Evaluating Methods for Increasing Physician Survey Cooperation

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Abstract

Over the years, a number of effective methods have been developed to increase the level of survey participation. These methods include pre-notification letters, incentives, reminders, survey form design, endorsement letters, sending additional surveys, shortening survey length, among others. Each of these methods has been demonstrated to have a positive impact on the level of participation in surveys with the general population. However, the success of many of these methods has not been adequately tested with special or elite populations such as physicians who typically have low rates of survey participation. One of the key questions for researchers considering methodological improvements is the cost to benefit ratio (or cost-effectiveness). Essentially, the question is which method will yield the best response at the lowest cost. To address this issue, researchers at RTI International conducted several experiments within a national survey of board certified physicians conducted as part of the "America's Best Hospitals" project for *U.S. News & World Report*. This paper discusses the results of two methodological experiments designed to increase physician survey cooperation/participation by use of reminders survey length. The usefulness of cost-effectiveness analyses is also explored as a possible addition to the methodological toolbox of survey researchers.

Introduction

Conducting surveys with physicians and other elite populations is different from conducting surveys with the general population (Sudman, 1985). Physicians have demanding work schedules, their time is valuable, and participating in a survey is often not seen as a priority. Physicians are frequently approached about taking part in surveys and other research, which can make them even more reluctant to participate.

In addition, physicians typically have a number of "gatekeepers," such as receptionists, administrative staff, or nurses who work to protect the physician from unwanted intrusions on their time. Because of the changing nature of medical practice, physician surveys are more often a type of business establishment survey than a survey of individual elite professionals (Sudman, 1985). Increasingly, physicians are members of joint practices or employees of a practice or managed care organization without independent freedom to make decisions about use of their time. As a result, the focus of many medical practices and organizations is on protecting the physician from unwanted intrusion so that they can see the greatest number of patients within a given timeframe.

Even when physicians have the time to complete a survey, they may not be interested in the topic or purpose of the study. When confronted with such a survey, many will refuse to respond, and others will agree to participate only after multiple persuasion attempts. However, surveys concerning physician attitudes about issues relevant to their practice of medicine can obtain high response rates without the need for telephone follow-up or payment of large monetary incentives (Flanigan, 2002; Kasprzyk, Montano, Lawrence, & Phillips, 2001).

As a result, for the survey researcher who wishes to conduct research with physicians, the question remains what can be done to improve participation? This paper will discuss two experiments conducted within a national survey of board certified physicians by researchers at RTI International as part of the "America's Best Hospitals" project conducted for *U.S. News & World Report*. The experiments focused on improving physician survey cooperation by use of differential reminder contacts and varying the length of the survey instrument. The usefulness of cost-effectiveness analyses is also explored as a possible addition to the methodological toolbox of survey researchers.

Related Work

Over the years, a number of effective methods have been developed to increase the level of survey participation. These methods include pre-notification letters, incentives, reminders, survey form design, endorsement letters, sending additional surveys, and shortening survey length, among others. Each of these methods has been demonstrated to have a positive impact on the level of participation in surveys with the general population (Dillman, 1978; Fowler, 1993; Dillman, 2000). However, the success of many of these methods has not been adequately tested with special or elite populations such as physicians who typically have moderate to low rates of survey participation.

Reminder Contact Methods.

Multiple contacts have been shown to increase physician participation in surveys. Both individual studies and reviews of the physician survey literature consistently find that multiple contacts such as letters, postcards, additional surveys, telephone calls, and other methods are much more effective than making a single contact with physicians to gain their participation in a survey (Worthern and Valcarce, 1985; Fox and Kim, 1988; Kasprzyk, et.al., 2001, Flanigan, 2002). Most authors suggest that the additional contacts serve as a reminder to participate in the survey. This is likely to be especially useful for samples of physicians as they have many demands on their time.

At present, a wide variety of different contact methods are used to conduct reminders in the survey literature. The most popular reminder contacts used in self-administered mail surveys in the general survey literature are postcards and 1st class letters (Dillman 1978, 2000; Fowler, 1993). This is also consistent with the physician survey literature (Flanigan, 2002).

Interestingly, both methods of contact have different advantages and disadvantages in the way they impact respondents. Postcards are a popular, low cost method of sending reminders to non-responding sample members in a survey. They provide a small and novel reminder to sample members that their response to the survey is both requested and encouraged. However, postcards are likely to be mistaken by physicians or their staff as "junk mail" and simply thrown away. On the other hand, 1st class letters used as reminders are more likely to be seen as "important" mail (i.e., opened and read) by physicians and their staff. This is likely due to the fact that these letters can appear to be more personalized to the physician and that they come in the same format as other "important" mail that they receive on a regular basis. However, while they offer an advantage in appearance, 1st class letters involve higher labor, materials, and postage costs.

The typical recommendation in the general survey literature is to use a personalized 1st class letter or a postcard (later followed by a personalized 1st class letter) as a reminder to improve participation (i.e., response rates) (Dillman, 1978; Fowler, 1993; Dillman, 2000). However, at the present, there is no current published literature comparing the differential impact of postcards vs. 1st class letter reminders on response rates in physician surveys. Since there is no definitive answer, most researcher's use the recommendations from the general survey literature or use what they believe will be effective.

Survey Length.

Physicians have very busy schedules. They must manage large caseloads, implement a variety of treatments modalities, and handle other administrative responsibilities. This situation leaves physicians with little time to participate in additional activities such as research. As a result, physicians may be reluctant to participate in surveys, even when a survey requires relatively little effort to complete.

Consistent with the reality of work life for physicians, a number of previous studies have demonstrated that survey length has an impact on participation. A reviews of the literature indicates that longer surveys elicit lower levels of physician participation (Thran & Hixson,

2000; Asch, Christakis, & Ubel, 1998; Thran & Berk, 1993). Interestingly, these results are consistent throughout the literature and appear to occur independent of all other efforts to increase participation by physicians. Based on the findings from the literature, the general recommendation is keep surveys as short as possible to reduce the overall burden on responding physicians.

Cost-effectiveness Analyses.

Cost-effectiveness analysis is a popular technique used to evaluate the relative advantage or disadvantage different methods used to achieve a desired result; this technique is also commonly referred to as cost/benefit analysis. The analytic concept was introduced by Jules Dupuit (1849, 1852), a civil engineer who worked for the government of Napoleon Bonaparte in France. He first introduced the concept of cost-effectiveness analysis on various public works projects involving the road system, flood management, and the Paris sewer system. Dupuit used the technique to evaluate the relative value of projects by comparing the utility (or beneficial value) to the total costs associated with the project. The basic formula for this technique is shown below:

$$\frac{\text{Benefits}}{\text{Costs}} = \text{Cost-effectiveness}$$

Dupuit argued that the best way to make decisions about which project to pursue was to do so on the basis of rational decision-making; his general recommendation was that the project that offered the higher value to the public should be the one pursued.

The cost-effectiveness (or cost-benefit) analysis is still used today in many settings to help guide decision making. The technique has seen very little use in survey research. There are a couple of published guides in the literature that offer direction on the use of the technique in survey research, however, they are aimed at helping researchers collect data to help guide decision-making by their clients (Mishan, 1988; Thompson, 1980).

One of the neglected uses of the technique has been to evaluate the relative advantage or disadvantage of different methodological improvements in research studies. In reviewing the survey literature, it is clear that issues of cost-effectiveness are becoming more and more of a concern for researchers (Groves, 2004). For surveys, the primary benefits of methodological improvements that are of interest to researchers are generally either improved response rates or decreased error. In addition, decreasing the costs associated with data collection is frequently a major benefit of methodological improvements. Since higher response rates reduce the potential for bias in survey estimates and are typically associated with lower levels of survey error (Groves, 2004), we can look at differences in response rate for various methodological conditions as being akin to the benefit which is the focus of cost-effectiveness analysis (Del Valle, et.al., 1997). Thus, the formula would change to the following:

$$\frac{\text{Response Rate}}{\text{Costs}} = \text{Cost-effectiveness}$$

The newly modified formula can then be used to evaluate the relative advantage or disadvantage of various methodological improvements being tested in a survey.

Methods

Since 1993, *U.S. News & World Report* has published rankings that identify hospitals of exceptional capability in the United States in several different medical specialties. The project is called the "America's Best Hospitals" and is accompanied by an annual issue of the news magazine and an accompanying website. The project uses an evaluation paradigm developed by Donabedian (1966, 1968) to measure quality in healthcare settings. The approach employed measures of three different dimensions to construct an index of hospital quality which is the basis for the hospital rankings. The three dimensions are structure, process, and outcome. The structural dimension defines the tools and environment available to care providers in treating patients. The process dimension of the quality equation is the net effect of physicians' clinical decision-making; this is represented in the project by a survey of board certified physicians. The final dimension of the approach is a measure of risk-adjusted outcomes that includes volume, mortality and other measures of hospital quality. Beginning with the 2005 rankings, RTI performs the data collection and analyses for the report.

The process component of the ranking methodology involves collecting original survey data from physicians regarding their nominations of the "best hospitals" in their medical specialty. The project is currently focused on data collection from board certified physicians in 17 medical specialties representing the majority of health care delivered by hospitals in the U.S. today. Physicians are surveyed and asked to nominate up to 5 hospitals that provide "the best care..." associated with their medical specialty. The specific language of the question is as follows:

> *"Please list in the spaces below, the five hospitals (and/or affiliated medical schools) in the United States that you believe provide the best care for patients with the most serious or difficult medical problems associated with <<medical specialty>>, regardless of location or expense:"*

To help maximize participation in the survey, the project utilizes a multiple contact approach. Sampled physicians are contacted by the project up to four times during data collection to ensure that they have ample opportunity to participate in the survey. All sampled physicians receive an initial survey package which consists of a cover letter, a copy of the survey, a business reply envelope, and $2 bill as an incentive. This survey package is followed by a reminder postcard or personalized 1st class letter 14 days after the initial mailing for all non-respondents. For non-responding physicians, a second survey package consisting of a cover letter, a 2nd copy of the survey, and a business reply envelope is sent 14 days later. This second package is send via United States Postal Service 2-day Priority mail For all physicians who have still not responded 14 days after the second mailing of the survey, a third survey package is sent via FedEx overnight.

For the 2005 rankings, a stratified random sample of 3,400 board certified physicians was drawn. The sample was stratified by region of the country (Northeast, South, Midwest, or West) and the 17 medical specialties. The medical specialties represented in the sample included the following:

- Cancer
- Digestive Disorders
- Ear, Nose, and Throat
- Eyes
- Geriatrics
- Gynecology
- Heart and Heart Surgery
- Hormonal Disorders
- Kidney Disease and Nephrology
- Neurology and Neurosurgery
- Orthopedics
- Pediatrics
- Psychiatry
- Rehabilitation
- Respiratory Disorders
- Rheumatology
- Urology

Experimental Conditions

To evaluate methods for improving the overall level of participation in the survey, two experiments were conducted to see if subtle changes in the reminder contacts and survey length would have any impact on physician participation in the survey. The experiments are described below.

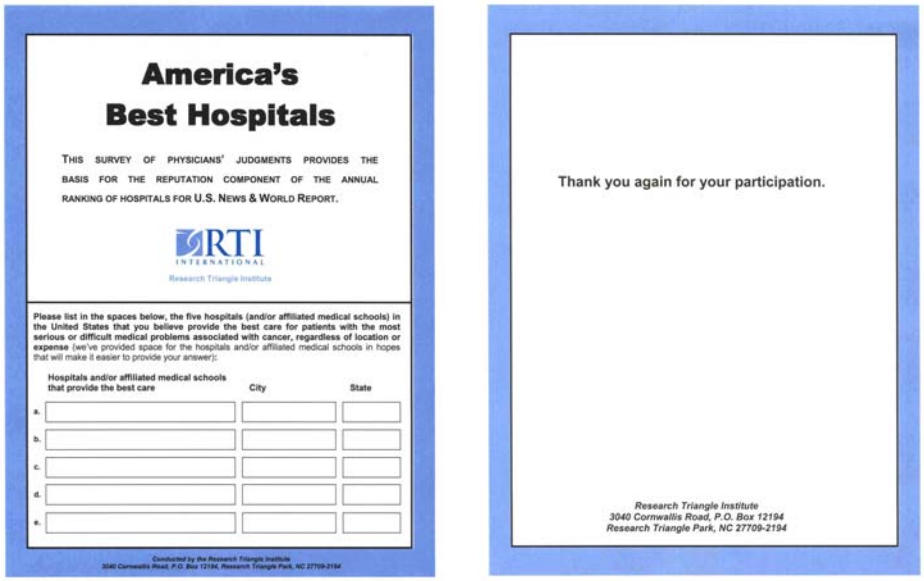
Reminder Contact Methods.

The first experiment focused on the impact of type of reminder on participation in the survey. Sampled physicians were randomly assigned to postcard (50%) or 1st class letter (50%) reminder conditions. Sample members were sent either a postcard or 1st class letter reminder 14 days after the initial survey packages were mailed. Both the postcards and letters contained the same message from the project director, but the letter was personalized to the physician listing their name and medical specialty in the body of the message. Based on the findings of previous research, our hypothesis was that those who received a 1st class letter reminder would be more likely to respond than those who received the postcard reminder

Length of Survey.

The second experiment focused on the impact of survey length on participation. In most of the literature cited above, studies have used "long form" surveys that were significantly longer than the "short form" condition which may have contributed to the lower response rate. To address a small change in survey length, the present study used a 1-page survey for the short form and a 2-page survey for the long form. The 1st page of the survey was used to collect nominations from physicians for the "Best Hospitals" within their particular medical specialty. The 2nd page of the long form was designed to address questions about the critical factors in physician nomination

decisions; this is part of another study and the results of these questions will not be reported in this paper. The estimated difference in time to complete the short vs. the long form is approximately 2 minutes. Samples of the survey forms are presented below in figure 1 and 2:



America's Best Hospitals

THIS SURVEY OF PHYSICIANS' JUDGMENTS PROVIDES THE BASIS FOR THE REPUTATION COMPONENT OF THE ANNUAL RANKING OF HOSPITALS FOR U.S. NEWS & WORLD REPORT.

RTI INTERNATIONAL
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Please list in the spaces below, the five hospitals (and/or affiliated medical schools) in the United States that you believe provide the best care for patients with the most serious or difficult medical problems associated with cancer, regardless of location or expense (we've provided space for the hospitals and/or affiliated medical schools in hopes that will make it easier to provide your answer):

	Hospitals and/or affiliated medical schools that provide the best care	City	State
a.			
b.			
c.			
d.			
e.			

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Thank you again for your participation.

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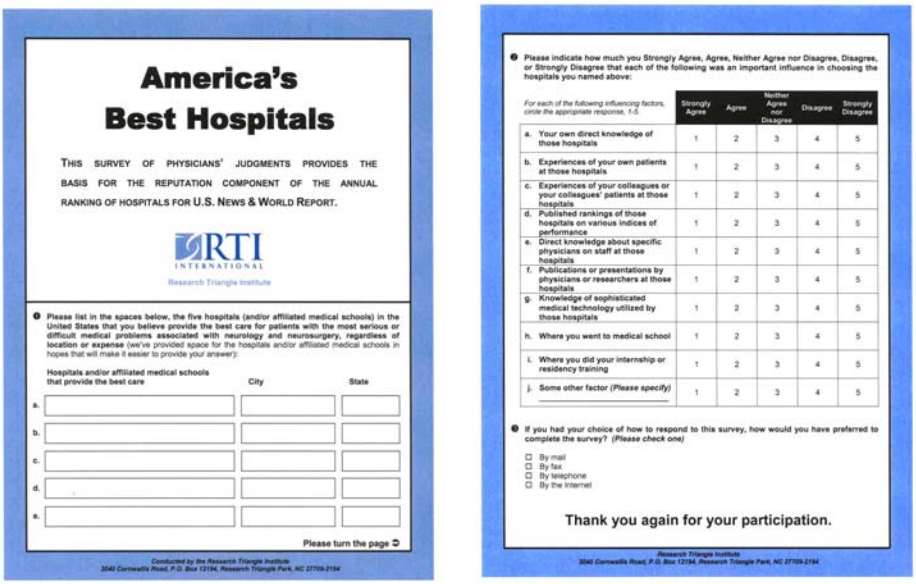
Figure 1. Short Form of the Physician Survey



America's Best Hospitals

THIS SURVEY OF PHYSICIANS' JUDGMENTS PROVIDES THE BASIS FOR THE REPUTATION COMPONENT OF THE ANNUAL RANKING OF HOSPITALS FOR U.S. NEWS & WORLD REPORT.

RTI INTERNATIONAL
Research Triangle Institute

❶ Please list in the spaces below, the five hospitals (and/or affiliated medical schools) in the United States that you believe provide the best care for patients with the most serious or difficult medical problems associated with neurology and neurosurgery, regardless of location or expense (we've provided space for the hospitals and/or affiliated medical schools in hopes that will make it easier to provide your answer):

	Hospitals and/or affiliated medical schools that provide the best care	City	State
a.			
b.			
c.			
d.			
e.			

Please turn the page ➲

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❷ Please indicate how much you Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, or Strongly Disagree that each of the following was an important influence in choosing the hospitals you named above:

For each of the following influencing factors, circle the appropriate response, 1-5	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
a. Your own direct knowledge of those hospitals	1	2	3	4	5
b. Experiences of your own patients at those hospitals	1	2	3	4	5
c. Experiences of your colleagues or your colleagues' patients at those hospitals	1	2	3	4	5
d. Published rankings of those hospitals on various indices of performance	1	2	3	4	5
e. Direct knowledge about specific physicians on staff at those hospitals	1	2	3	4	5
f. Publications or presentations by physicians or researchers at those hospitals	1	2	3	4	5
g. Knowledge of sophisticated medical technology utilized by those hospitals	1	2	3	4	5
h. Where you went to medical school	1	2	3	4	5
i. Where you did your internship or residency training	1	2	3	4	5
j. Some other factor *(Please specify)* _____	1	2	3	4	5

❸ If you had your choice of how to respond to this survey, how would you have preferred to complete the survey? *(Please check one)*

☐ By mail
☐ By fax
☐ By telephone
☐ By the Internet

Thank you again for your participation.

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Figure 2. Long Form of the Physician Survey

To facilitate testing of this experiment, the sample was randomly divided between the "short" and "long" conditions. Seventy-five percent of the sample received the short version of the

survey while 25% received the long form. The sample distribution was done in this manner to ensure that if there was a negative effect of survey length, it did not significantly decrease the response rate for the project. Based on previous research, our hypothesis was that those who receive the short form of the survey will be more likely to respond than those who receive the long form.

Results

Data for the physician survey were collected from October 1, 2004 to January 1, 2005. The survey achieved an overall response rate of 47.3% as calculated using the AAPOR standard response rate formula number 2. The results of the two experiments are reported below.

Reminder Contact Methods.

All surveys received 6 days after mailing the reminder were counted as part of the experiment. Utilizing the AAPOR standard definition #2 for calculating response rates, the response rates for the two different reminder contact methods were calculated. The postcard condition achieved a response rate of (413/[413+871+0]) 32.2% while the 1st class letter condition achieved a response rate of (447/[447+853+0]) 34.4%. One thing to note here is that the response rates reported only represent incoming survey received 20 days after the initial survey packages were mailed (i.e., 14 days after the initial mailing + 6 days after the reminder mailing).

A small, but non-significant difference was found in the response rates between the postcard and 1st class letter reminders: χ^2 (1, N = 2,584) 1.24, p = .27. This result indicates that the two methods of conducting reminder follow-ups do not differ significantly from one another.

While the two methods did not differ statistically, the research team was interested in applying the cost-effectiveness analyses method to the data to see which method offered the best value. As stated above, we can substitute the response rate for the benefit portion of the equation. For the cost portion of the equation, we entered the costs for labor, materials, printing, and postage in the denominator. The calculations are shown below for each of the two reminder contact methods:

- Postcard (34.4/675) = .51
- 1st class letter (32.2/1,305) = .25

The calculation of the cost-effectiveness ratio indicated that the postcards offered more of a relative value than 1st class letters as a reminder. This is interesting in contrast to the statistical results reported above which appeared to point to the 1st class letter as a more effective reminder to physicians to participate in the survey.

Length of Survey.

All surveys received during the data collection period with at least 1 hospital nomination were counted as a completed survey in this experiment. The response rates for the two different survey length conditions were calculated utilizing the AAPOR standard definition #2. The short

form achieved a response rate of (1,246/[1,246+1,281+0]) 49.3% while the long form achieved a response rate of (346/[346+496+0) 41.1%.

A significant difference was found in the response rates between the short and long forms of the survey: χ^2 (1, N = 3,369) 17.20, p = .0001. This result indicates that the short form of the survey is much better at obtaining physician survey response than the long form of the survey.

Since the costs of producing and mailing both forms of the survey were the same, the cost-effectiveness ratio was not calculated as it would not yield any more information beyond what was found in the standard statistical analyses reported above.

Summary and Discussion

The results of the study provided some interesting results for researchers concerned about conducting surveys with physicians. We conducted two experiments focused on evaluating alternative reminder contact methods and different lengths of the survey as a way of determining their impact on the level of participation by physicians to a survey being conducted for the "America's Best Hospital's" project.

The findings of the first experiment indicated that there is no difference in response rates between postcard and 1st class letter reminders. However, the calculation of the cost-effectiveness ratio indicated that the postcards offered more relative value when compared to the 1st class letter reminders. Consistent with previous survey research, the findings of the second experiment indicated that physicians were more likely to participate when receiving the short version of the survey. This was the case even with the relatively small difference of one page in length between the long and short forms. The results underscore the need to continue to writing shorter and more focused surveys so that we do not create a great deal of burden for physician respondents.

The addition of the cost-effectiveness calculation may be helpful to researchers as a way of determining which methods to employ in a given survey. This will be especially true as research continues to define the expected or typical response rates associated with different methodological approaches. This will allow survey researchers and sponsors to make more informed decisions on the specific methods employed in a given survey.

While cost-effectiveness analyses appear to be promising in helping to evaluate the relative value of methodological improvements, it does have some limitations. For instance, there are no standards for what is a "significant" difference in cost-effectiveness ratios when making comparisons. Also, the cost-effectiveness ratio may provide findings that are contradictory to standard statistical tests, as was found in this study. Since there are no guidelines on how to interpret these situations, the researcher is left on their own with what to do. An additional caveat is also warranted, namely that there are no standards for how to apply the technique in survey research. As a result, both the decisions regarding what should be included in the costs and benefits portions of the equation are made rather subjectively. For instance, the costs reported in this study only included the outbound costs (labor, materials, printing, and postage) and did not include handling, analytic, or return postage costs incurred by the project. Also,

researchers could argue that other factors should be included in the benefit component of the equation.

While the findings of the second experiment were clear (that shorter surveys are better at obtaining physician response), we believe there is still room for additional research. A limitation of the present study was that we only used two conditions. Future studies may want to employ surveys of various lengths (e.g., 1-, 2-, 5-, 10-pages) to explore at what point participation drops off. The amount of bias introduced by with increasing length of survey would be an useful investigation. The interaction between survey incentives and survey length would also be useful. Finally, further information on why longer surveys are less likely to be answered would be helpful to guide survey researchers in prudent study design decisions.

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