

# Conducting Survey Research among Physicians and other Medical Professionals – A Review of Current Literature

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## Abstract

Conducting surveys on physicians and other medical professionals is much different from conducting surveys of the general population (Sudman, 1985). Physicians' work schedules are demanding and their time is scarce, so participating in a survey represents a high opportunity cost to them. Furthermore, physicians represent an elite population and are frequently approached for surveys, potentially making them more reluctant to participate. They also typically have receptionists or other "gatekeepers" making it difficult to contact the physician directly. Consequently, response rates with physicians average about 10 percentage points lower than studies with the general population (Cummings, Savitz, and Konrad 2001). In addition, it is unclear whether methods aimed at improving response rates with the general population will work as well with physicians and other medical professionals.

This paper presents a review of survey literature published from 1987 to 2007. We focused on studies aimed at increasing response rates or reducing nonresponse bias specifically among physicians and other medical personnel. Other survey topics examined include the use of incentives, survey length, mode comparisons, survey sponsorship, making contact, nonresponse bias, surveying physician establishments, and mode-specific methods such as the use of stamps on mail surveys. This paper provides a comprehensive review of the literature and recommended efforts to increase overall response among this hard-to-reach population. It also identifies areas where more research is needed

**Key Words:** Survey Research, Physicians, Incentives, Multi-mode, Survey Methods, Nonresponse

## Introduction

Conducting surveys on physicians and other medical personnel is much different from conducting surveys of the general population. Physicians have demanding work schedules, their time is valuable, and participating in a survey represents a high opportunity cost to them. Furthermore, physicians are frequently approached for surveys, making them more reluctant to participate.

They also typically have receptionists or other "gatekeepers" whose job includes protecting 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). Sudman characterized physicians as having demanding work schedules, frequently contacted by researchers, pharmaceuticals and others, and hard to reach directly due to receptionists and other "gatekeepers". Furthermore, physicians are often members of joint practices or employees of a practice or managed care organization without independent freedom to make decisions about use of their time.

Physicians are inundated with what they consider "medical junk mail." In a letter to *The Lancet* in 2000, one physician noted that he received approximately 122kg of medical junk mail in one year (Montauk, 2000). To a physician, a survey request may not be considered any different than other requests for his/her time. Not surprisingly then, response rates among physicians average about 10% lower than studies with the general population (Cummings, Savitz, and Konrad 2001).

Physicians may find the topic of many physician surveys to be uninteresting. Providing detailed information about practice characteristics may be seen as difficult, time-consuming, and intrusive to many physicians. 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 any phone follow-up or payment of large monetary incentives.

## Methods

We conducted a literature review in 2002 that included publications from 1987-2002. In 2008, we recognized a need to update the literature review with current publications. Furthermore, we found only a couple of studies in 2002 that addressed the use of the Internet as a mode of administration. There is much more information available since 2002 and we wanted to include this valuable information. We decided to update our literature review with publications from 2002-2008. In total, this review includes 136 publications from 1987 to 2008 in scientific databases (e.g. MEDLINE, PsychInfo, WebSM, Google Scholar, ASA and AAPOR Proceedings), peer-reviewed journal articles (e.g. *Public Opinion Quarterly*, *Evaluation and the Health Professions*), conference proceedings, or books related to survey research pertaining to improving response rates or reducing nonresponse bias with physicians. The following table displays the “key words” used during the literature review.

Topics	Keywords
Incentives	<i>Incentives, non-monetary incentives, lottery, gifts</i>
Mail Strategies	<i>Survey length, stamps, postage, replacement surveys, timing, mail surveys</i>
Telephone Strategies	<i>Telephone surveys,</i>
Web Strategies	<i>Internet, web survey, email survey</i>
Multi- Mode Strategies	<i>Mode comparison, mixed mode</i>
Reaching physicians	<i>Gatekeepers, survey sponsorship,</i>
Nonresponse bias	<i>Nonresponse bias, response rates, late responders</i>

## Importance of High Response Rates

Maintaining high response rates is always desirable. However, recent research has shown that survey response rates among physicians tend to be lower than the general population.

Asch et al. (1997) reviewed 178 manuscripts to characterize response rates for mail surveys published in medical journals. They found the mean response rate among mail surveys to be approximately 60%. However, response rates vary according to subject studied and technique used. They found that surveys of physicians had a mean response rate of 54% compared to 68% mean response rate among non-physicians. The authors concluded that written reminders provided with a copy of the instrument and telephone reminders were each associated with response rates 13% higher than surveys that did not use these techniques. Price (2000) also found that physicians are more reluctant to participate in surveys. The author cites a number of reasons for physician reluctance including an unwillingness to take part in stereotyping and generalization and resistance to restrictions imposed by closed-format questions. The author concludes that two techniques have consistently shown to improve response rates: the use of prepaid incentives and multiple follow-up contacts.

A recent paper titled, “*Methodologies for Improving Response Rates in Surveys of Physicians: A Systematic Review*” (VanGeest et al., 2007). The authors conducted a systematic review of 66 published reports of efforts to improve response rates to physician surveys. They specifically looked at incentive and design-based approaches. They found that small financial were effective in improving physician response. Token non-monetary incentives were much less effective. In terms of design strategies, postal and telephone strategies have generally been more successful than have fax or Web-based approaches, with evidence also supporting use of mixed-mode surveys in this population. In addition, use of first-class stamps on return envelopes and questionnaires designed to be brief, personalized, and endorsed by legitimizing professional associations were also more likely to be successful.

## Nonresponse

Although maintaining high response rates is always desirable, research evidence indicates that physician surveys are somewhat more resilient to the effects of survey non-response than other types of surveys. Studies have been done comparing early and late responders on survey questions, as well as comparing responders and nonresponders in terms of background characteristics (usually available on sampling frames of physicians).

Kellerman and Herold (2001) suggest that response bias may be less of a concern for physician surveys compared to surveys with the general population as most nonresponse studies have found no or only minimal amounts of response bias. This finding holds true for studies conducted after 2001 as well (Barclay, 2002; Cull et al., 2005; Menachemi et al., 2006; McFarlane et al., 2007; Bjertnaes et al., 2008).

Studies of **early and late responders** (Menachemi et al., 2006; Schoenman et al., 2003; Armstrong and Ashworth, 2000; Guadagnoli and Cunningham, 1989; Malin, Rideout, Ganz, 2000; Parsons, Warnecke, Czaja, Barnsley, and Kaluzny, 1994; Sobal and Ferentz, 1989; Thran, Olson, and Strouse, 1987) indicate that they do not differ significantly in their answers to survey questions. McFarlane et al (2007) found that men were more likely to be early responders and that additional mailings helped to reduce the amount of bias for men.

Few differences were found with respect to demographic variables such as income, geographic area, specialty, and gender. When differences were observed, early responders were more likely to live in suburban areas and have higher annual incomes than late responders (Guadagnoli and Cunningham, 1989; Sobal and Ferentz, 1989; Temple et-al., 1997; Kellerman and Herold, 2001; Barclay, 2002; Cull et al., 2005).

Studies of respondents and nonrespondents suggest differences on some characteristics (such as age, recency of graduation, medical specialty, practice location, and whether the physician is U.S. or foreign trained), but not large differences. Berk (1983, 1985) suggests that, if a given sample size is needed for statistical power reasons, a larger sample should be drawn. If we assume that nonrespondents are not significantly different from respondents, then the reduction of costs of trying to encourage reluctant sample members to participate can more than offset the costs of initial contacts.

Other findings included:

#### **Response rates and response bias.**

- Several studies with physicians have shown that higher response rates are not associated with lower response bias (Barton et al. 1980, McCarthy and MacDonald 1997; Thomsen 2000; and McFarlane, Murphy, Olmsted, and Hill, 2007).

#### **When bias did exist...**

- The direction showed that women, non specialist physicians (e.g. generalists), young physicians or recently licensed physicians, and medical graduates from the country sponsoring the survey were slightly more likely to respond to the survey (Temple et-al, 1997; Kellerman and Herold, 2001; Barclay, 2002; Cull, Karen, O'Connor, Sharp and Tang 2005).
- Contradictory to most findings, one study found that male physicians were more likely to be responders than females (McFarlane, Murphy, Olmsted, and Hill, 2007).

#### **Mode:**

- Surveys completed on the web have a tendency to incur a greater non-response bias compared to surveys conducted in other modes (Leece et.al, 2004; Kellerman and Herold 2001; Cummings et.al, 2001)
- In a comparison between mail and web, no response bias was detected in either group for age, gender or tenure. However, a bias towards nonspecialists was present in the web group. A mail follow-up survey, however, reduced the amount of bias (Beebe, Locke, Barnes, Davern, and Anderson, 2007).

## **Maximizing Response in Mail and Telephone Surveys**

### **Mail Surveys**

Early research on mail surveys and physicians confirm that Dillman's (1978) Total Design Method (TDM) variables are important for maximizing mail response rates. Researchers who have manipulated characteristics of mail survey methodology confirm:

- **Prepaid incentives at initial contact** (rather than delayed incentives or prepaid incentives on follow-up) have been shown to improve response rates (Berk et al., 1990; Berry and Kanouse, 1987; VanGeest, Wynia, 2000).
- **Personalized letters** (Everett et al. 1997; Oden and Price, 1999; Olson et al., 1993).
- **Professional organization sponsorship** (Olson et al., 1993)
- **Studies comparing full TDM approaches** generally show high response rates (Berry and Kanouse, 1987; Everett, Bedell, and Telljohann, 1997; Kasprzyk, Montano, Lawrence, and Phillips 2001; Moore, Gaudino, DeHart, Cheadle, and Martin, 2001; Mullen, Easling, Nixon, Koester and Biddle, 1987; Olson, Schneiderman, and Armstrong, 1973; Shosteck and Fairweather, 1979; Tambor, Chase, Faden, Geller, Hofman and Noltzman, 1993).
- **Prenotification of the survey** did improve response rates in most cases (Ward et al., 1998; Heywood et al., 1995). One exception is a study by Shiono and Klebanoff, 1991, which did not see improvements.

However, response rates for mail surveys with physicians have declined over the past decade (Cull et al., 2005), and the above strategies alone are often not sufficient to maintain response rates.

#### **Postcard reminders:**

- Sending replacement questionnaires as opposed to postcards increases response rates, but are not a cost saving strategy (Becker, Cookston, and Kuberg, 2000; Olmsted et al., 2005).
- Sending postcard reminders as opposed to no reminder did not increase response rates in a survey of registered nurses (Hill, Fahrney, Wheelless, and Carson, 2006).

#### **Use of Stamps**

- Some research with physician populations has shown that the use of stamps can be effective compared to metered or business reply envelopes for return mail (Streiff, 2001; Kellerman and Herold, 2001; Urban, Anderson, and Tseng, 1993).
- No evidence to support the use of stamps on outgoing mail. Seven studies conducted in the 1970's found no difference in response rates for mailings that used a stamped outgoing envelope versus a metered outgoing envelope (Edwards, 2002; Gullen, 1993). One recent study also found no difference in response rates (McFarlane, Murphy, Olmsted, 2007).

#### **Certified Mail, Priority, and FedEx**

- Rimm, Stampfer, Colditz, et al. 1990 found that the use of Certified Mail increased response rates. Del Valle et al., 1997 reported 16.5% increase in response rates using certified mail
- Kasprzyk et al. (2001) compared Federal Express delivery with US Mail resulted in an 8% increase in response rates.
- A survey of health care providers in Alaska and New Mexico found no difference in response rates between surveys sent via US mail and surveys sent via Priority mail (Brems, Johnson, Warner, and Roberts, 2006). However, another study found that the use of Priority mail was effective in increasing response rates with physicians (Moore and An, 2001).

#### **Survey size and length:**

- Not surprisingly, most studies found that longer surveys tend to yield lower levels of physician participation (Burt and Woodwell, 2005; Thran & Hixson, 2000; Asch, Christakis, & Ubel, 1998; Thran & Berk, 1993).
- A comparison of surveys of varying length identified a threshold of 1000 words, at which response rates begin to drop off (Jepson, Asch, Hershey and Ubel, 2005).
- Even an increase from a one page, one-sided survey to a one page, two-sided survey was associated with lower response rates (Hing, Schappert, Burt, and Shimizu, 2005; Olmsted et al., 2005)
- Making the survey shorter by using a close-ended questionnaire format compared to an open-ended format yielded a 22% higher response rate (Griffith, Cook, Guyatt, and Charles, 1999).
- Beebe, Stoner, Anderson, and Willmans (2007) advocate the use of printing a survey in a small white booklet (as suggested in Dillman's Total Design Method) compared to a larger size survey or a survey on blue paper. The small white booklet obtained higher response rates on the initial mailing and in less time than the other mailings.

#### **Cover Letters**

- Respondents who received a flattering cover letter emphasizing the physician's importance and expertise yielded a higher response rate than a standard cover letter. This difference was found only in letters sent by mail and not on the Internet (Leece et al., 2004).
- The literature is mixed on whether the use of hand-written notes or signatures can improve response rates. Two studies reported that the inclusion of hand-written notes increased response rates (Leece et al., 2006; Maheux, Legault, & Lambert, 1989; Olson et al., 1993), while another study reported no difference between a hand-written signature and a scanned signature (McKenzie-McHarg, Tully, Gates, Ayers, & Brocklehurst, 2005).

#### **Sponsorship**

- A study found that surveys sent by a recognized sponsor (the American Medical Association) achieved an 11.2% higher response rate than surveys sent using market research letterhead (Olson, Schneiderman, and Armstrong, 1993).
- The use of a university sponsorship compared to a pharmaceutical sponsorship did not improve response rates (Myers, Shaheen, and Lee, 2007)

#### **Response rates compared to other methods**

- Studies have found that physician response to mail surveys rivals that of telephone surveys (Kellerman and Herold, 2001).

- A mail survey with three follow ups achieved response rates 19% higher than in a telephone survey (Hocking, Lim, Read, and Hellard 2006)

Overall, research has shown that providing a personalized letter, prepaid incentive, and follow-up contacts lead to a greater response rate.

### **Telephone Surveys**

Several studies looked at the use of telephone as a mode of data collection, while others looked at the use of the telephone in providing prompts to nonrespondents.

- **Telephone vs. Other Modes of Administration** A study compared a telephone interview with a postal survey that included three reminders. The study found that postal surveys with three reminders can have superior response rates compared with a telephone interview. (Hocking, JS, Lim, MS, Read, T., and Hellard, M. 2006).
- Another study randomly assigned primary care physicians to complete a brief, validated patient questionnaire by mail, Internet (web), or Interactive Voice Response (IVR). Response rates were higher by mail (50.8%) than web (18.4%) or IVR (34.7%) (Rodriguez, H. P., Von Glahn, T., Rogers, W. H., Chang, H., Fanjiang, G., Safran, D.G. 2006).
- **Call scheduling.** Scheduling calls at specific times of the day was found to be successful in one study (Thran, Downes-LeGuin and Berry, 1994). The authors recommend found that including respondent specialty in the call scheduler (ER/radiology/ pathology in the morning and surgery/anesthesiology in afternoon have higher probability of success), and to avoid too many calls late in the day.
- **Repeated callbacks.** It was found in several studies that the use of telephone “prompts” to complete a mail or internet survey were quite successful (Price 2000, Braithwaite, D., Emery, J., de Lusignan, S. and Sutton, S. 2003, Narayanan, V., Giambo, P., Fry, S., Crafts, J. 2007).
- **Follow-up calls by a physician** who secures cooperation, then passes the case to an interviewer, have been shown to produce substantial increases in response rates (Bostick, Pirie, Leupker, and Kofron, 1992).

Overall, results of these studies seem to suggest that telephone as a solo mode of administration is not very effective. However, when used using a physician or other medical personnel as a point of contact, combining telephone with other modes of administration, call scheduling, and repeated callbacks have led to increases in response rate in telephone surveys.

### **Maximizing Response in Mixed Mode Surveys**

Several surveys have combined telephone surveys with mail in a single design. These studies include telephone surveys in which respondents are:

#### **Mail and telephone:**

- Several studies found that **repeated telephone call-backs** produced more respondents in a mail survey than did either providing a mail follow-up option or making special conversion attempts (Kalsbeek, Dever, Sanders, and Bennett, 1992; Olson, Srinath, Burich, and Klabunde, 1999; Gupta, Ward, and D’Este, 1998; Asch, Jedrziwski, and Christakis, 1997; Parsons, Johnson and Warnecke, 1993; Thran, Olson and Strouse, 1987)
- One exception was a study by Donaldson, et al. (1999) that did not find that follow-up calls improved response rates compared to follow-up mailings. It is unclear, however, whether repeated call-backs were attempted or only one.

#### **Mail and Web:**

- Providing a web option in a mail survey was not associated with an increase in response rates, and increased response bias (Brøgger, Nystad, Cappelen, Bakke, 2007).
- Sending the initial survey by mail with followed by a web survey to nonresponders increased response rates compared to an initial survey with a mail nonresponse follow-up (Beebe, Locke, Barnes, Davern, and Anderson, 2007)

#### **Fax and Other Modes:**

- During a telephone screener for survey, physicians were asked whether they would prefer to complete the survey via telephone immediately, postal mail, or fax. Almost half of the physicians requested to be surveyed by fax. Physicians in this group achieved an 87% response rate (Lensing et al., 2000).
- In one study, physicians were randomly assigned to receive the survey by fax, postal mail or email. Surprisingly, the authors found that after two attempts, the physicians in the faxed survey group had the highest response rate at 47%, compared to 41% in the postal mail group, and 26% in the email group (McMahon et al., 2003).
- Mailed surveys with **follow-up telephone reminder calls** (Armstrong and Ashworth, 2000; Asch, Jedrzewski, and Christakis, 1997; Berry and Kanouse, 1987; Gupta, Ward, and D’Este, 1998; Kasprzyk, Malin, Rideout, Ganz, 2001; Moore and An, 2001; Moore, Gaudino, DeHart, Cheadle, and Martin, 2001; Olson, Schneiderman, and Armstrong, 1993; Shiono and Klebanoff, 1991; Tambor, Chase, Faden, Geller, Hofman and Noltzman, 1993; Temple-Smith, Mulvey, and Doyle, 1998; Thran, Olson and Strouse, 1987; Urban, Anderson, and Tseng, 1993; VanGeest, Wynia, Cummins, and Wilson, 2000; Ward, Holt, D’Este, and Sladden, 1998).
- Administered a phone surveys with **mailed prenotifications** (Gunn and Rhodes, 1981; Moore, Gaudino, DeHart, Cheadle, and Martin, 2001; Olson, Srinath, Burich, and Klabunde, 1999).
- Provided a telephone prenotification and reminder calls along with personal interviews (Shosteck and Fairweather, 1979).
- Given the option of responding by different survey modes including: Internet; mail; fax; telephone. (Olson, Srinath, Burich, and Klabunde, 1999)
- Given the option of **mail or web modes**. (Raziano, Ravishankar, Valenzula, Weiner, and Lavizzo-Mourey, 2001) .

Most of these studies were not designed to assess the effect of including the additional mode. However, those studies which did so found that **repeated telephone call-backs** produced more respondents in a mail survey than did either providing a mail follow-up option or making special conversion attempts (Asch, Jedrzewski, and Christakis, 1997; Gupta, Ward, and D’Este, 1998; Thran, Olson and Strouse, 1987), and that **telephone follow-up of mailed questionnaires** is more expensive than mail follow-up (Ogborne, Rush and Fondacaro, 1986). Overall, the best response rates among mixed-mode surveys can be achieved by mailed surveys using a prepaid incentive, follow-up telephone prompts, and the option to complete the survey by several different modes.

## Web Surveys

The use of the Internet as a mode of survey data collection has grown in recent years. The benefits of web-based survey include lower cost per case, quick turnaround, ability to complete the survey at any hour of the day, and low respondent burden are very attractive to survey researchers.

### Web responders

- When given the choice of response mode, physicians who choose to respond over the Internet tended to be younger, male, graduates of American medical schools, working in/ members of/ partners in a larger group practice, and employees of Health Maintenance Organizations (Lusk et al. 2007; Olson et al. 1999).

### Response rates

- Studies on physician surveys have shown that lower response rates were the result of using web surveys alone compared to other survey modes (Akl et al. 2005; Leece et al. 2004; Losh, Thompson and Lutz 2004; McMahon et al. 2003; Raziano et al. 2001; Kim et al. 2001).
- Response rates may vary depending upon how Internet savvy the sample physicians are. One Internet survey was given to “800 Web-using doctors (members of a UK medical Internet service provider, Medix)” and reached a response rate of 94% in two months (Potts and Wyatt 2002).

### Response accuracy

- A study sent by email had fewer incomplete answers compared to the same study sent by fax or postal mail (McMahon et al, 2003).

### E-mail sampling error

- Since a common practice in web surveys is contacting respondents by an e-mail lead letter that includes a hyperlink to the survey site, web surveys who use this technique may have greater sampling error because physician e-mail addresses are not as published and easily accessible as physician addresses and phone numbers (Braithwaite et al., 2003).

## Studies of Physician Staff as Respondents

Physicians usually have office staff who both screen their phone calls and mail, and who are knowledgeable about many aspects of the practice. Some survey researchers have investigated the effects of using such **staff as proxy respondents** (Berk, 1983; Berk, Cohen and Myers, 1981; Marder and Thran, 1988). In general, these studies indicate that proxy respondents may be valuable sources for some kinds of information about finances of the physician's practice (such as fee levels) or patient characteristics but poorer sources of information about topics such as the physician's income and expenses or physicians' use of their time.

Physicians often choose to **designate proxy respondents for providing cost information** (Schneider, et al., 1992 - cited in Thran and Berk, 1993; Thran and Hixson, 2000).

Several studies have looked at the best way to overcome gatekeepers' resistance to allowing access to physicians.

- **Use of a physician for call-backs** (Bostick, Pirie, Leupker, and Kofron, 1992; Gupta, Ward, and D'Este, 1998; Temple-Smith, Mulvey, Doyle, 1998; Ward, Holt, D'Este, and Sladden, 1998).
- **Use of more experienced interviewers** (Parsons, Johnson and Warnecke, 1993) have been found to increase gatekeeper cooperation.

## Effects of Providing Incentives

Many of the articles we found focused on the use of monetary and nonmonetary incentives to increase response rate. Overall, most of the studies found that the use of an incentive, when appropriate, led to increased response rates.

### Size of Monetary Incentive

- VanGeest, Wynia, Cummins, and Wilson (2000) experienced higher response rates as incentives are increased from \$5 to \$10, but dropped with \$20 incentive.
- Kasprzyk et al. (2001) found higher response rates for \$15 and \$25 group over no incentive.
- Malin et al. (2000) found a large increase in response rate for \$50 incentive for nonresponders over no incentive.
- Researchers concluded that physicians viewed no incentive or use of a small incentive as not worth the time to complete the survey. Enclosing too large on an incentive was viewed as a payment, therefore turning away many physicians. An incentive that was viewed as a "token of appreciation" had the best result.

### Prepaid Incentive

Other researchers found that monetary incentives are effective if they are **prepaid**. (Everett, Bedell, and Telljohann, 1997; Moore, Gaudino, DeHart, Cheadle, and Martin, 2001; Oden and Price, 1999; Price, 2000).

- A recent mail survey on smoking cessation among 2,100 physicians found that physician response rates to mail surveys are greatly improved, especially among certain medical specialties, by using up-front incentives. (Delnevo, CD, Abatamarco, DJ, and Steinberg, MB. 2004).
- Another study of general practitioners experienced a higher response rate among respondents who received non-conditional incentives. (Tjerbo T, Kvaerner KJ, Botten G, and Aasland OG. 2005).

### Non-Monetary Incentives

Some researchers experimented with the use of non-monetary incentives with no success.

- VanGeest, JB., Johnson, TP., and Welch, VL. 2007 reviewed 10 recent studies that used nonmonetary incentives. In general, they concluded that token monetary incentives (candy, pencils and pens, stickers) were not very effective in increasing response rate.
- A recent study compared inclusion of candy with no incentive in a mail survey to physicians. The authors concluded that nonmonetary incentives appear to have little or no impact on response rates (Burt, C. W., and Woodwell, D. 2005).

### Inclusion in a "lottery"

- One study evaluated the cost-effectiveness of physician willingness to complete a mail survey when inclusion in a lottery was used as an incentive. A randomized controlled trial of a sample of 1,000 general practitioners found that a lottery significantly increased the response rate of physicians to a mail survey (Baron, DeWals, and Milord, 2001).
- A recent national mail survey of consultant obstetricians and gynecologists were randomized to receiving a questionnaire offering a prize draw incentive (on response) or no such incentive. Overall, the offer of a prize draw incentive did not significantly increase response rates to a national questionnaire survey of consultant obstetricians and gynecologists (Moses, SH and Clark, TJ. 2004).
- A study compared emergency physicians' responses to inclusion of a \$2 bill and a chance to win \$250 through a lottery. Two groups of 288 emergency physicians were mailed a questionnaire with incentive type. It was found that a \$2 bill produced a better response rate with lower cost per participant than offering a chance to win \$250 (Tamayo-Sarver, JH, and Baker, DW. 2004).

### Professionally-relevant Incentives

There were a few studies that looked at professionally relevant non-monetary incentives. They found the use of incentives such as continuing education credits and research briefs to be effective at increasing response rates (Olson, Schneiderman, and Armstrong, 1993; Tambor, *et al.*, 1993).

## Conclusion

There are many challenges to conducting surveys among physicians. In general, response rates are lower than those of the general population. Overall, we found that studies varied in their research findings. We attempted to draw conclusions based on the numerous studies we evaluated into a set of “best practices” shown in the table below. Each study we evaluated differed in many ways from design to target population to mode of delivery. This is an attempt to highlight the more successful strategies in improving response rates among physicians.

### Best Practices in Surveying Physicians

Category	Strategy
<b>Mail Packaging</b>	<ul style="list-style-type: none"> <li>✓ Several authors have concluded that a <u>personalized prenotification letter</u>, <u>use of stamps</u>, or <u>special packaging</u> (i.e. priority shipping or Federal Express) on both outgoing and return envelopes are effective.</li> <li>✓ Preparing a personalized cover letter that uses flattery positively effected response rate.</li> <li>✓ Sponsorship and letters of endorsement were found to be effective.</li> <li>✓ Furthermore, letters of endorsement were also found to be effective.</li> </ul>
<b>Incentives</b>	<ul style="list-style-type: none"> <li>✓ Prepaid incentives were most effective.</li> <li>✓ Amount of the incentive should be large enough to be viewed as a “token of appreciation” for completion of the survey. Too large of an incentive can be viewed as a payment by physicians resulting in lower response.</li> <li>✓ Non-monetary incentives do not seem to be very effective.</li> </ul>
<b>Questionnaire Length</b>	<ul style="list-style-type: none"> <li>✓ Attention should be paid to overall length of questionnaire. Physicians are busy and response will drop with longer questionnaires.</li> </ul>
<b>Survey Mode of Administration</b>	<ul style="list-style-type: none"> <li>✓ Mail seems to be the preferred mode by physicians; however, web-based surveys are increasingly used by physicians.</li> <li>✓ Multi-mode studies experienced the greatest overall response.</li> </ul>
<b>Nonresponder Follow-up</b>	<ul style="list-style-type: none"> <li>✓ Postcard reminders were inexpensive and effective.</li> <li>✓ Telephone “prompts”, E-mail and Fax “prompts” (when available) were also successful in increasing response.</li> </ul>

While maintaining high response rates is always desirable, research indicates that physicians do not significantly differ among respondents and nonrespondents in terms of responses and group characteristics. In this case, larger sample sizes compensate for greater nonresponse and can be less expensive than continual follow-up contacts. This provides some comfort since it appears response rates will continue to lag behind non-physicians well into the near future.



## Future Direction

There is no reason to believe that physician cooperation rates will improve in the future. Future research should focus on the concerns voiced by the target population. Focus groups could be used to further investigate barriers and reluctance to participate. Furthermore, emerging technologies may also provide opportunities for more efficient and less invasive forms of gathering data from physicians.

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