

Who Searches the Internet for Health Information?

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Objective. To determine what types of consumers use the Internet as a source of health information.

Data Sources. A survey of consumer use of the Internet for health information conducted during December 2001 and January 2002.

Study Design. We estimated multivariate regression models to test hypotheses regarding the characteristics of consumers that affect information seeking behavior.

Data Collection. Respondents were randomly sampled from an Internet-enabled panel of over 60,000 households. Our survey was sent to 12,878 panel members, and 69.4 percent of surveyed panel members responded. We collected information about respondents' use of the Internet to search for health information and to communicate about health care with others using the Internet or e-mail within the last year.

Principal Findings. Individuals with reported chronic conditions were more likely than those without to search for health information on the Internet. The uninsured, particularly those with a reported chronic condition, were more likely than the privately insured to search. Individuals with longer travel times for their usual source of care were more likely to use the Internet for health-related communication than those with shorter travel times.

Conclusions. Populations with serious health needs and those facing significant barriers in accessing health care in traditional settings turn to the Internet for health information.

Key Words. Internet, health information, uninsured, travel time, chronic conditions

Consumers are increasingly turning to the Internet to obtain information about health and health care. Internet use has grown dramatically over the last decade (Pew Research Center 2005) and searching for health information is an important application for many users (Fox et al. 2000; Baker, Wagner et al. 2003; Fox 2005). In addition, among consumers who seek information about

health and health care from a source other than a physician, approximately 40 percent use the Internet (Tu and Hargraves 2003).

Arrow (1963) proposed that consumers would be unequally informed about health and medical care because of differences in the costs and benefits of seeking information. Surprisingly few studies, however, have directly examined the proposition that the costs and benefits of seeking information affect information seeking behavior. In a study of the relationship between cost sharing and provider choice, Marquis (1985) found little evidence that consumers facing higher cost sharing were more likely to search for lower cost providers. In an analysis of a community-wide informational intervention, Wagner, Hu, and Hibbard (2001) found that those likely to benefit most from health information, as measured by poor self-reported health status and the presence of children in the household, were more likely to use self care resources. In addition, those facing higher costs of accessing information from physicians, as measured by travel time to usual source of care, were also more likely to use self-care resources. However, Wagner and colleagues did not find evidence that the price of physician services, as measured by insurance status, had a positive effect on the use of self-care resources.

The emergence of the Internet as a source of health information provides new impetus to study the determinants of demand for health information. While the Internet has dramatically increased access to consumer health information, concerns about the quality of information available on the Internet and the ability of consumers to identify high-quality information (Berland et al. 2001; Green, Kazanjian, and Helmer 2004; Zeng et al. 2004) raise questions about the implications of expansions in its use.

To assess both the promise of the Internet as a source of health information and its potential shortcomings, one must first identify the types of individuals who turn to the Internet for health information. In this paper, we examine consumer demand for health information on the Internet, focusing on how differences across individuals are associated with their use of the Internet for this purpose.

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DEVELOPING HYPOTHESES

People obtain health information from a variety of sources. Conceptually, we divide these sources into two broad categories based on whether or not a consumer obtains personalized information directly from a physician or other health professional. Health professionals, primarily physicians, presumably have superior information about the production of health because of their extensive training and their experience in treating patients, which creates a market for health information from physicians (Arrow 1963).

Consumers may also obtain health information through nonphysician channels, which we will refer to as consumer health information. Consumer medical guides, the popular press, professional journals, publications by health plans or not-for-profit organizations, and recommendations from family and friends all serve as sources of consumer health information. In this paper, we view the Internet as a medium that facilitates access to consumer health information. Of course, consumers may turn to multiple sources, including both physician and nonphysician sources, when seeking health information. In addition, some information on the Internet comes directly from physicians or other health care providers, although in many cases it is not tailored to a particular patient through a personalized interaction.

We develop our hypotheses based on the proposition that demand for health information is affected by the expected costs and benefits to consumers of acquiring that information (Arrow 1963). Demand for health information on the Internet, in turn, will be affected by the characteristics of consumers that are associated with greater demand for health information from any source. The expected benefits of seeking health information are based on the likelihood that the information will improve the individual's health. These benefits are likely to be greater for individuals either in poor health or more likely to experience poor health. Holding health status constant, individuals who are more efficient producers of health because they have greater ability to find and act upon information are also more likely to have greater demand for health information (Grossman 1972; Fuchs 1998).

Demand for consumer health information on the Internet also depends on the costs and benefits of obtaining consumer health information on the Internet relative to those of other sources. While the monetary cost of consumer health information on the Internet is generally low, the opportunity costs of time spent searching for health information as well as the benefits of Internet-based health information are likely to be uncertain and vary significantly across consumers. Individuals may have to search for information from

multiple sources and may have difficulty understanding and using the information they find.

The costs of information from physicians also affect demand for consumer health information, and this type of information may serve as either a substitute for or a complement to health information from a physician (Wagner et al. 2001). Consumers may forego contacts with physicians in response to the availability of information from alternative sources. Consumers for whom the opportunity costs of obtaining information from a physician are high may be more likely to substitute consumer health information for health information provided by a physician.

Consumer health information may also complement information from a physician. Consumers may search for information to evaluate the quality of either the information or the services they receive from a physician (Haas-Wilson 2001) or to supplement that provided by a physician. For example, patients learning more about a particular condition may identify alternative treatments that better match their personal preferences than those recommended by a physician, or a physician may recommend a particular type of diet or treatment, and a patient may seek out other patients on the same regime for more detailed advice on how to incorporate these instructions into their daily living. Finally, consumers, particularly those facing high out-of-pocket costs for health care services, may search for information on the prices of health care providers (Haas-Wilson 1990).

In summary, our analysis suggests that the characteristics of individuals that affect demand for health information from any source as well as the relative costs and benefits of seeking information from alternative sources will affect consumer demand for health information from the Internet. Based on this framework, we identify three hypotheses that we test in our empirical work. First, we hypothesize that those currently in poor health and those with expectations of future poor health have greater demand for health information from the Internet than those in better health. This is because these individuals are more likely to benefit from health information in the form of improved health. Second, we hypothesize that individuals who are more efficient users of health information will have greater demand for health information from the Internet. This is due to the greater efficiency of these individuals in producing health and the lower cost to these individuals of accessing information without the assistance of a health professional. Finally, we hypothesize that the price of alternative sources of health information relative to the price of obtaining information on the Internet affects demand for health information on the Internet. If consumer health information serves as a substitute for health

information from physicians, individuals facing higher costs, either out of pocket or opportunity costs, in accessing health care providers will be more likely to search for health information on the Internet. If consumer health information on the Internet complements information from physicians, an increase in the price of physician services will decrease consumer demand for health information on the Internet.

EMPIRICAL METHODS

Data

A survey of consumer use of the Internet for health conducted during December 2001 and January 2002 provided data for this study. Respondents were selected from an Internet-enabled panel of over 60,000 households created and maintained by a survey research firm (Knowledge Networks Inc., Menlo Park, CA). The panel was created by randomly selecting individuals to be offered free Internet access via Web-TV in exchange for answering occasional surveys. At the time of our survey, the panel recruitment response rate was 50.6 percent and the household connection rate was 70.2 percent.¹ Our survey was sent to 12,878 panel members. The survey completion rate was 69.4 percent.

All members of our study sample have at least a minimum level of Internet access through the Web-TV, and some respondents also have access through a computer or broadband service independent of panel membership. This has two implications for our study. First, differences across the sample in the use of the Internet are not the result of the monetary cost of obtaining Internet access. Second, our results are not necessarily representative of either the population currently with Internet access or the general population. They are representative of a population of individuals who responded to an offer of free Internet access. That said, comparisons between the study sample and other nationally representative data sources along a number of dimensions of demographic, socioeconomic, and health status indicate that the survey panel is comparable with the U.S. population along these dimensions (Baker, Bundorf et al. 2003). We excluded 560 observations with missing data for key study variables. The characteristics of our study sample are presented in Table 1.

Hypothesis Testing

Our objective in the empirical analysis is to test three hypotheses. First, individuals who are in poor health are more likely than those who are in better

Table 1: Sample Characteristics ($N = 8,378$)

<i>Variable</i>	<i>Mean</i>
Public insurance	0.270
Private insurance	0.586
Uninsured	0.144
Prior Internet access	0.528
Travel time (minutes)	
< 15	0.490
15–29	0.369
30+	0.141
Rural	0.229
Chronic condition	0.509
Education (years)	
≤ 12	0.575
> 12	0.425
Income (k)	
<35	0.394
35–75	0.387
75+	0.128
Missing	0.092
Male	0.465
Age (years)	
21–30	0.166
31–40	0.200
41–50	0.238
51–64	0.230
65–74	0.109
75 and older	0.057

health, all else equal, to turn to the Internet for health information. We test this hypothesis by examining whether those with chronic conditions are more likely to search for health information on the Internet than those without chronic conditions. We use this measure of health needs, rather than a measure of health status (such as self-reported health status), to reduce the possibility that our results are affected by reverse causality. This would be the case, for example, if information from the Internet led individuals to manage more effectively their chronic condition and, thus, report better health status.

Our second hypothesis is that those who are more efficient users of health information will have greater demand for health information from the Internet. We propose that education is a proxy for greater expected benefits of health information. Education may also be a proxy for the costs of obtaining health information on the Internet.

Finally, we hypothesize that individuals facing higher costs in accessing health information from health care providers in traditional settings, all else equal, are more likely to use the Internet for health information. We use two proxies for the costs of accessing information from providers in traditional settings, including health insurance status and distance from an individual's usual source of care. Individuals without health insurance coverage face higher out-of-pocket payments for both physician visits and physician services. Travel time to the individual's regular source of care serves as a measure of the opportunity cost of visits to providers in traditional settings (Acton 1975; Cauley 1987; Currie and Reagan 2003).

We also examine differences by age in the use of the Internet for health information. Because health generally deteriorates with age, we use age as an additional proxy for health needs. In this case, demand for health information would increase with age. However, age may also be a proxy for the ability to use the Internet. In particular, use of the Internet and computers more generally declines with age (Pew Research Center 2005), suggesting that age may also be related to one's ability or desire to use the Internet. In this case, age would be negatively correlated with demand for health information from the Internet.

Study Variables

The dependent variables are measures of use of the Internet for information and the use of the Internet and e-mail for communication about health and health care. We asked survey respondents, "Within the past year, how often did you look on the Internet for information or advice about health or health care?" For this question, we identified users as those indicating they did this at least once in the past year and frequent users as those indicating they did this every 2–3 months or more frequently. We also asked individuals, "In the past year, about how often did you use e-mail or the Internet to (a) communicate with a doctor or other health care provider, (b) communicate with a family member or friend about health or health care, or (c) communicate with other people who have health conditions or concerns like mine." We identified individuals who indicated that they had done so at least once within the last year as users.

We measure health needs using an indicator of at least one of five self-reported chronic conditions including high blood pressure or hypertension; diabetes or high blood sugar; cancer; a heart attack, coronary heart disease, angina, heart failure, or other heart problems; and depression. For the first four

conditions, survey respondents were asked whether a doctor or other health care provider had ever told them they had the condition. For depression, respondents were asked whether they ever had or a doctor told them they ever had the condition. In other words, we allowed self-diagnosis only for depression.

The study includes two measures of the price of obtaining information from health care providers in traditional settings. The first is insurance status. We hypothesize that the uninsured face a relatively high price of obtaining information from physicians in a traditional setting. We asked individuals about their current health insurance status using a hierarchical question format intended to assign individuals to a single category. We also asked a follow-up question to those not indicating any source of coverage to verify that they were uninsured. The categories we use in our analysis are uninsured, any private insurance (including employer-sponsored and individually purchased), and public coverage (which includes individuals indicating an unknown source of coverage as well as public programs). The primary purpose of our analysis of insurance coverage is to compare the uninsured with those with private insurance to obtain an estimate of the effect of the out-of-pocket price of physician visits on demand for information on the Internet. Thus, we include those with unknown coverage (1.8 percent of our sample) with those with public coverage.

A potential issue in using insurance status as an indicator of the out-of-pocket price of physician services is that it may be correlated with unobserved preferences for health and health care. In particular, a lack of health insurance may be negatively correlated with unobserved preferences for health and health information in general, creating a downward bias in our estimates of the effects of the price of substitutes on demand for health information on the Internet. To address this, we include the interaction of health needs and health insurance status in the empirical model using a mutually exclusive set of indicator variables. The omitted category in each model is privately insured with no chronic conditions.

We use travel time to the individual's usual source of care as a measure of the opportunity cost of obtaining information in traditional provider settings. The categories for this variable are less than 15, 15–29, and 30 minutes or more each way. The omitted category in the empirical models is less than 15 minutes.

We include variables in our model intended to control for individual characteristics that affect demand for health information overall and demand for information on the Internet. These include education (≤ 12 , > 12 years),

income (<\$35,000, \$35–\$75,000, >\$75,000), sex (binary indicator of male), and age (21–30, 31–40, 41–50, 51–64, 65–74, and 75 years and older). We also include an indicator of whether the individual had used the Internet before obtaining access through the survey research firm to control for general familiarity with the Internet. This also controls for mode effects—some respondents may use Web-TV to access the Internet while others may use computers. Finally, we include an indicator of whether an individual lives in a rural area to control for potential confounding of characteristics of rural markets with travel time, although our results for travel time are ultimately not sensitive to including this control.

Model Estimation

We estimate logistic regression models, presenting the coefficient estimates as odds ratios. We demonstrate the magnitude of the effects of key study variables by calculating the average of the predicted probabilities over the entire study sample, holding study variables of interest constant. In our analyses, we use poststratification weights, which correct the distribution of respondents to match the known distribution of the U.S. population on age, sex, race, education, region, metropolitan residence, and veteran status, to account for over-sampling and nonresponse.

RESULTS

Descriptive Statistics for Dependent Variables

Thirty-three percent of the study sample used the Internet in the last year to search for health information, and 13 percent indicated they did so frequently (Table 2). Both any use and frequent use of the Internet to search for health information are relatively stable with age until age 65 when they decline. Fewer survey respondents used the Internet or e-mail for communication about health matters than for searching for information in the last year, and they were more likely to use it to communicate with family members or friends (22 percent) than with health care providers (5 percent) or with other people with similar health conditions or concerns (10 percent). Age is not associated with use of the Internet or e-mail for communication with health care providers or with other people with similar health conditions. Although age is associated with use of the Internet or e-mail to communicate with family members or friends about health care, a clear trend does not emerge.

Table 2: Use of the Internet to Search for Health Information and to Communicate with Others about Health

	N	Proportion Indicating Use Overall and by Age Group						
		All	21-30	31-40	41-50	51-64	65-74	75+
Use of the Internet within the past year to search for health information								
Ever (at least once within the last year)	8,378	0.327	0.336	0.334	0.349	0.347	0.272	0.212***
Frequently (every 2-3 months or more frequently within the last year)	8,378	0.127	0.125	0.122	0.134	0.144	0.113	0.079***
Use of the Internet or e-mail at least once within the last year to communicate with								
A doctor or other health care provider	8,327	0.053	0.077	0.044	0.055	0.050	0.036	0.047
A family member or friend about health or health care	8,326	0.224	0.284	0.187	0.217	0.238	0.187	0.227***
Other people who have health conditions or concerns like mine	8,309	0.103	0.133	0.088	0.102	0.100	0.091	0.106
N			704	1,101	1,562	2,772	1,450	789

Statistical significance refers to the test of the hypothesis that the means are equal across age groups.

*Significant at 10%;

**Significant at 5%;

***Significant at 1%.

Search for Health Information and Communication with Health Providers

Those with chronic conditions were more likely to use the Internet to search for health information than those without chronic conditions, consistent with the hypothesis that those with greater underlying health needs have greater demand for health information (Table 3). Privately insured individuals with a chronic condition were 1.3 times more likely ($p \leq .05$) than privately insured individuals without a chronic condition to have used the Internet for health information at least once during the past year. While those publicly insured without a chronic condition were equally as likely as the privately insured without a chronic conditions to search for health information on the Internet, the publicly insured with a chronic condition were 1.6 times more likely

Table 3: Use of the Internet to Search for Health Information or to Communicate with Others about Health Model Estimated Using Maximum Likelihood Logistic Regression. Odds Ratios Shown

	<i>Search for Information on the Internet within the Past Year</i>		<i>Use of the Internet or E-Mail to Communicate with</i>		
	<i>At Least Once</i>	<i>Every 2-3 Months or More</i>	<i>Providers</i>	<i>Friends or Family</i>	<i>Patients</i>
Privately insured and chronic condition	1.251** [0.119]	1.363** [0.184]	1.425* [0.292]	1.459*** [0.158]	1.793*** [0.313]
Uninsured and no chronic condition	0.663** [0.120]	0.639 [0.176]	0.736 [0.315]	0.587** [0.131]	1.021 0.327
Uninsured and chronic condition	1.314 [0.249]	1.942*** [0.456]	1.246 [0.491]	1.711*** [0.356]	2.095*** [0.554]
Publicly insured and no chronic condition	1.018 [0.192]	1.478 [0.386]	2.017* [0.781]	1.217 [0.252]	2.478*** [0.693]
Publicly insured and chronic condition	1.579*** [0.241]	2.596*** [0.500]	1.644* [0.443]	1.549*** [0.263]	2.952*** [0.660]
Travel time (minutes)					
15-29	1.123 [0.089]	1.012 [0.112]	1.372* [0.236]	1.273*** [0.112]	1.206 [0.160]
30+	1.262* [0.150]	1.181 [0.181]	1.348 [0.323]	1.453*** [0.189]	1.574*** [0.262]
Rural	0.917 [0.095]	0.789 [0.116]	0.936 [0.200]	1.002 [0.113]	0.963 [0.157]
Prior Internet access	1.745*** [0.147]	1.423*** [0.165]	1.261 [0.238]	1.379*** [0.130]	1.438** [0.207]
Education > 12 years	1.778*** [0.138]	1.592*** [0.173]	1.057 [0.173]	1.310*** [0.114]	1.045 [0.138]
Income (k)					
35-75	0.808** [0.074]	0.729** [0.094]	0.731 [0.149]	0.85 [0.088]	0.789 [0.122]
75+	0.964 [0.111]	0.834 [0.133]	0.977 [0.245]	0.963 [0.128]	0.717 [0.146]
Missing	1.183 [0.166]	1.236 [0.229]	1.014 [0.256]	0.994 [0.145]	1.066 [0.209]
Male	0.555*** [0.041]	0.651*** [0.067]	1.18 [0.194]	0.649*** [0.054]	0.690*** [0.084]
Age (years)					
21-30	0.821 [0.109]	0.858 [0.155]	1.44 [0.371]	1.422** [0.211]	1.286 [0.268]
31-40	0.888 [0.108]	0.907 [0.153]	0.793 [0.198]	0.827 [0.115]	0.869 [0.176]
51-64	0.947 [0.097]	1.009 [0.144]	0.857 [0.181]	1.04 [0.119]	0.845 [0.139]
65-74	0.617*** [0.101]	0.516*** [0.109]	0.467** [0.155]	0.721* [0.129]	0.495*** [0.114]
75 and older	0.457***	0.345***	0.641	0.943	0.604**

continued

Table 3: Continued

	<i>Search for Information on the Internet within the Past Year</i>		<i>Use of the Internet or E-Mail to Communicate with</i>		
	<i>At Least Once</i>	<i>Every 2-3 Months or More</i>	<i>Providers</i>	<i>Friends or Family</i>	<i>Patients</i>
	[0.089]	[0.094]	[0.218]	[0.195]	[0.154]
Observations	8,378	8,378	8,327	8,327	8,309

*Significant at 10%;

**Significant at 5%;

***Significant at 1%.

($p \leq .01$) than the privately insured without a chronic condition to use the Internet for health information. For the uninsured, those without a chronic condition were less likely to use the Internet for health information while those with a chronic condition were more likely to use the Internet for health information, particularly frequently, than the privately insured without a chronic condition. Although travel time to usual source of care is positively associated with searching for health information on the Internet, the effect is weakly statistically significant ($p \leq .10$) only for any use within the past year.

More highly educated individuals were more likely to turn to the Internet for health information than those with less education, and men were less likely than women to turn to the Internet for health information. The effects that we observed for age in the unadjusted results remained in the multivariate models. Use of the Internet for health information is relatively constant by age until age 65 when it begins to decline.

The results for communication about health and health care using the Internet or e-mail with family members or friends and people with similar types of health conditions are similar to those for search for health information. Among privately insured individuals, those with chronic conditions were more likely to use the Internet or e-mail for each of these purposes than those without chronic conditions. The uninsured without a chronic condition were less likely than the privately insured without a chronic condition to use the Internet or e-mail to communicate with friends or family about health conditions. The uninsured with a chronic condition, in contrast, were more likely than the privately insured without a chronic condition to use the Internet or e-mail to communicate with both friends or family and other individuals with similar health conditions. Those with public insurance appear to be more likely than the privately insured without chronic conditions to use the Internet or e-mail for each type of health communication. In the case of health-related electronic

communication, travel time had a positive and statistically significant relationship with each of the forms of Internet and e-mail communication.

In Table 4, we demonstrate the magnitude of the effects of insurance and health status. For individuals with each type of health insurance, those with chronic conditions were more likely to use the Internet for health information than those without. The differences between those with and without chronic conditions, however, are generally larger for the uninsured. The uninsured with chronic conditions were 13 percentage points more likely to have searched the Internet for health information at least once in the past year and 10 percentage points more likely to have done so frequently than the uninsured without chronic conditions. For the privately insured, the comparable differences are 4.5 and 3.0 percentage points. The uninsured with chronic conditions were more likely (0.168) than the privately insured with chronic conditions (0.126) to be frequent users of the Internet for health information.

CONCLUSIONS

The costs and benefits of seeking health information affect the extent to which consumers seek health information from the Internet. Individuals with a chronic condition are more likely than those without a chronic condition to use the Internet to search for health information and to communicate with others about health and health care, supporting the hypothesis that demand for health information on the Internet is positively associated with perceived benefits.

Individuals facing a higher price to obtain information from health care professionals are more likely to turn to the Internet for health information. The uninsured with a chronic condition are more likely than the privately insured with a chronic condition to use the Internet to search for information. This is particularly striking given that rates of information seeking are lower among the uninsured than the privately insured without a chronic condition. We interpret this as evidence that demand for health information on the Internet is sensitive to the price of accessing information from physicians, with the uninsured without chronic conditions serving as controls for unobserved preferences for health and health care among the uninsured. We also find that the opportunity cost associated with time to visit providers in traditional settings affects demand for health information on the Internet, primarily in the form of communication with others. Consistent with past research (Wagner, Hu, and Hibbard 2001), those reporting longer travel times to their usual source of care

Table 4: Magnitude of the Effects of Insurance and Health Status

	Privately Insured			Uninsured			Public Insured		
	No Chronic Condition	Chronic Condition	Difference	No Chronic Condition	Chronic Condition	Difference	No Chronic Condition	Chronic Condition	Difference
Use of the Internet within the past year to search for health information									
Ever (at least once within the last year)	0.301	0.346	0.045	0.226	0.356	0.130	0.304	0.396	0.092
Frequently (every 2-3 months or more frequently within the last year)	0.096	0.126	0.030	0.064	0.168	0.104	0.135	0.211	0.076
Use of the Internet or e-mail at least once within the last year to communicate with									
A doctor or other health care provider	0.040	0.056	0.016	0.030	0.049	0.019	0.077	0.064	-0.013
A family member or friend about health or health care	0.184	0.245	0.062	0.118	0.275	0.157	0.214	0.256	0.042
Other people who have health conditions or concerns like mine	0.057	0.097	0.040	0.058	0.111	0.053	0.128	0.148	0.020

were more likely to report using the Internet or e-mail to communicate with provider, family and friends, and other patients.

The results of our study support the application of economic models to investigate the impact of the Internet on consumer use of health information. A framework within which consumers respond to the costs and benefits of obtaining information from different sources when making decisions about information seeking and communication about health issues can provide valuable insights into information seeking behavior and its implications for health care delivery and health policy.

We find that differences across consumers in the costs of accessing information are important determinants of information seeking behavior. The costs of accessing information from providers include out of pocket payments for consultations as well as the time spent seeking care. The costs of accessing information on the Internet include the costs of Internet access, the time spent searching for information, and the risks of obtaining faulty information. Trends in information seeking behavior on the part of consumers will be affected by trends in cost differentials between the two sources. In particular, if the costs of obtaining information from the Internet continue to decline and the costs of accessing providers remain constant, the resulting cost differentials will drive increasing Internet use.

For providers, this suggests that Internet-based resources are likely to become an increasingly important tool in reaching patients. This creates an opportunity for providers to respond proactively by encouraging the use of Internet-based tools to provide information to and to communicate with patients in beneficial ways. Our results suggest that patients using these tools will disproportionately be those for whom the expected benefits are high. This may include patients with significant health care needs and those in remote areas as well as high income patients for whom the opportunity cost of time is high. Our findings indicate that providers who do not respond proactively are also likely to be affected. In particular, based on our results, we would expect that the recent trend toward increased patient cost sharing at the point of service (Claxton et al. 2004) would result in greater demand among plan enrollees for consumer health information. Thus, even providers not responding proactively by directing patients to Internet-based information resources will be affected by increased use among patients of these sources of information.

The use of the Internet for health information may be both directly and indirectly affected by health policy. Our findings indicate that the Internet serves as an important source of information for the uninsured, particularly

those with chronic conditions, suggesting that broader trends in coverage will affect the composition of the population seeking information. While targeting of tools to the populations most likely to use the Internet for information could have the strongest impacts, the groups of people with the highest benefits and the greatest cost advantage favoring the Internet are quite diverse. Thus, efforts may need to be tailored in important ways. In addition, a full understanding of the implications of current use patterns and opportunities for improvement will require a better understanding of the types of information people in particular circumstances find on the Internet, how it influences their health care decision making, and how to encourage the use of high-quality sources of information.

Our study had some limitations. First, we asked about five common chronic illnesses, so the nonchronically ill group could have a condition that we did not identify. This suggests that our results may be conservative, as misclassification would attenuate the findings. This may also partially explain relatively high rates of information seeking among those with public coverage who are disproportionately older individuals with Medicare coverage and are likely to have more unreported conditions. In addition, our study is based on a sample of individuals randomly chosen to receive Internet access in exchange for periodically filling out surveys. While this design reduces the likelihood that our findings with respect to information-seeking behavior are driven by the price of Internet access, it does introduce the possibility that our results are affected by selection into the survey research panel. In this case, we anticipate that these individuals are more likely to be interested in obtaining information from the Internet. The implication is that our findings may overestimate the extent of Internet use for health information among the general population but underestimate the extent among those obtaining Internet access on their own. Finally, we examine only one source of consumer health information. This is important to note as we measure and study the frequency of using the Internet for health, but do not observe the frequency of searching for health information from other sources. As a result, our estimates should not be construed as estimates of the frequency of searching for any information.

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NOTE

1. The household connection rate is the percentage of recruited households for which an adult completed the initial demographic profile survey.

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