

# USE OF A WEBSITE QUESTIONNAIRE AS ONE METHOD OF PARTICIPATION IN A PHYSICIAN SURVEY

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## Abstract

In an effort to enhance response rates on the Survey of Colorectal Cancer Screening Practices, sponsored by the National Cancer Institute, website versions of the questionnaires were offered to sampled physicians, along with mail, fax, and telephone versions. Primary care physicians and physician specialists in this national study were offered the opportunity to choose their mode of survey participation. The sampled physicians were sent an advance mailing with a fulfillment card on which they could indicate whether they would like to participate in the study by mail, fax, telephone, or Internet. First, the demographic characteristics (age, gender, race/ethnicity) and practice characteristics (specialty, practice size, practice type, and geographic location) of physicians who chose the website option will be compared with the characteristics of physicians who participated using the other modes of mail, fax, and telephone.

Second, the survey responses of physicians completing the website version of the questionnaires will be compared with the responses of physicians participating by mail, fax, or telephone, with respect to such data quality measures as completion of a final open-ended question.

Third, physicians completing the website option were asked about their experience with this mode of participation with respect to ease of use, whether they would have participated in the absence of an Internet option, and prior experience in completing website questionnaires. This assessment will provide insight into the viability of this new mode of data collection, particularly in studies involving physicians.

The National Cancer Institute's Survey of Colorectal Cancer Screening Practices, a list sample survey, took advantage of the Internet option in an effort to achieve high response rates among primary care physicians and specialists. This paper presents a profile of the physicians who participated using the Internet version, some indicators of the quality of the data

collected via the Internet, and these physicians' reactions to the Internet version.

## Previous Research

The use of web-based surveys marks a new frontier in computer-assisted interviewing techniques, and signals unprecedented opportunities for the future. However, with Internet surveys still in their infancy, little research literature is currently available on Internet methodologies or on the difficulties associated with this medium.

As the field of survey data collection continues to evolve, researchers are continually seeking more cost-effective and reliable means of collecting data. This is due to the fact that in most surveys, "the single most expensive function is data collection, ranging from one-third to one-half of total costs" (Couper, 1998: 556). The Internet offers numerous advantages in data collection: it eliminates the postage and handling costs involved in paper surveys, and labor costs related to telephone follow-up or data entry; it also reduces error rates associated with data entry from hard copy surveys into survey databases. In addition, with "the widespread adoption of e-mail among corporate, scholastic, and government populations, dissemination of survey materials among such populations has never been so easy or cheap" (Smith, 1997:1). Another advantage of using the Internet to collect data from respondents is that turnaround between distribution to response can be very quick.

Although there are numerous advantages to using the Internet for survey research, some problems are associated with this method. The literature shows that Internet surveys still present a significant sampling bias with respect to respondents' background, education, gender, and resources (Coomber, 1997). As of 1997, "only 37% of U.S. households reported owning a computer, up from 24% in 1994" (Dillman, 1998:1). Although the general population has seen expanded growth in Internet access, that growth has occurred to a greater extent within certain income levels, demographic groups, and geographic areas. For example, in the article entitled, "Falling through the Net II: New Data on the Digital Divide," James McConnaughey notes that, "even

though all racial groups now own more computers than they did in 1994, Blacks and Hispanics now lag even further behind the rest of the population” (McConnaughey, 1997). Since Internet access and use is still not widespread in the general population, Internet surveys must be included as one option in a multi-mode response approach, or else face serious sampling problems due to the narrow scope of potential respondents.

While Internet surveys of the general public are fraught with coverage problems, survey data collection efforts incorporating use of the Internet among the more homogeneous physician population are feasible. Physicians are particularly well-suited for a survey that incorporates administration through the Internet. In the 1997 American Medical Association Physician Opinion Survey, it was found that 82 percent of physicians own or have access to a computer at home; 88 percent own or have access to a computer in their medical practice; and among physicians with access to a computer either at home or in their medical practice, more than half (52 percent) access the Internet at least once a week (American Medical Association, 1998). Most physician surveys are based on list samples, and therefore the respondents who use the Internet can be compared with the rest of the sampled physicians with respect to demographic and practice characteristics. This makes it possible to weight the results in order to adjust for any potential bias. Some of the issues related to general population surveys using the Internet either do not exist for the physician population or are easily surmounted.

### **Data**

National samples of physicians were selected from the American Medical Association Physician Masterfile. The samples included primary care physicians (general and family practitioners, general internists, and obstetricians/gynecologists), gastroenterologists, general surgeons, and diagnostic radiologists. In September 1999, the sampled physicians were sent a mailing introducing the study and offering them a choice of mode of participation. On a “fulfillment card,” they were to specify whether they would like to have a mail questionnaire sent, a questionnaire faxed, or a telephone interview scheduled, or whether they would like to receive the information about completing the interview on the Internet. Based on the “fulfillment card” response, one of five mailings was sent:

- The physicians who requested a mail questionnaire were sent a specialty-specific

questionnaire, along with a cover letter, a \$50 honorarium check, and business reply envelope.

- The physicians who did not return a fulfillment card were sent a questionnaire mailing (questionnaire, honorarium check, and business reply envelope) with a different cover letter.
- The physicians who indicated that they would like to participate by telephone were sent a thank you letter with the honorarium check.
- The physicians who preferred to participate via fax were faxed a questionnaire with a cover letter. A thank you letter accompanied by the honorarium check was sent by mail.
- Those wishing to participate using the Internet were sent a letter listing the website address, their personalized user ID, and their personalized password, along with the honorarium check.

The overall response rates at the conclusion of data collection in April 2000 were 71.9% for the primary care physicians and 82.5% for the specialists. Among the 1,926 respondents, 7.3% participated via the Internet, 85.2% by mail, 3.4% faxed a completed questionnaire, and 4.2% completed telephone interviews. The data were weighted to account for varying probabilities of selection and nonresponse.

### **Demographic Profile of Physicians Who Participated Using the Website Questionnaire**

How do the physicians who participated via the Internet version compare with the other respondents? First, the demographic characteristics (age, gender, and country of medical school) and practice characteristics (specialty, practice size, practice arrangement, medical school affiliation, and geographic location) of physicians who chose the website option are compared with the characteristics of physicians who participated using other modes. The results suggest that physicians who chose to use the Internet version of the questionnaire instead of mail, fax, or telephone tended to be younger, male, a graduate of a U.S. medical school, in a larger medical practice, or an employee of an HMO.

### **Quality of Internet Data Compared with Other Data**

The data obtained using the Internet version of the questionnaire were compared with the data obtained

using the other three methods in terms of completion of a final open-ended question, and the length of the response provided to that question. The Internet participants were more likely to provide a response to the final question that asked, "Is there anything else you would like to tell us about colorectal cancer screening, diagnostic follow-up, or surveillance in your practice or in general?" Among physicians who participated via Internet, 26.9% did so, compared with 25.6% of the respondents who participated by telephone, mail, or fax. Did they provide responses comparable to those given by other respondents? Using the median number of words in the response as a rough measure of completeness, we see that the physicians who participated using a self-administered paper version (either mail or fax) answered using the most words, 28.7, compared with 17.2 among the Internet participants, and 12.2 words provided during telephone interviews.

### Use of the Internet Questionnaire

When asked whether they would have participated in the survey if a website questionnaire had not been available, 78.7% indicated that they would have. Among these physicians, 88.5% would have participated by mail, 19.1% would have participated by fax, and 14.0% would have participated by telephone.

When asked how easy or difficult it was to complete the website questionnaire, 88.1% indicated that it was very easy, and 10.8% that it was somewhat easy. Only 1.1% that it was somewhat difficult, no one said that it was very difficult.

The most common location for completion of the website questionnaire was the physician's home (59.0%), followed by the physician's medical office (37.6%), hospital (3.3%), and other location (12.6%).

Respondents were asked how many other Internet surveys they had participated in. For 49.3%, this was the first Internet survey, another 43.7% had participated in 1-5, 5.8% in 6-10, and 1.2% had participated in more than 10 Internet surveys.

There was a wide range in the time of day when the physicians completed the Internet version of the questionnaire, with the earliest time being 5:16AM and the latest 2:13AM. The website was available 24 hours a day, and 45.9% of the Internet cases were completed outside the hours when interviewers were available (on weekdays, 8:00 AM-7:00 PM Central Time): 22.2% on a weekend and 23.8% before or after interviewing hours

during the week. The Internet questionnaires were completed soon after the information regarding accessing the Internet was distributed, with 60.5% completed within two weeks. The median length of time required to complete the Internet version was comparable to the time required for the telephone interview (21 minutes compared with 28 minutes for primary care physicians, 19 minutes and 17 minutes for gastroenterologists and general surgeons, and 13 minutes and 13 minutes for diagnostic radiologists).

When asked for comments on the experience of completing the survey via the Internet, the majority of the physicians who used the Internet version indicated that they were pleased with the questionnaires' design and structure. Of the 54 respondents who chose to provide additional comments at the end of the questionnaire, 39 provided positive comments regarding use of this mode. Physicians stated that it was convenient, user-friendly, well orchestrated, and an efficient way to participate in a survey. One physician remarked, "I liked it. I could do it at my convenience, and at my speed, without having to remember to mail it. I would be happy to participate again." Another wrote, "This was much easier than filling out the survey I received at home and would be willing to participate in more surveys electronically." One more physician indicated, "I much prefer this survey method. I can plan to do it at a particular time, or complete it at down times such as when waiting for a callback or in divided times between meetings, etc. Thanks for offering this method of data collection."

A couple of suggestions were provided. Four physicians recommended that the format of the Internet questionnaires could have been different. One physician stated, "Rather than a branched access, it would have been nice just to have the full form to run through the answers. The screen changing took time."

Another wrote, "More than one question could have been placed on one page. Scrolling may be easier." Another physician was concerned with the issue of time, "It would have been helpful to have an idea about how long this would take, and/or number of items to be answered."

In general, the web site questionnaires were a success in terms of physician satisfaction. As one physician stated, "It's the way of the future."

## Conclusion

Given a choice with respect to mode of survey participation, the physicians sampled for this survey were, overwhelmingly, most likely to participate by mail, but the Internet was selected more often than telephone or fax. The physicians who chose to participate via the Internet tended to be younger, male, a graduate of a U.S. medical school, in a larger group practice, or an employee of an HMO. It is encouraging that incorporation of an Internet option appears to be one means of maintaining high survey response rates among one of the most difficult-to-reach survey populations.

On at least one measure, item non-response, the data provided via Internet were superior to the data provided using other modes of administration. The Internet participants were more likely to answer a final open-ended question, and their responses to these questions were lengthier than the ones provided during a telephone interview (though not as long as those written by hand on a mail or fax questionnaire).

Physician surveys, even mail surveys, often rely on telephone follow-up in order to achieve high response rates. The results of this study indicate that, on large-scale surveys where the development costs are incurred for the completion of many cases, inclusion of an Internet version may be more cost-effective than such traditional mixed modes. The Internet participants provided high-quality data very soon after having been provided the website, user name, and password. Offering this option on a survey allows for rapid completion of one segment of the cases, thus enabling resources to be focused on completion of the other cases.

One out of five of the Internet participants indicated that they would not have participated in the survey if an Internet version of the questionnaire had not been available. This indicates that the inclusion of the Internet version contributes to a higher response rate, and to inclusion of a segment of the physician population that might not have participated otherwise. With almost half of the Internet questionnaires being completed outside of the regular interviewing hours, the self-administered Internet version could be completed at a time most convenient to the physician. Indeed, when physicians were asked to comment on the Internet version, the word that was used most frequently was "convenient." While the Internet survey was new for most of the physicians--with this being the first Internet survey for 49.3% of the Internet respondents and 93.0% having participated in five or fewer such surveys, most of the physicians (86.6%) found the Internet version very easy to use.

## References

- American Medical Association. *Physician Opinion Survey*. Chicago: American Medical Association. 1997.
- Coomber, R. "Using the Internet for Survey Research," *Sociological Research Online*, (2) 2, 1997.
- Couper, Mick P. (editor), Reginald P. Baker, Jelke Bethelhem, Cynthia Z. F. Clark, Jean Martin, William L. Nicholls II, and James M. O' Reilly. *Computer Assisted Survey Information Collection*, John Wiley & Sons, Inc. 1998.
- Dillman, Don A., Robert D. Tortora, and Dennis Bowker. "Principles for Constructing Web Surveys," Social and Economic Sciences Research Center Technical Report 98-50, Pullman, Washington.
- McConnaughey, James W. and Wendy Lader. "Falling Though the Net II: New Data on the Digital Divide." [<http://www.ntia.doc.gov/ntiahome/net2/falling.html>]
- Smith, Christine B. "Casting the Net: Surveying an Internet Population," *Journal of Computer Mediated Communication*, (3) 1, June 1997.

<b>Table 1. Mode of Participation by Demographic and Practice Characteristics</b>				
	<b>Internet</b>	<b>Other</b>	<b>Total</b>	<b>N</b>
<b>Demographic Characteristics</b>				
<b>Age*</b>				
Younger than 40	12.3%	87.8%	100.0%	454
40 and older	5.5%	94.5%	100.0%	1,472
<b>Gender*</b>				
Male	7.7%	92.3%	100.0%	1,552
Female	4.5%	95.5%	100.0%	374
<b>Country of Medical School Graduation*</b>				
United States	8.0%	92.0%	100.0%	1,510
Other country	3.6%	96.4%	100.0%	416
<b>Practice Characteristics</b>				
<b>Medical Specialty</b>				
Family Practice	7.8%	92.2%	100.0%	514
General Practice	5.1%	94.9%	100.0%	112
Obstetrics/ Gynecology	5.3%	94.7%	100.0%	255
General Internal Medicine	7.5%	92.5%	100.0%	552
Gastroenterology	7.4%	92.6%	100.0%	99
General Surgery	5.6%	94.4%	100.0%	224
Diagnostic Radiology	9.2%	90.8%	100.0%	170
<b>Practice Size*</b>				
1	2.5%	97.5%	100.0%	472
2-5	6.3%	93.7%	100.0%	669
6-15	10.8%	89.3%	100.0%	347
16 or more	11.0%	89.0%	100.0%	398

<b>Practice Arrangement*</b>				
Full or Part Owner	6.3%	93.7%	100.0%	1,043
Employee of Physician-Owned Practice	4.3%	95.7%	100.0%	226
Employee of Staff or Group Model HMO	10.6%	89.4%	100.0%	106
Employee of Hospital, Clinic, or University Practice	4.9%	95.1%	100.0%	414
<b>Medical School Affiliation</b>				
Affiliation with a Medical School	7.9%	92.1%	100.0%	726
No Affiliation	6.7%	93.3%	100.0%	1,166
<b>Region</b>				
Northeast	6.3%	93.7%	100.0%	402
North Central	6.0%	94.0%	100.0%	475
South	6.6%	93.4%	100.0%	630
West	9.7%	90.3%	100.0%	420

\*p < .05

Note: The smaller sample sizes for the practice size, arrangement, and medical school affiliation result from non-response.

<b>Table 2. Demographic and Practice Characteristics by Mode of Participation</b>		
	<b>Internet</b>	<b>Other</b>
<b>Demographic Characteristics</b>		
<b>Age*</b>		
40 and younger	40.9%	22.3%
Older than 40	59.1%	77.7%
Total	100.0%	100.0%
Number of Respondents	136	1,790
<b>Gender*</b>		
Male	12.3%	19.9%
Female	87.7%	80.1%
Total	100.0%	100.0%
Number of Respondents	136	1,790
<b>Country of Medical School Graduation*</b>		
United States	88.9%	11.1%
Other country	77.6%	22.4%
Total	100.0%	100.0%
Number of Respondents	136	1,790
<b>Practice Characteristics</b>		
<b>Medical Specialty</b>		
Family Practice	29.3%	26.5%
General Practice	4.2%	5.9%
Obstetrics/ Gynecology	9.9%	13.5%
General Internal Medicine	30.4%	28.5%
Gastroenterology	5.4%	5.1%
General Surgery	9.2%	11.8%
Diagnostic Radiology	11.5%	8.6%
Total	100.0%	100.0%
Number of Respondents	136	1,790

<b>Practice Size*</b>		
1	8.7%	26.0%
2-5	31.3%	35.4%
6-15	27.6%	17.5%
16 or more	32.5%	20.0%
Total	100.0%	100.0%
Number of Respondents	135	1,751
<b>Practice Arrangement*</b>		
Full or Part Owner	50.7%	58.9%
Employee of Physician- Owned Practice	7.5%	13.0%
Employee of Staff or Group Model HMO	8.7%	5.7%
Employee of Hospital, Clinic, or University Practice	33.1%	22.4%
Number of Respondents	129	1,659
<b>Medical School Affiliation</b>		
Affiliation with a Medical School	42.5%	38.1%
No Affiliation	57.5%	61.9%
Total	100.0%	100.0%
Number of Respondents	135	1,757
<b>Region</b>		
Northeast	18.7%	21.0%
North Central	20.9%	24.9%
South	30.5%	32.9%
West	29.9%	21.2%
Total	100.0%	100.0%
Number of Respondents	136	1,790

\*  $p < .05$

Note: The smaller sample sizes for the practice size, arrangement, and medical school affiliation result from non-response.