

Assessing Utilization of a Marketwide Price Transparency Tool

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There is growing concern that the opaque prices of health care services in the United States both contribute to high overall health spending and impose direct burdens on consumers. One suggested response to high or unexpected costs is to make prices more transparent. Proponents of greater price transparency envision 2 paths through which transparency might improve the functioning of health care markets. First, providing price information may enable consumers to make more informed health care decisions and more efficient health care purchases. Second, making price information more transparent might lead to more price competition among providers, which could lead to lower prices.

Both paths require that consumers have information to use when shopping for care outside an insurance network. Many major commercial insurers offer pricing information within their networks, often in combination with high-deductible plans. Insurer-specific tools are particularly useful for in-network care because they can be customized based on claims information to reflect an individual member's cost-sharing provisions, which may change as the member exhausts a deductible or reaches an out-of-pocket maximum.^{1,2} But these tools offer little help to those seeking care out of network, who face the "list price" of the service: the charges set by the individual provider. Despite much variation in health care prices among the commercially insured population,³ relatively little is known about the value of marketwide transparency tools that reveal list prices (charges) for out-of-network care.^{4,5}

The logic of using price transparency as a tool for market improvement around out-of-network care incorporates several implicit assumptions. First, potential shoppers need to be aware of the existence of the tool when they make medical service use decisions. Second, there must be medical service decisions that are plausibly "shoppable." Third, there need to be enough providers, and enough provider price variation, for shopping to be worthwhile.

The existing literature on price transparency, almost all conducted in the context of insurer-provided pricing tools, offers mixed evidence on patient shopping behavior.⁶ Several studies have investigated how consumers respond to price shopping tools offered with

ABSTRACT

OBJECTIVES: Most transparency tools are provided by individual insurers for enrollees shopping for services within their networks. This paper seeks to understand the impact of a marketwide price transparency tool with an embedded randomized experiment to offer provider-level charge information.

STUDY DESIGN: In September 2017, FAIR Health released an independent, publicly accessible statewide consumer shopping tool, New York Healthcare Online Shopping Tool, or NYHOST, that displays individual provider charges (list prices) for common procedures in each of New York State's 3-digit geozips, as well as the estimated insurer-allowed amounts and educational resources. The rollout was accompanied by an extensive, multipronged marketing effort. It also incorporated a randomized experiment: The set of procedures with provider-level information varied across areas.

METHODS: We characterized the types of services that were most searched on the consumer shopping tool. Utilizing negative binomial models with procedure and area fixed effects, we report on market and procedural characteristics that influence price search.

RESULTS: Consumers utilized the tool strategically, searching more in procedure markets with provider-specific price information availability, more frequent out-of-network utilization, higher charges, significant charge dispersion, and substantial provider competition. We also found that the majority of searches using the tool were for emergent services not usually classified as shoppable, suggesting that consumers may also have used the tool to compare searchable prices against those in bills for services already received.

CONCLUSIONS: Our findings confirm aspects of price search theory that have been developed by studying other industries and may prove instructive for further study of price transparency tools.

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high-deductible health plans, such as those that insurers and self-insured employers offer to their own enrollees. Overall, these studies typically find relatively little use of the shopping tools.⁷⁻¹¹ On the other hand, evidence suggests that price shopping tools can be useful in specific contexts. An examination of both consumer and provider behavior in the context of an insurer-based reference pricing model for hip and knee replacements in California found that consumers who had price information did switch to lower-cost providers and that overall prices trended lower.¹²⁻¹⁴ Studies focused on laboratory services also find some evidence of effective shopping behavior in some populations.¹⁵⁻¹⁷ Several studies have assessed the effect of marketwide price transparency on inpatient charges. Price transparency by New Hampshire hospitals led to more aggressive bargaining by insurers and, study findings suggest, eventually led high-priced hospitals to lower their rate demands.^{18,19} On the other hand, a study found that charge transparency regulations in more than 30 states that required posting of hospital charges for select procedures led to reductions in listed charges but did not change actual payment rates.²⁰

Statewide price transparency tools have been developed; these tools tend to present estimates of prices (either charges or the allowed amounts) for inpatient services at the hospital level or estimates of average prices for outpatient services at the regional level. In several states, consumers can access transparency tools with provider-level information on prices for outpatient services.²¹⁻²³

Interest in consumer shopping in health care is motivated, in part, by the fact that consumers shop for almost everything else. The literature on consumer shopping in general finds that market characteristics, such as the number of available choices and the dispersion of prices, can affect shopping behavior.²⁴⁻²⁸ The literature suggests that consumers would be more likely to utilize a transparency tool when search costs are lower, when the potential savings are higher (for high-cost services with price dispersion), where significant consumer choice exists (ie, procedure markets [outpatient procedures in areas defined by geozips in New York State] with more providers), and when patients face the actual cost of care.

Background: New York Healthcare Online Shopping Tool

The launch of FAIR Health's New York Healthcare Online Shopping Tool (NYHOST), in September 2017, provides an opportunity to test the effects of an out-of-network transparency tool directly. FAIR Health was founded in 2009 to create a database of charges for health care procedures, for use by insurers paying for out-of-network care based on usual and customary rates; to provide data to government officials, policy makers, and academics for research; and to establish a consumer-facing website to provide the public with estimated out-of-network charges. The original FAIR Health website included information on nonnegotiated charges for

TAKEAWAY POINTS

Price transparency tools have the potential to enable consumerism in health care. We report on the utilization of a marketwide price transparency tool and present several findings on consumer behavior.

- ▶ There was more utilization in markets that had targeted advertising and promotion efforts.
- ▶ Most searches were for emergent services not usually classified as shoppable, suggesting that consumers may also have used the tool to assess their medical bills.
- ▶ Consumers utilized the tool strategically, by searching more often in procedure markets (outpatient procedures in areas defined by geozips in New York State) with provider-specific price information availability, more frequent out-of-network utilization, higher charges, significant charge dispersion, and substantial provider competition.

medical procedures in a geozip (a geozip tends to track with the first 3 digits of a zip code) and did not include any information on provider-specific charges or estimated insurer-allowed amounts. The New York State component of the website was enhanced, redesigned, rebranded, and launched on September 12, 2017, as NYHOST across New York State. The consumer-shopping tool can be accessed via youcanplanforthis.org (**eAppendix A** [eAppendices available at ajmc.com]).

NYHOST incorporated several enhancements to the existing FAIR Health website. These enhancements included information on the estimated allowed (ie, negotiated, in-network) amounts for all medical procedures across the geozips in the state (**eAppendix B**). The website also included information on the estimated total charges and allowed amounts for 25 "episodes of care." These 25 episodes spanned a range of services and conditions, from colonoscopy to maternity care services. Each episode presented a composite estimate of all the charges associated with the episode, as well as the estimated charge for each of the procedures and services comprising the episode.

In conjunction with the rollout of NYHOST, a randomized experiment was embedded within the website design, which released charge information for specific named medical professionals for a set of frequently performed procedures in the state (RCT ID AEARCTR-0005853). Of the 104 frequently performed procedures for professional services in New York State that had been identified, specific provider-level charge information was featured for 50 of those procedures in all 31 geozips in New York State. In addition to these 50 procedures, specific provider-level charge information also was released for a randomized set of geozip-procedure pairs for 54 additional common procedures across all geozips; each geozip was randomly allocated an additional 27 procedures on average (range, 25-37). Thus, the website featured billed charges specified at the provider level for approximately 77 procedures in each geozip (**eAppendix C**). The remaining set of geozip-procedure pairs had the estimated charge and insurer-allowed amount and did not feature provider-level charge information.

FAIR Health commissioned independent analytics on the site and found that 56% of users were female, that more than half were 44 years or younger, and that the site was heavily used for

out-of-network services; 29% denoted their insurance status as out-of-network, compared with 25% in-network, 30% unsure, and 14% uninsured.

Study Data

We examined the use of the website by combining 3 sets of data. FAIR Health also provided us with information on the utilization of the original website from January 1, 2016, to September 11, 2017, and the enhanced, redesigned website from September 12, 2017, to August 9, 2018. Searches for the procedures included in the list of 104 procedures included in the randomization represented just under 15% of the total searches. Finally, we licensed and studied an extract of the FAIR Health claims database for New York State for the time period from January 1, 2016, through June 30, 2019, of the 104 codes for which information on provider-level billed charges, limited patient information (gender, age band), and claims information (insurer identifier, product, line of business, in-network status) was available in either all or some geozips. We used the claims data for 2016, which represents a full calendar year prior to the launch of the price transparency tool, to construct information about the use of each procedure and market characteristics of each of the 31 geozips in New York State. These claims data represent claims from plans that cover 90% of the commercially insured population of New York State and include claims from Medicare Advantage and managed Medicaid plans. The line-level claims data include information on the National Provider Identifier of the billing provider, Current Procedural Terminology (CPT)/Healthcare Common Procedure Coding System (HCPCS) code billed, billed charge amount, number of units billed, insurance line of business, type of insurance product, date of service, and deidentified basic patient demographic information.

Lessons Learned

Consumer shopping behavior. An important goal for price transparency tools is to harness consumer shopping to drive price containment. This strategy focuses on the use of tools to guide shopping behavior and is likely to be most effective for shoppable services. Prior research has classified health services as shoppable if they are defined as commoditized (ie, the services are not differentiated between providers, such as laboratory and imaging services) and nonemergent. This kind of shopping behavior may also be enhanced if consumers have access to data on episodes of treatment rather than individual procedures.²⁹ We examined the codes searched on the NYHOST site to see whether actual shopping behavior corresponded to prior conjectures about what services are or are not shoppable.^{30,31}

We categorized the most commonly searched codes and assessed whether certain characteristics defined the services searched. Within the medical category, we classified the CPT/HCPCS codes based on a combination of the CPT code ranges defined by the American Medical Association and the Clinical Classifications Software developed by the Agency for Healthcare Research and Quality.

Of the searches, the majority were for medical services. Dental services, however, accounted for 22% of all searches. This may reflect the much lower prevalence of dental insurance than of medical insurance. According to the American Dental Association, approximately 1 in 3 adults had no form of dental benefits coverage as of 2015.³² In comparison, the percentage of individuals with health insurance coverage was 92% in 2019.³³ The types of medical services searched did not change meaningfully in the periods before and after the launch of NYHOST. Of the services searched, after the launch of NYHOST, surgeries accounted for the largest share of procedures: orthopedic procedures, including hip and knee replacement, back surgery, and fractures (14.4%); gastrointestinal procedures, including colonoscopy and endoscopy (5.3%); dermatology procedures (6.5%); cardiovascular procedures (1.5%); and other surgeries (8.7%). Other commonly searched categories were evaluation and management services (7.3%), radiology and imaging services (4.7%), and psychiatry and psychotherapy services (5.8%). Searches also included medicine codes (6.3%), laboratory services (3.2%), physical therapy services (3.2%), and codes for medical equipment and supplies (1.4%). Despite the option to search for an episode of care, searches for episode-of-care codes accounted for only 2.23% of all searches after the launch of NYHOST. Commonly searched episodes of care were evaluative services (evaluation and management codes) (0.5%), maternity care (0.4%), orthopedic procedures (0.3%), and colonoscopy/endoscopy (0.3%) (Table 1³⁰).

White and Eguchi reviewed private insurance claims data and classified 350 medical and dental services as shoppable; that is, both high spending and able to be scheduled in advance. Research using this classification has found these services to constitute at most 42.5% of total spending and less than 7% of out-of-pocket spending, based on claims data from the employer-sponsored insurance population.³⁰

Of the codes searched on the NYHOST website, only about a quarter of searches were classified as shoppable according to this classification. The majority of searches (74%) were for services not included in the list of shoppable services; among these, 4% of all searches were for emergency procedures and ambulances.

Impact of market characteristics on website use. We used information on the characteristics of markets (characterized by provider-geozip) prior to the launch of NYHOST to assess how market characteristics affect shopping behavior. We evaluated whether use of the tool varied with provider market characteristics (provider concentration, insurer market share), procedure characteristics (such as degree to which the procedure is used out of network in that geozip, magnitude of the average billed charge, and variation of billed charges), and patient demographic information. We report marginal effects from a negative binomial regression model with geozip, procedure, and year fixed effects that estimate how market characteristics affect the number of website hits for a given geozip, procedure code, and month combination (Table 2).

Similar to research findings on the use of price transparency tools in other settings,⁹ consumers were more likely to search for providers

in a given geozip for procedures where costs and the dispersion of costs were relatively high. A doubling of the average billed charge for a procedure-geozip combination was associated with 0.685 more users per month. Moving from the 25th percentile of the coefficient of variation (0.35) to the 75th percentile of the coefficient of variation (0.69) was associated with 0.004 more users per code per month.

Consumers were also much more likely to search for providers in procedure-geozip combinations where there were more providers available. There were 0.26 fewer searches per procedure in each month in geozips where providers performing the procedure were highly concentrated than in geozips where they were less concentrated. The impact of provider concentration on consumer shopping is important because so many markets are highly concentrated. In our sample, approximately 13% of all procedure-geozip combinations fell into the highly concentrated category, whereas 11% fell into the moderately concentrated category. In highly concentrated markets, with relatively few provider choices, consumers incurring the cost of search are unlikely to gain much. We see little effect of insurer market concentration on search, but this may be because insurer markets in New York State are extremely highly concentrated; more than 99% of all procedure-geozip combinations fell into the highly concentrated category for insurer markets, and the remaining less than 1% of combinations fell into the moderately concentrated category.

The NYHOST shopping tool is likely of most value to consumers searching for out-of-network care. Shopping increased for procedure-geozip combinations with high rates of out-of-network care. Based on our model results, moving from the 25th percentile of out-of-network claims (1.2%) to the 75th percentile (8.6%) would lead to 0.09 more users per month on average. A change from 0% to 100% of out-of-network claims for a particular geozip and code combination would be associated with 1.275 more users per month on average.

Demographic characteristics of service users were associated with website use. A procedure was more likely to be searched for in a given geozip if users of that procedure in that geozip were disproportionately young adults (aged

TABLE 1. Characteristics of Codes Searched^{30,a}

Category	Number of searches	Share of all searches,%	Searches for shoppable services, ^b n [%]	Searches for other services, n [%]
Dental services	13,520	21.96%	2169 (16%)	11,351 (84%)
Medical/surgical services	46,663	75.81%	13,130 (28%)	33,533 (72%)
Orthopedic procedures	8867	14.41%	1266 (14%)	7601 (86%)
Surgery: other	5336	8.67%	970 (18%)	4366 (82%)
E&M	4484	7.28%	3591 (80%)	893 (20%)
Dermatology procedures	4027	6.54%	293 (7%)	3734 (93%)
Medicine	3892	6.32%	659 (17%)	3233 (83%)
Psychiatry/psychology	3584	5.82%	881 (25%)	2703 (75%)
Radiology	2875	4.67%	1265 (44%)	1610 (56%)
Physical therapy	1996	3.24%	1025 (51%)	971 (49%)
Laboratory	1975	3.21%	669 (34%)	1306 (66%)
Colonoscopy/endoscopy	1969	3.20%	984 (50%)	985 (50%)
Gastrointestinal procedures: other	1311	2.13%	395 (30%)	916 (70%)
Ambulance	1081	1.76%	55 (5%)	1026 (95%)
Anesthesia services	1060	1.72%	380 (36%)	680 (64%)
Emergency services	959	1.56%	0	959 (100%)
Cardiovascular procedures	892	1.45%	92 (10%)	800 (90%)
Medical equipment and supplies	845	1.37%	31 (4%)	814 (96%)
Maternity care	761	1.24%	360 (47%)	401 (53%)
Eye surgery	597	0.97%	181 (30%)	416 (70%)
Immunizations	100	0.16%	33 (33%)	67 (67%)
Home health services	52	0.08%	0	52 (100%)
Episode of care	1370	2.23%		
E&M	296	0.48%		
Maternity	269	0.44%		
Orthopedic procedures	181	0.29%		
Colonoscopy/endoscopy	171	0.28%		
Dermatology	120	0.19%		
Emergency services	107	0.17%		
Cardiovascular	98	0.16%		
Digestive	45	0.07%		
Surgery	42	0.07%		
Eye	39	0.06%		
Medicine	2	0.00%		
Total	61,553	100%	16,138 (26%)	45,415 (74%)

CPT, Current Procedural Terminology; E&M, evaluation and management; HCPCS, Healthcare Common Procedure Coding System; NYHOST, New York Healthcare Online Shopping Tool.

^aCodes were classified based on the CPT code ranges; search numbers reflect the post-NYHOST launch period only.

^bShoppable codes were identified by the select list of CPT/HCPCS codes for ambulatory services, as defined by White and Eguchi.³⁰

Source: Authors' analysis of data from FAIR Health.

TABLE 2. Impact of Market Characteristics on Monthly Searches for a Given Procedure/Geozip Combination (January 2017–July 2018)^a

	Marginal effects	Post NYHOST		Percentile	
		Mean	SD	25th	75th
Dependent variable: number of times code searched per month in a geozip		0.27	1.9	0	0
NYHOST code-geozip combinations with provider-level charges, d	0.205***	75.9	42.8	1	1
Market share of largest insurer, %	-0.023	59.1	15.4	47.2	68.7
Highly concentrated procedure market (HHI > 2500), %	-0.260**	12.9	33.5	0	0
Moderately concentrated procedure market (1500 < HHI < 2500), %	-0.136	11.0	31.3	0	0
Log of average billed charges	0.686***	5.72	1.46	4.68	6.75
Billed charges, coefficient of variation	0.013*	0.63	1.34	0.35	0.69
Out-of-network claims, %	1.275***	7.8	11.8	1.2	8.6
Commercial claims, %	0.291	57.7	16.3	50.0	66.6
Female, %	0.582*	57.9	21.0	47.8	62.7
Aged 19-24 years, %	-0.549	4.3	4.8	1.0	5.7
Aged 25-34 years, %	2.458***	9.8	12.5	3.4	10.9
Aged 35-44 years, %	0.027	12.4	8.6	7.2	16.0
Aged 45-54 years, %	0.338	18.8	10.1	13.6	23.9
Aged 55-64 years, %	0.559*	23.1	12.4	17.0	29.2
Aged 65-74 years, %	0.848*	12.1	8.5	6.3	17.0
Aged ≥ 75 years, %	0.167	7.6	8.3	1.4	10.8
Constant	-4.732***				
Observations	60,952				
Pseudo R ²	.2725				
Month dummies	Yes				
Geozip dummies	Yes				
Procedure dummies	Yes				

d, discrete change of dummy variable from 0 to 1; HHI, Herfindahl-Hirschman Index; NYHOST, New York Healthcare Online Shopping Tool.

P* < .10; *P* < .05; ****P* < .01.

^aData are drawn from NYHOST website use and 2016 claims data from the FAIR Health database. Control variables except randomization are calculated based on 2016 billed claims data from the FAIR Health charge database. The estimation method was a negative binomial regression model; additional details on the regression model are presented in Table 3. The reference group for procedure market concentration is procedure markets with HHI < 1500; for age, aged 0-18 years.

Source: Authors' analysis of data from FAIR Health.

19-34 years) and women compared with users of that procedure in other geozips or users of other procedures in the same geozip.

Finally, we found substantial evidence that provider-level price information is valuable. Areas and procedures randomized for release of physician-level charges were more likely to exhibit utilization of the tool. Procedure and geozip combinations that had been randomized to the availability of price information had an estimated 0.2 more users per month on average, which is small in magnitude but meaningful compared with the average of 0.27 users per month for each procedure and geozip combination (Table 2). Our robustness checks included weighting the number of users by the population in a given 3-digit geozip, utilizing 2010 data from

the Census Bureau,³⁴ and we found an effect that was similar in direction and magnitude, an average increase of 0.19 more users per 1 million residents in a given geozip (Table 3).

DISCUSSION

Online transparency tools like NYHOST can reduce search costs for out-of-network services in health care markets by enabling consumers to have the price information needed to negotiate with providers. Tools that provide provider-level price information for out-of-network care may put pressure on providers to be transparent about network information and reduce out-of-network rates. On the other hand, we observe low rates of use of the tool relative to overall out-of-network service use, which suggests that this strategy may have limited scope. Although prior analyses of the impact of price transparency tools have primarily focused on the prospective use of these tools by consumers for shoppable services and elective procedures, we have found that the majority of codes searched have not typically been considered shoppable. The high prevalence of searches for emergent services in the NYHOST tool and the higher rate of searches in procedure markets (eg, procedure-geozip combinations) with higher out-of-network use and higher billed charges and dispersion suggest that transparency tools may also be used for negotiation and evaluation of emergency or surprise out-of-network bills. Consumers may be seeking price information to negotiate the bills they have already incurred when they received out-of-network care, as well as to understand the prices they might be exposed to if they choose to use services out of network.

Our results suggest that consumer-facing tools such as NYHOST may play some role in limiting the impact of unexpected or “surprise” bills, which have increasingly been the focus of legislative action.^{35,36}

Our analysis of the procedure market characteristics that affect website use suggests that although only a small fraction of the market utilizes these tools, those consumers who use it do appear to search in rational ways. They search more where there are many providers, where costs and variance of prices are high, and where provider-specific price information exists. Unfortunately, these results also suggest that price transparency tools for consumer shopping may be of limited use as a strategy for cost containment in concentrated provider markets, in which insurer negotiations

TABLE 3. Impact of Market Characteristics on Monthly Searches for a Given Procedure and Geozip (January 2017–July 2018): Robustness Checks

Dependent variable: number of times code was searched per month in a geozip Time period: January 2017–July 2018	(1) Number of searches per million	(2) Randomization test on pre-NYHOST
Randomization with provider-level charges	0.198*** (0.050)	
Randomization: check		0.052 (0.038)
Market share of largest insurer	0.113 (0.260)	–0.014 (0.225)
Highly concentrated provider markets (HHI > 2500)	–0.296*** (0.109)	–0.263** (0.104)
Moderately concentrated provider markets (1500 < HHI < 2500)	–0.143 (0.096)	–0.135 (0.083)
Log of average billed charges	0.591*** (0.081)	0.689*** (0.059)
Billed charges, coefficient of variation	0.014 (0.009)	0.013* (0.007)
Out-of-network claims, %	1.682*** (0.236)	1.244*** (0.170)
Commercial claims, %	0.412 (0.254)	0.299 (0.210)
Female, %	0.470 (0.382)	0.570* (0.318)
Aged 19–24 years, %	–0.736 (0.975)	–0.628 (0.753)
Aged 25–34 years, %	2.305*** (0.607)	2.361*** (0.380)
Aged 35–44 years, %	0.520 (0.507)	0.042 (0.386)
Aged 45–54 years, %	0.838* (0.464)	0.319 (0.403)
Aged 55–64 years, %	0.638 (0.475)	0.538 (0.340)
Aged 65–74 years, %	1.039* (0.563)	0.832* (0.454)
Aged ≥ 75 years, %	–1.169* (0.675)	0.197 (0.559)
Constant	–5.051*** (0.667)	–4.592*** (0.495)
Observations	60,952	60,952
Adjusted R ²	.1198	.2725
Month dummies	Yes	Yes
Geozip dummies	Yes	Yes
Procedure dummies	Yes	Yes

HHI, Herfindahl-Hirschman Index; NYHOST, New York Healthcare Online Shopping Tool; SE, standard error.

* $P < .10$; ** $P < .05$; *** $P < .01$.

*Negative binomial regression model. Figures reported are marginal effects. Robust SEs are in parentheses. Control variables except randomization are calculated based on 2016 billed claims data from the FAIR Health charge database. Observations are at the code*geozip*month level.

Description of estimation method: The unit of observation is at the geozip–month–procedure code level for the set of 100 codes.

The estimation method is a negative binomial regression model to account for overdispersion of the distribution of website use over geozip–month–codes, and includes year, geozip, and procedure fixed effects.

We conducted several robustness checks. In column 1, we present the results when the dependent variable is measured as the number of searches per million individuals, based on 2010 population estimates from the Census Bureau. The direction and magnitude of the coefficients of interest remain consistent with the results of the original specification. In column 2, we present the results when we tested the impact of an artificial “randomization” dummy variable for the randomized geozip*code combinations for the months prior to September 12, 2017. The coefficient on the dummy variable is not statistically significant and shows that there was no statistically significant difference in website hits between the randomized and nonrandomized geozip-code combinations prior to the actual randomization in September 2017. In the [eAppendix Table](#), we present the results with the SEs clustered at the geozip level to account for potential within-geozip heteroscedasticity. Aside from the billed charges’ coefficient of variation, the key variables of interest identified in the original specification remain statistically significant.

Source: Authors’ analysis of data from FAIR Health.

may be least effective and where the prices for health care services are least likely to be amenable to market forces.

If price dispersion is the result of imperfect information,³⁷ then price information could have both demand- and supply-side effects at equilibrium in health care markets, including a switch to lower-cost providers for patients with higher out-of-pocket costs on the demand side and reductions in prices in the long run on the supply side.³⁸ Further research is needed to understand the impact of this tool on future shopping decisions and utilization patterns. As data on search use patterns after launch become available, the

randomized experiment embedded in the NYHOST tool should provide useful information on these hypotheses.

CONCLUSIONS

The experience of the first year of New York’s new charge transparency tool, NYHOST, offers both encouragement and caution about the potential for such tools. Consumers use the tool for shoppable services, which may help contain provider pricing, but they use it even more to assess prices for services that may not be shoppable, perhaps as an

ex post negotiating tool. Finally, shopping behavior responds to the level and variance of costs—but for consumers, as with insurers, the availability of local competitors offering the same service is critical. In a market-based health care system, consumers should have access to the information on the costs that they are likely to pay for services before they receive their bills. Price transparency tools, like NYHOST, can contribute to the availability of this information. ■

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REFERENCES

- Brot-Goldberg ZC, Chandra A, Handel BR, Kolstad JT. What does a deductible do? the impact of cost-sharing on health care prices, quantities, and spending dynamics. *Q J Econ*. 2017;132(3):1261-1318. doi:10.1093/qje/qjx013
- Chernew M, Cooper Z, Larsen-Hallock E, Morton FS. Are health care services shoppable? evidence from the consumption of lower-limb MRI scans. National Bureau of Economic Research working paper No. 24869. July 2018. Revised January 2019. Accessed March 7, 2021. <https://www.nber.org/papers/w24869>
- Cooper Z, Craig SV, Gaynor M, Van Reenen J. The price ain't right? hospital prices and health spending on the privately insured. National Bureau of Economic Research working paper No. 21815. December 2015. Revised May 2018. Accessed March 7, 2021. <https://www.nber.org/papers/w21815>
- Bai G, Anderson GF. US hospitals are still using chargemaster markups to maximize revenues. *Health Aff (Millwood)*. 2016;35(9):1658-1664. doi:10.1377/hlthaff.2016.0093
- Bai G, Anderson GF. Variation in the ratio of physician charges to Medicare payments by specialty and region. *JAMA*. 2017;317(3):315-318. doi:10.1001/jama.2016.16230
- Mehrotra A, Dean KM, Sinaiko AD, Sood N. Americans support price shopping for health care, but few actually seek out price information. *Health Aff (Millwood)*. 2017;36(8):1392-1400. doi:10.1377/hlthaff.2016.1471
- Desai S, Hatfield LA, Hicks AL, et al. Offering a price transparency tool did not reduce overall spending among California public employees and retirees. *Health Aff (Millwood)*. 2017;36(8):1401-1407. doi:10.1377/hlthaff.2016.1636
- Desai S, Hatfield LA, Hicks AL, Chernew ME, Mehrotra A. Association between availability of a price transparency tool and outpatient spending. *JAMA*. 2016;315(17):1874-1881. doi:10.1001/jama.2016.4288
- Gourevitch RA, Desai S, Hicks AL, Hatfield LA, Chernew ME, Mehrotra A. Who uses a price transparency tool? implications for increasing consumer engagement. *Inquiry*. 2017;54:0046958017709104. doi:10.1177/0046958017709104
- Sinaiko AD, Rosenthal MB. Examining a health care price transparency tool: who uses it, and how they shop for care. *Health Aff (Millwood)*. 2016;35(4):662-670. doi:10.1377/hlthaff.2015.0746
- Mehrotra A, Brannen T, Sinaiko AD. Use patterns of a state health care price transparency web site: what do patients shop for? *Inquiry*. 2014;51:0046958014561496. doi:10.1177/0046958014561496
- Robinson JC, Brown T, Whaley C. Reference-based benefit design changes consumers' choices and employers' payments for ambulatory surgery. *Health Aff (Millwood)*. 2015;34(3):415-422. doi:10.1377/hlthaff.2014.1198
- Robinson JC, Brown TT, Whaley C. Reference pricing changes the 'choice architecture' of health care for consumers. *Health Aff (Millwood)*. 2017;36(3):524-530. doi:10.1377/hlthaff.2016.1256
- Robinson JC, MacPherson K. Payers test reference pricing and centers of excellence to steer patients to low-price and high-quality providers. *Health Aff (Millwood)*. 2012;31(9):2028-2036. doi:10.1377/hlthaff.2011.1313
- Sinaiko AD, Joynt KE, Rosenthal MB. Association between viewing health care price information and choice of health care facility. *JAMA Intern Med*. 2016;176(12):1868-1870. doi:10.1001/jamainternmed.2016.6622
- Whaley C. Searching for health: the effects of online price transparency. SSRN. October 1, 2015. Accessed March 7, 2021. <https://ssrn.com/abstract=2684809>
- Wu S, Sylwestrzak G, Shah C, DeVries A. Price transparency for MRIs increased use of less costly providers and triggered provider competition. *Health Aff (Millwood)*. 2014;33(8):1391-1398. doi:10.1377/hlthaff.2014.0168
- Tu HT, Lauer JR. Impact of health care price transparency on price variation: the New Hampshire experience. *Issue Brief Cent Stud Health Syst Change*. 2009;(128):1-4.
- Tu HT, Gourevitch R. Moving markets: lessons from New Hampshire's health care price transparency experiment. California HealthCare Foundation. April 2014. Accessed March 7, 2021. <https://www.chcf.org/wp-content/uploads/2017/12/PDF-MovingMarketsNewHampshire.pdf>
- Christensen HB, Floyd E, Maffett M. The only prescription is transparency: the effect of charge-price-transparency regulation on healthcare prices. *Manag Sci*. 2020;66(7):2861-2882. doi:10.1287/mnsc.2019.3330
- Kullgren JT, Ducey KA, Werner RM. A census of state health care price transparency websites. *JAMA*. 2013;309(23):2437-2438. doi:10.1001/jama.2013.6557
- de Brantes F, Delbanco S, Butto E, Patino-Mazmanian K, Tessitore L. Price transparency & physician quality report card 2017. Catalyst for Payment Reform. 2017. Accessed March 7, 2021. https://www.catalyst.org/wp-content/uploads/2017/11/Price-Transparency-and-Physician-Quality-Report-Card-2017_0-1.pdf
- Brown ZY. Equilibrium effects of health care price information. *Rev Econ Stat*. 2018;101(4):699-712. doi:10.1162/rest_a_00765
- Butters GR. Equilibrium distributions of sales and advertising prices. *Rev Econ Stud*. 1977;44(3):465-491. doi:10.2307/2296902
- Stigler GJ. The economics of information. *J Polit Econ*. 1961;69(3):213-225.
- Seiler S. The impact of search costs on consumer behavior: a dynamic approach. *Quant Mark Econ*. 2013;11(2):155-203. doi:10.1007/s1129-012-9126-7
- Salz T. Intermediation and competition in search markets: an empirical case study. Yale University Department of Economics. December 14, 2015. Accessed March 7, 2021. https://economics.yale.edu/sites/default/files/jmp_salz.pdf
- Lieber EMJ. Does it pay to know prices in health care? *Am Econ J Econ Policy*. 2017;9(1):154-179. doi:10.1257/pol.20150124
- de Brantes F, Rosenthal MB, Painter M. Building a bridge from fragmentation to accountability—the Prometheus Payment model. *N Engl J Med*. 2009;361(11):1033-1036. doi:10.1056/NEJMp0906121
- White C, Eguchi M. Reference pricing: a small piece of the health care price and quality puzzle. National Institute for Health Care Reform research brief No. 18. October 2014. Accessed March 7, 2021. <https://www.nihcr.org/analysis/improving-care-delivery/prevention-improving-health/reference-pricing/>
- Frost A, Newman D. Spending on shoppable services in health care. Health Care Cost Institute. March 1, 2016. Accessed March 7, 2021. <https://healthcostinstitute.org/hcci-research/spending-on-shoppable-services-in-health-care>
- Dental benefits and Medicaid. American Dental Association. Accessed September 28, 2021. <https://www.ada.org/en/science-research/health-policy-institute/dental-statistics/dental-benefits-and-medicaid>
- Health insurance coverage in the United States: 2019. US Census Bureau. September 15, 2020. Accessed September 28, 2021. <https://www.census.gov/library/publications/2020/demo/p60-271.html>
- Decennial Census datasets. US Census Bureau. 2010. Accessed September 28, 2021. <https://www.census.gov/programs-surveys/decennial-census/data/datasets.2010.html>
- Cooper Z, Morton FS, Shekita N. Surprise! out-of-network billing for emergency care in the United States. National Bureau of Economic Research working paper No. 23623. July 2017. Revised January 2019. Accessed March 7, 2021. <https://www.nber.org/papers/w23623>
- McCarthy M. Many US patients are hit with surprise emergency care bills, study finds. *BMJ*. 2016;355:i6200. doi:10.1136/bmj.i6200
- Urbany JE, Dickson PR, Kalapurakal R. Price search in the retail grocery market. *J Mark*. 1996;60(2):91-104. doi:10.2307/1251933
- Whaley C, Brown T, Robinson J. Consumer responses to price transparency alone versus price transparency combined with reference pricing. *Am J Health Econ*. 2019;5(2):227-249. doi:10.1162/ajhe_a_00118

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eAppendix A. Launching Page of the Price Transparency Tool

FAIRHealth Consumer | You can plan for this.

Insurance Basics | Resources | Shared Decision Making | Quality | Glossary | About Us | Newsletters

Estimate your healthcare expenses.

Get essential information on costs for thousands of procedures and learn [insurance basics](#).

Search for Medical and Hospital Costs | Search for Dental Costs

eAppendix B. Example of the Information on the Price Transparency Website for the Procedure-Geozip Combinations Assigned to the Control Group

FAIRHealth Consumer | You can plan for this.

Insurance Basics | Resources | Shared Decision Making | Quality | Glossary | About Us

FH[®] Total Treatment Cost Related to
Type 2 Diabetes
 Flushing, NY 11357

Print

TOTAL \$5,227 (Out-of-Network/Uninsured Price) | TOTAL \$2,058 (In-Network Price)

Costs of Care Related to Type 2 Diabetes	Out-of-Network/Uninsured Price	In-Network Price
Doctor Visits (Ex. Inpatient, Office, Emergency Room, Nursing Facility)	\$1,316	\$608
Laboratory Tests	\$1,743	\$545
Medical Tests/Exams (Ex. Allergy Tests, Inhalation Treatment)	\$925	\$404

eAppendix C. Example of the Information on the Price Transparency Website for the Procedure-Geozip Combinations Assigned to the Treatment Group

The screenshot displays a website interface for price transparency. At the top, there is a navigation bar with the FAIR Health Consumer logo and various menu items like Insurance Basics, Resources, Shared Decision Making, Quality, Glossary, and About Us. A search bar is also present.

Below the navigation bar, a header section provides details for a specific service: "Provider Cost Related to Psychotherapy, 45 minutes CPT Code 90834 Albany, NY 12202". A prominent blue box indicates a "Typical Provider Price in this Area" of "\$250". A callout box below this states "OUT-OF-NETWORK/ UNINSURED PRICE".

The main content area is divided into several sections:

- Search Filters:** Includes "Narrow your search" with filters for Price (\$51 - \$310), Specialty (All specialties), and Gender (All Gender). There are also options to "Narrow your search" and "Collapse Map".
- Compare Provider Info:** A table-like section with columns for "Compare", "Provider Info", and "Est. Provider Charge".
- Provider 1:** Dr. Rachel H Wasserman, PH.D., 435 New Karner Rd, Albany, NY 12205, Phone: 518-227-1878. Estimated charge: \$100-\$200. Includes a "See provider details" link.
- Provider 2:** Parsons Child And Family Center, 60 Academy Rd, Albany, NY 12208, Phone: 518-426-2600, Fax: 518-447-1812. Estimated charge: \$120-\$230.
- Map:** A map showing the geographic area around Albany, NY, with labels for various locations like Lake Desolation, Greenfield Center, and Saratoga Springs.

eAppendix Table.

Dependent variable: number of times code was searched per month in a geozip Time period: January 2017-July 2018	SE clustered at geozip level
Randomization with provider-level charges	0.205*** (0.058)
Randomization: check	
Market share of largest insurer	-0.023 (0.365)
Highly concentrated provider markets (HHI > 2500)	-0.260* (0.146)
Moderately concentrated provider markets (1500 < HHI < 2500)	-0.136 (0.101)
Log of average billed charges	0.686*** (0.104)
Billed charges, coefficient of variation	0.013 (0.009)
Out-of-network claims, %	1.275*** (0.231)
Commercial claims, %	0.291 (0.327)
Female, %	0.582 (0.422)
Aged 19-24 years, %	-0.549 (1.061)
Aged 25-34 years, %	2.458*** (0.681)
Aged 35-44 years, %	0.027 (0.966)
Aged 45-54 years, %	0.338 (0.408)
Aged 55-64 years, %	0.559 (0.490)
Aged 65-74 years, %	0.848 (0.648)
Aged ≥75 years, %	0.167 (0.987)
Constant	-4.732*** (0.755)
Observations	60,952
Adjusted R^2	.2733
Month dummies	Yes
Geozip dummies	Yes
Procedure dummies	Yes