2011/index.html	RWJF	Included
43.	http://public.hcsc.net/providerfinder/home.do?corpEntCd=NM1	IPI	Excluded
44.	http://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/HAI/Pages/index.aspx	RWJF	Excluded
45.	http://publicapps.odh.ohio.gov/facilityinformation/	RWJF, Mathematica	Excluded

#	Web Sites	Sources	Decision
46.	http://recognition.ncqa.org/	RWJF	Excluded
47.	http://reportcard.opa.ca.gov/rc2013/	RWJF	Excluded
48.	http://reportcard.opa.ca.gov/rc2013/medicalgroupcounty.aspx	RWJF	Excluded
49.	http://rx4excellence.org/getInformed/performanceMeasures/index.php	RWJF	Excluded
50.	http://the-collaborative.org/	Mathematica	Excluded
51.	http://tnhospitalsinform.com/	IPI	Excluded
52.	http://utahhealthscape.org/	RWJF	Excluded
53.	http://utpricepoint.org/	RWJF, IPI	Included
54.	http://web.doh.state.nj.us/apps2/hpr/	RWJF, Mathematica	Excluded
55.	http://whynotthebest.org/	RWJF	Included
56.	http://www.abouthealthsatisfaction.org/	RWJF	Excluded
57.	http://www.abqhealthcarequality.org/	RWJF	Excluded
58.	http://www.aetna.com/docfind/home.do	Journal	Excluded
59.	http://www.ahd.com/freesearch.php	RWJF	Included
60.	http://www.aligning4healthpa.org/	RWJF, Mathematica	Included
61.	http://www.aligningforceshumboldt.org/find_quality_care.php	RWJF	Included
62.	http://www.anthem.com/wps/portal/ahpmember?content_path=shared/va/f1/s0/t0/pw_ad087638.htm&state=va&rootLevel=0&label=Performance%20report%20catalog	RWJF	Excluded
63.	http://www.azdhs.gov/plan/crr/cr/hospitals.htm#CostComparison	RWJF, IPI	Included
64.	http://www.bcbst.com/tools/hospital-quality/service.do	RWJF	Excluded
65.	http://www.betterhealthcleveland.org/Community-Health-Checkup.aspx	RWJF	Excluded
66.	http://www.calhospitalcompare.org/?v=2	RWJF, Mathematica, journal	Excluded
67.	http://www.carechex.com/Default.aspx	RWJF	Excluded
68.	http://www.cbghealth.org/cbgh/?LinkServID=E1A62B2B-C267-A10F-ABAECC91AD53EA8A&showMeta=0	RWJF	Excluded
69.	http://www.cchri.org/reports/physician_organizations.html	RWJF, Mathematica	Excluded
70.	http://www.cdph.ca.gov/programs/hai/Pages/HealthcareAssociatedInfections.aspx	RWJF	Excluded
71.	http://www.centralindianaallianceforhealth.org/reports/	RWJF	Excluded
72.	http://www.cha.com/CHA/Resources/Colorado_Hospital_Report_Card/CHA/_Resources/Colorado_Hospital_Report_Card.aspx?hkey=a513e409-4b71-4eee-bbf6-1440067be285	Mathematica	Excluded
73.	http://www.cha.com/pdfs/Discharge_Data/2010ChgRptnop.pdf	RWJF	Excluded
74.	http://www.chaboard.com/prices/index.html	IPI	Excluded
75.	http://www.chd.dphe.state.co.us/topics.aspx?q=Health_Facility_Acquired_Infections	RWJF	Excluded
76.	http://www.checkbook.org/patientcentral/?cb=cbgh	RWJF	Excluded
77.	http://www.chiaunlv.com/Reports/HealthChoices.php	IPI	Included
78.	http://www.cigna.com/web/public/hcpdirectory/	RWJF	Excluded
79.	http://www.cimronebraska.org/Home/datamaps/nedata.aspx	RWJF	Excluded
80.	http://www.coap.org/for-the-public	RWJF	Excluded
81.	http://www.cohospitalprices.org/hprices/index.php	RWJF, IPI	Included
82.	http://www.cohospitalquality.org/	RWJF	Excluded
83.	http://www.coloradohealthonline.org/cbgh/?LinkServID=6AEFBCC8-9D88-398C-72AE3FB8ECF47B50&showMeta=0	RWJF, Mathematica	Excluded
84.	http://www.comparecarewv.gov/	IPI	Excluded
85.	http://www.comparecarewv.gov/index.aspx	RWJF	Included
86.	http://www.ct.gov/dph/cwp/view.asp?a=3132&q=388090	RWJF	Excluded
87.	http://www.cthosp.org/advocacy/quality-and-patient-safety/hospital-quality-reporting-website/	RWJF	Excluded
88.	http://www.dads.state.tx.us/	Mathematica	Excluded
89.	http://www.dartmouthatlas.org/	RWJF, Mathematica	Excluded

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92.	http://www.drscore.com/	Mathematica	Excluded
93.	http://www.dshs.state.tx.us/thcic/	RWJF, Mathematica	Excluded
94.	http://www.ehpco.com/consumer_guide.html		
95.	http://www.floridahealthfinder.gov/CompareCare/SelectChoice.aspx	RWJF, Mathematica	Included
96.	http://www.floridahealthfinder.gov/LandingPages/NursingHomeGuide.aspx	RWJF, Mathematica	Included
97.	http://www.gdaha.org/resource-center/gdaha-publications	RWJF	Excluded
98.	http://www.getbettermaine.org/	RWJF, Mathematica	Excluded
99.	http://www.hci3.org/	RWJF, Mathematica	Excluded
100.	http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/	RWJF	Excluded
101.	http://www.health.ri.gov/data/hospitalcareoutcomes/index.php	RWJF, Mathematica	Excluded
102.	http://www.health.ri.gov/publications/generalassemblyreports/2011HealthCareQualityPerformanceProgramAnnualReport.pdf	RWJF, Mathematica	Excluded
103.	http://www.health.ri.gov/publications/qualityreports/hospitals/PatientSatisfactionResults.pdf	RWJF, Mathematica	Excluded
104.	http://www.health.state.mn.us/healthreform/measurement/report/index.html#one	RWJF	Excluded
105.	http://www.health.state.mn.us/patientsafety/adverseselect.cfm	RWJF	Excluded
106.	http://www.health.state.ny.us/statistics/diseases/cardiovascular/	RWJF	Excluded
107.	http://www.health.state.ok.us/stats/index.shtml	RWJF	Excluded
108.	http://www.health.utah.gov/epi/HAI/CLABSIdata.html	RWJF	Excluded
109.	http://www.healthcarereportcard.illinois.gov/	RWJF, Mathematica	Included
110.	http://www.healthfinderla.gov/CQHospitals.aspx	RWJF	Excluded
111.	http://www.healthgrades.com/	RWJF, Mathematica	Excluded
112.	http://www.healthpartners.com/portal/145.html		Excluded
113.	http://www.healthymemphis.org/	Mathematica	Excluded
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115.	http://www.heart.org/HEARTORG/HealthcareResearch/GetWithTheGuidelinesHFStroke/GetWithTheGuidelinesStrokeHomePage/Recognition-from-Get-With-The-Guidelines-Stroke_UCM_308034_Article.jsp	RWJF	Excluded
116.	http://www.hhicpublicreports.org/	RWJF	Excluded
117.	http://www.hospitalcompare.va.gov/apps/Compare/index.asp	RWJF	Excluded
118.	http://www.hospitalconsumerassist.com/search.htm	RWJF, Journal	Included
119.	http://www.hospitalsafetyscore.org/licensure-and-permissions	RWJF	Excluded
120.	http://www.iha.org/	Mathematica	Excluded
121.	http://www.ihconline.org/aspx/publicreporting/iowareport.aspx	RWJF, Mathematica	Excluded
122.	http://www.ihie.org/public-reporting	RWJF	Excluded
123.	http://www.in.gov/isdh/23433.htm	RWJF	Excluded
124.	http://www.in.gov/isdh/reports/QAMIS/hosrpt/index.htm	RWJF	Excluded
125.	http://www.iowahospitalcharges.com/	RWJF, Journal, IPI	Included
126.	http://www.kaiserhealthnews.org/Stories/2012/April/18/community-health-center-chart.aspx	RWJF	Excluded

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128.	http://www.lahealthinform.org/	RWJF	Included
129.	http://www.leapfroggroup.org/	RWJF, Mathematica	Excluded
130.	http://www.lhcqf.org/	Mathematica	Excluded
131.	http://www.ltcohio.org/consumer/index.asp	Mathematica	Excluded
132.	http://www.maine.gov/dhhs/mecdc/infectious-disease/hai/reports.shtml	RWJF	Excluded
133.	http://www.mass.gov/eohhs/gov/departments/dph/programs/hcq/healthcare-quality/health-care-facilities/hospitals/healthcare-assoc-infections/healthcare-associated-infections-reports.html	RWJF	Excluded
134.	http://www.medicare.gov/hospitalcompare/search.html	RWJF	Excluded
135.	http://www.medicare.gov/nursinghomecompare/search.html	Mathematica	Excluded
136.	http://www.mehmc.org/member-resources/publications/advanced-primary-care/	RWJF	Excluded
137.	http://www.mhakeystonecenter.org/compare.htm	RWJF	Included
138.	http://www.mhaonline.org/quality/quality-performance-measures/quality-performance-measures	RWJF	Excluded
139.	http://www.mhqp.org/quality/whatisquality.asp?nav=030000	RWJF, Mathematica	Excluded
140.	http://www.michigandrugprices.com/	Journal	Excluded
141.	http://www.mihealthandsafety.org/2006_consumer/index.html	RWJF, Mathematica	Excluded
142.	http://www.missourihealthmatters.com/hospital-quality/	RWJF	Excluded
143.	http://www.mnhealthscores.org/	RWJF	Included
144.	http://www.mnhospitalpricecheck.org/	RWJF	Included
145.	http://www.mnhospitalquality.org/	RWJF	Excluded
146.	http://www.montanapricepoint.org/	RWJF, Mathematica IPI,	Included
147.	http://www.mqf-online.com/summary/map.aspx	RWJF	Excluded
148.	http://www.mvphealthcare.com/provider/provider-metrics-2010.html	RWJF	Excluded
149.	http://www.mycarecompare.org/	RWJF	Excluded
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151.	http://www.myhealthfinder.com/	RWJF	Excluded
152.	http://www.myschospital.org/reports_step1.aspx	RWJF	Excluded
153.	http://www.nchospitalquality.org/	RWJF	Excluded
154.	http://www.ncqa.org/tabid/631/default.aspx	Mathematica	Excluded
155.	http://www.ndhealth.gov/hf/pubs/NursingFacilityCharges/2011.pdf	Journal	Included
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157.	http://www.nevadacomparecare.net/	Journal	Included
158.	http://www.nhacarecompare.com/	RWJF, IPI	Included
159.	http://www.nhhealthcost.org/costByProcedure.aspx	RWJF, Mathematica, IPI	Excluded
160.	http://www.nhpghscorecard.org/disclaimer.cfm?redirect=hospitalratings	RWJF, Mathematica	Excluded
161.	http://www.nhqualitycare.org/	RWJF	Excluded
162.	http://www.njhcqi.org/index.php/resource-center/reports/18-new-jersey-hospital-price-transparency-report.html	RWJF, IPI	Included
163.	http://www.njhospitalcarecompare.com/index.aspx	RWJF	Included
164.	http://www.njhospitalpricecompare.com/	RWJF, IPI, Journal	Excluded
165.	http://www.nmhanet.org/	Mathematica	Excluded
166.	http://www.nortonhealthcare.com/	Mathematica	Excluded
167.	http://www.nursinghomeguide.org/NHG/nhg_txt_home.lasso	Mathematica	Excluded
168.	http://www.nvhospitalquality.net/	RWJF	Excluded
169.	http://www.nyc.gov/html/hhc/infocus/html/home/performance_landing.shtml	RWJF	Excluded
170.	http://www.oahhs.org/patient-services/price-point.html	Journal	Excluded
171.	http://www.ok.gov/health/documents/08%20Hospital%20AR.pdf	RWJF	Excluded

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173.	http://www.ok.gov/health/Protective_Health/Medical_Facilities_Service/Facility_Services_Division/Hospital_Annual_Report/	RWJF	Excluded
174.	http://www.okhca.org/	Mathematica	Excluded
175.	http://www.okhospitalpricing.org/Default.aspx	RWJF	Excluded
176.	http://www.okhospitalquality.org/reports_step1.aspx	RWJF	Excluded
177.	http://www.opa.ca.gov/Pages/Home.aspx	Mathematica	Excluded
178.	http://www.oregon.gov/OHA/OHPR/docs/HCAIAC/Reports/Dec2010_Report/Final_Report.pdf?ga=t	RWJF, Mathematica	Excluded
179.	http://www.oregon.gov/OHA/OHPR/RSCH/comparehospitalcosts.shtml	RWJF	Excluded
180.	http://www.oregon.gov/oha/OHPR/RSCH/docs/Hospital_Report/Hospital_Report_2011.pdf	RWJF	Excluded
181.	http://www.orhospitalquality.org/	RWJF	Excluded
182.	http://www.orpricepoint.org/	RWJF	Included
183.	http://www.oshpd.ca.gov/Chargemaster/	RWJF	Included
184.	http://www.oshpd.ca.gov/commonsurgery/Default.aspx	RWJF, IPI	Excluded
185.	http://www.oshpd.ca.gov/HID/DataFlow/HospQuality.html	RWJF	Excluded
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187.	http://www.pacificmedicalcenters.org/index.php/about-us/quality-innovations/	Mathematica	Excluded
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191.	http://www.patientchoicesignature.com/aboutpcs/consumersurvey.html	RWJF	Excluded
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195.	http://www.phc4.org/medicarepayments/Search.aspx	RWJF, Mathematica, IPI	Excluded
196.	http://www.phcqa.org/	RWJF	Excluded
197.	http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234/hai_annual_reports/1403644	RWJF	Excluded
198.	http://www.q-corp.org/	Mathematica	Excluded
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200.	http://www.qualitycheck.org	RWJF, Mathematica	Excluded
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202.	http://www.qualityquest.org/quality-reports/	RWJF	Excluded
203.	http://www.rethinkhealthy.org/	RWJF	Excluded
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205.	http://www.savannahbusinessgroup.com/	Mathematica	Excluded
206.	http://www.scbch.org/hospital-quality-guide/	RWJF	Excluded
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208.	http://www.sdhospitalquality.org/search.php	RWJF	Excluded
209.	http://www.sdpricepoint.org/	RWJF, IPI	Included
210.	http://www.state.nj.us/health/healthcarequality/	RWJF	Excluded
211.	http://www.stlbhc.org/healthcare.aspx	RWJF	Excluded
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213.	http://www.sts.org/quality-research-patient-safety/sts-public-reporting-online	RWJF	Excluded
214.	http://www.tnhospitalsinform.com/reporting.aspx	RWJF	Included
215.	http://www.txpricepoint.org/consumer.aspx	RWJF	Included
216.	http://www.ucomparehealthcare.com/	RWJF, Mathematica	Included
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220.	http://www.usnews.com/	Mathematica	Excluded
221.	http://www.utcheckpoint.org/reports_step1.aspx	RWJF	Excluded
222.	http://www.va.gov/HEALTH/docs/2012_VHA_Facility_Quality_and_Safety_Report_FINAL508.pdf	RWJF	Excluded
223.	http://www.vapricepoint.org/	RWJF	Included
224.	http://www.vhha.com/qualityscorecard.html	RWJF	Excluded
225.	http://www.vhi.org/healthcare.asp	RWJF, Mathematica	Included
226.	http://www.vhi.org/hospitals.asp	RWJF, Mathematica	Excluded
227.	http://www.vhi.org/outpatient_compare.asp	RWJF, Mathematica	Included
228.	http://www.vhi.org/physicians.asp	RWJF, Mathematica	Included
229.	http://www.vimo.com/hospital/browseprocedures.php	RWJF	Excluded
230.	http://www.vitals.com/	Journal	Excluded
231.	http://www.wacommunitycheckup.org/?p=viewreports&orgname=all&county=All+Counties	RWJF, Mathematica	Excluded
232.	http://www.wahospitalpricing.org/	RWJF	Included
233.	http://www.wahospitalquality.org/	RWJF	Excluded
234.	http://www.wbchc.com/resources/resources.htm	RWJF, Mathematica	Excluded
235.	http://www.wchq.org/reporting/	RWJF, Mathematica	Excluded
236.	http://www.whainfocenter.com/data_resources/2010_hcdr.htm	RWJF	Included
237.	http://www.whainfocenter.com/data_resources/2011WIInpatientQIRelease.pdf	RWJF	Excluded
238.	http://www.wheretofindcare.com/default.aspx	RWJF	Excluded
239.	http://www.wicheckpoint.org/reports_step1.aspx	RWJF	Excluded
240.	http://www.wipricepoint.org/	RWJF, IPI	Included
241.	http://www.wisconsinhealthreports.org/data	RWJF	Excluded
242.	http://www4.cbs.state.or.us/ex/ins/hit/	IPI	Excluded
243.	http://wyopricepoint.com/	RWJF, IPI	Included
244.	http://yourhealthmatters.org/	RWJF	Excluded
245.	https://findadoctor.bluecrossma.com/	RWJF	Excluded
246.	https://health.data.ny.gov/Health/Hospital-Inpatient-Cost-Transparency-Beginning-200/7dtz-qxmr	IPI	Included
247.	https://health.utah.gov/myhealthcare/	RWJF, Mathematica	Included
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250.	https://health.utah.gov/myhealthcare/reports/hcahps/index.php?doc=2&mytabsmenu=3	RWJF	Excluded
251.	https://info.kyha.com/Pricing/MSDRG/SelectHospital.asp	RWJF	Included
252.	https://ltc.dph.illinois.gov/webapp/LTCApp/ltc.jsp	Journal	Included
253.	https://prd.chfs.ky.gov/MONAHRQ/2011/	RWJF, Journals	Excluded
254.	https://www.anthem.com/health-insurance/provider-directory/searchcriteria?qs=*bnlC7RuslFfU3qxduSJdoQ==&brand=abcbs	Journal	Excluded
255.	https://www.bcbsal.org/web/index.html	RWJF	Excluded
256.	https://www.bcbsri.com/about-us/improving-healthcare-delivery/hospital-quality-program	RWJF	Excluded
257.	https://www.blueshieldca.com/fap/app/search.html	RWJF	Excluded
258.	https://www.geoaccess.com/uhc/po/Default.asp	RWJF	Excluded
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	al&_schema=PORTAL	Mathematica	
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261.	https://www.healthcarebluebook.com/	IPI	Excluded
262.	https://www.healthnet.com/portal/member/prvfinder/searchMedicalGroupsForm.do?category=DoctorSearch&topic=CompareMedicalGroups®ion=CA	RWJF	Excluded
263.	https://www.medica.com/members#quality	RWJF	Excluded
264.	https://www.ncha.org/issues/finance/top-35-drgs	IPI	Included
265.	https://www.ncha.org/issues/finance/top-35-drgs	RWJF	Excluded
266.	https://www.phin.state.ok.us/ahrq/MONAHRQ%202010/index.html	RWJF	Excluded
267.	https://www.providerlookuponline.com/harvardpilgrim/po7/Search.aspx	RWJF	Excluded
268.	https://www.uhcwest.com/vgn/images/portal/cit_60701/600715339_PCA140967_004.pdf	RWJF, Mathematica	Excluded
269.	https://www.uhcwest.com/vgn/images/portal/cit_60701/600762581_PCA080402_009.pdf	RWJF, Mathematica	Excluded
270.	https://www6.state.nj.us/LPSCA_DRUG/index.jsp	Journal	Excluded

RWJF=Robert Wood Johnson Foundation, IPI=Informed Patient Institute

Appendix C. Characteristics of Included Web Sites

#	Owner	Setting	Type	Measure of Cost	Year	Comparison	Consumer Centeredness					
							P	R	I	C	E	SUM
95.	Florida Agency for Health Care Administration	Inpatient, outpatient	Dollar amount	Charge (range)	2012-2013	Hospital	2	3	1	2	3	11
228.	Virginia Health Information	Inpatient	Symbols	Charges (average)	2012	Hospital	2	3	1	2	3	11
118.	Arkansas Hospital Association	Inpatient	Dollar amount	Charges (average)	2012	Hospital	2	2	2	1	3	10
81.	State of Colorado	Inpatient, outpatient	Dollar amount	Charges, reimbursements (average)	2011	Hospital	2	3	1	1	3	10
109.	Illinois Department of Public Health	Inpatient, outpatient, emergency	Dollar amount	Charge (median)	2011-2012	Hospital, state, and national	2	3	1	1	3	10
125.	Iowa Hospital Association	Inpatient, outpatient	Dollar amount	Charges (average, median)	2012-2013	Hospital and state	2	3	1	1	3	10
146.	Montana Hospital Association	Inpatient, outpatient	Dollar amount	Charges (average, median)	2012	Hospital, regional, and state	2	3	1	1	3	10
158.	Nebraska Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2012-2013	Hospital, regional, and state	2	3	1	1	3	10
37.	Nevada Hospital Association	Inpatient, emergency	Dollar amount	Charges (average, median, range)	2012	Hospital, county, and state	2	3	1	1	3	10
209.	South Dakota Association of Healthcare Organizations	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital and state	2	3	1	1	3	10
53.	Utah Hospitals & Health Systems Association	Inpatient	Dollar amount	Charges (average, median)	2011	Hospital, county, and state	2	3	1	1	3	10
227.	Virginia Health Information	Outpatient	Dollar amount	Charges (median)	2011	Hospital and state	2	3	0	2	3	10
223.	Virginia Hospital and Healthcare Association	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital, state, and regional	2	3	1	1	3	10
232.	Washington State Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital, county, and state	2	3	1	1	3	10
240.	Wisconsin Hospital Association	Inpatient, outpatient, emergency	Dollar amount	Charges (average, median)	2012-2013	Hospital, county, and state	2	3	1	1	3	10
236.	Wisconsin Hospital Association Information Center	Inpatient, outpatient, emergency	Dollar amount	Charges (average, median), daily rate (average)	2012-2013	Hospital county, and state	2	3	1	1	3	10
59.	American Hospital Directory, Inc.	Inpatient, outpatient	Dollar amount	Charges and costs (average)	2012	Hospital	2	2	1	2	3	10
42.	Arizona Department of Health Services	Inpatient, outpatient	Dollar amount	Charges, costs (average)	2011	Hospital, state, and national	2	3	1	0	3	9
15.	California State Government	Inpatient, outpatient	Dollar amount, symbols	Charges (average)	2012	Hospital and state	2	2	0	2	3	9

#	Owner	Setting	Type	Measure of Cost	Year	Comparison	Consumer Centeredness					
32.	Greater Detroit Area Health Council	Inpatient, outpatient	Dollar amount	Payment (median)	2010-2011	Hospital	2	3	1	0	3	9
60.	Healthy York County Coalition	Inpatient, emergency	Dollar amount	Charges (average)	2012	Hospital	2	1	1	2	3	9
13.	Maine Health Data Organization	Inpatient, outpatient	Dollar amount	Charges (median), payments	2010	Hospital	2	3	0	1	3	9
143.	State of Minnesota	Inpatient, outpatient	Dollar amount	Costs (average, median, range)	2011-2012	Hospital	2	2	0	2	3	9
38.	Ohio Department of Health	Inpatient, outpatient	Dollar amount	Charges (average, median, range)	2010	Hospital	2	3	1	1	2	9
182.	Oregon Association of Hospitals and Health Systems	Inpatient	Dollar amount	Charges (average, median)	2012-2013	Hospital, county, and state	2	2	1	1	3	9
215.	Texas Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital, county, and state	2	2	1	1	3	9
248.	Utah Department of Health	Inpatient	Dollar amount	Charges (average)	2011	Hospital, state, national	2	3	1	0	3	9
243.	Wyoming Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2011-2012	Hospital, county, and state	2	2	1	1	3	9
61.	Aligning Forces Humboldt	Inpatient	Dollar amount	Payment (median)	2010-2011	Hospital	2	3	1	0	3	9
63.	Arizona Dept. of Health Services	Inpatient	Dollar amount	Charges (average)	2012	Hospital	2	2	0	1	3	8
96.	Florida Agency for Health Care Administration	Nursing home	Dollar amount	Daily rate	NA	Provider	1	2	0	2	3	8
251.	Kentucky Hospital Association	Inpatient, outpatient	Dollar amount	Charges (median), price (range)	2012	Hospital and state	2	2	1	0	3	8
128.	Louisiana Hospital Association	Inpatient, outpatient	Dollar amount	Charge (range)	2009	Hospital	1	3	1	0	3	8
16.	Commonwealth of Massachusetts	Inpatient, outpatient	Dollar amount, symbols	Costs (median, range)	NA	Hospital	1	3	1	1	2	8
21.	Healthy Memphis Common Table	Inpatient, outpatient	Dollar amount	Payment (average)	2011-2012	Hospital	2	3	0	0	3	8
137.	Michigan Health and Hospital Association	Inpatient, outpatient	Dollar amount	Charges, payment (average)	2011-2012	Hospital	2	2	0	1	3	8
144.	Minnesota Hospital Association	Inpatient, outpatient	Dollar amount	Charges (average, median), daily rate (average)	2012	Hospital, regional, and state	2	2	1	0	3	8
214.	Tennessee Hospital Association	Inpatient	Dollar amount	Charges (average, median, range)	2010-2011	Hospital	2	1	1	1	3	8
55.	The Commonwealth Fund	Inpatient	Dollar amount	Charges, payments (average)	2011	Hospital, state, and national	2	2	1	1	2	8
35.	The New Hampshire Insurance Department	Inpatient, outpatient	Dollar amount	Out-of-pocket, payments (insurance, combined)	NA	Provider	2	2	0	1	3	8

#	Owner	Setting	Type	Measure of Cost	Year	Comparison	Consumer Centeredness					
225.	Virginia Health Information	Inpatient	Dollar amount	Charges, costs (average)	2011	Hospital, regional, state, and national	2	2	1	0	3	8
190.	Patient Choice (Medical), Wisconsin	Inpatient, outpatient	Dollar amount	Charges (median, range)	2011	Hospital	2	2	1	1	2	8
85.	West Virginia Health Care Authority	Inpatient, outpatient	Dollar amount	Charges (average, total)	NA	Hospital	1	3	1	0	3	8
247.	Utah Hospital Association and Utah Department of Health	Inpatient, outpatient	Dollar amount	Charges (average, median)	2011	Hospital, county, regional, and state	2	2	1	0	3	8
8.	Clear Health Costs	Inpatient, outpatient	Dollar amount	Costs (range)	NA	Hospital and provider	1	3	0	1	3	8
163.	The New Jersey Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2006	Hospital, county, and state	1	2	1	1	2	7
246.	New York State Department of Health	Inpatient, outpatient	Dollar amount	Charge, cost (average, median)	2011	Hospital	2	2	0	0	3	7
194.	Pennsylvania Health Care Cost Containment Council	Inpatient	Dollar amount, symbols	Charges (average)	2009	Hospital	1	3	1	0	2	7
216.	UCompare Holdings, LLC	Inpatient	Dollar amount	Payments (average)	NA	Hospital	0	2	1	2	2	7
77.	University of Nevada and Center for Health Information Analysis	Inpatient, outpatient	Dollar amount	Billed charges (average)	2007-2011	Hospital	2	2	1	0	2	7
252.	Illinois Department of Public Health	Nursing home	Dollar amount	Daily rate (average)	2006	Provider	1	2	0	1	2	6
14.	State of Maine	Inpatient, outpatient	Dollar amount	Costs (average)	2009	Hospital	1	2	0	0	3	6
20.	Utah Department of Health	Inpatient	Dollar amount	Charges (average)	2011	Hospital and state	2	2	1	0	1	6
157.	Center for Health Information Analysis	Inpatient, outpatient	Dollar amount	Charges (total, average), daily rate (average)	2013	Hospital	2	2	0	0	2	6
264.	North Carolina Hospital Association	Inpatient	Dollar amount	Charges (average)	2012	Hospital	2	1	0	0	2	5
90.	State of Vermont	Inpatient, outpatient	Dollar amount	Charges (average)	2011	Hospital	2	2	0	0	1	5
183.	State of California	Inpatient, outpatient	Dollar amount	Prices (average)	2013	Hospital	2	1	0	0	1	4
162.	New Jersey Health Care Quality Institute	Inpatient	Dollar amount	Charges (average)	2009	Hospital and state	1	2	0	0	1	4
155.	North Dakota Department of Health	Nursing facility	Dollar amount	Daily rates (average)	2011	Facility	1	2	0	1	0	4

#=Web site identification; P=price transparency R=real comparisons; I=information on value; C=connect to care; E=ease of use

Appendix D. Characteristics of Semipublic Web Sites

To supplement our review of public Web sites that report on health care costs, we sought additional information on semipublic sites that report on health care costs. In contrast to public Web sites, semipublic Web sites may be better able to offer consumers the individualized cost information they need for decisionmaking. Private companies (e.g., health plans or third party vendors) own most semipublic Web sites. Through our targeted literature review and Key Informant interviews, we identified five vendors that report cost data to enrolled clientele. In these examples, consumers are able to access cost information via a personalized Internet login if their health plan or employer subscribes to (i.e., subsidizes) the vendors' services (Table D1).

The specifics of what vendors offer are largely unknown because their products are proprietary. Based on their advertisements, vendors offer consumers online platforms that provide educational material and personalized health care cost information. Some of the vendors also offer in-person, e-mail, and phone consulting services to consumers. All vendors listed in Table A1 offer didactic material so their consumers can interpret and use the cost information. The informational material includes definitions of common terms, an explanation of insurance coverage, an overview of the health care system and its navigation, and tutorials on medical billing. These are all intended to be of value to the consumer.

Table D1. Examples of semipublic Web sites reporting health care costs

Vendor	Setting	Measures	Comparison	Subscription
Castlight Health www.castlighthealth.com	Outpatient	Reference based pricing, out-of-pocket costs	Facility, provider	Employer subscription
HealthSparq www.healthsparq.com	Inpatient, outpatient, urgent care, emergency room	Total cost estimates, professional facility and ancillary fees, out- of-pocket estimates	Facility and/or provider	Health plan or employer subscription
Truven Health Analytics www.truvenhealth.com	Inpatient, outpatient	Total cost estimates, out-of-pocket costs estimates	Facility, provider, geographic region	Health plan or employer subscription
Change Healthcare www.changehealthcare.com	#	#	#	Health plan or employer subscription
ClearCost Health www.clearcosthealth.com	#	#	Provider	Health plan, union or employer subscription
Compass www.compassphs.com	Outpatient	#	#	Employer, individual or family subscription

#=insufficient data in public domain to determine

The vendors also provide consumers with individualized cost information based on the consumer's chosen health plan. They often break down costs into total cost estimates and out-of-pocket estimates. Depending on the platform, consumers can also compare the in-network and out-of-network costs for inpatient, outpatient, urgent, and emergency department care. Within these care settings, the vendors report on costs for medical treatments, procedures, imaging tests, and laboratory tests. One vendor, Healthsparq, also breaks down costs by professional, ancillary,

and facility fees. Consumers can compare costs across facilities, providers, zip codes, and geographic regions. They have access to providers' contact information and maps to facilitate travel. Consumers can also receive updates on their accumulating costs for the year to assist with budgeting. In addition to cost data, consumers also receive quality data so they can better gauge the value of the care they receive. Another vendor, Change Healthcare, states that it tailors recommendations based on consumers' preferences regarding cost, quality, and convenience. The vendors typically market their products to health plans and employers that are interested in reducing their enrollees' or employees' health care costs. It's unclear how much a consumer's health plan or employer pay for these services. The vendors advertise that the services are a good return on investment because they improve consumer health literacy, increase engagement, and reduce costs (for health plans, employers, and consumers). Compass, another of the five vendors we reviewed, also offers services to individuals and families, independent of a health plan or an employer. The annual service fee for an individual is $108 and for a family of up to eight members is $215. To promote the service, they advertise that Compass members save an average of $620 a year by avoiding overpriced medical car.