



Original Research

Response rate, response time, and economic costs of survey research: A randomized trial of practicing pharmacists

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Abstract

Background: There is a gap between increasing demands from pharmacy journals, publishers, and reviewers for high survey response rates and the actual responses often obtained in the field by survey researchers. Presumably demands have been set high because response rates, times, and costs affect the validity and reliability of survey results.

Objective: Explore the extent to which survey response rates, average response times, and economic costs are affected by conditions under which pharmacist workforce surveys are administered.

Methods: A random sample of 7200 U.S. practicing pharmacists was selected. The sample was stratified by delivery method, questionnaire length, item placement, and gender of respondent for a total of 300 observations within each subgroup. A job satisfaction survey was administered during March–April 2012.

Results: Delivery method was the only classification showing significant differences in response rates and average response times. The postal mail procedure accounted for the highest response rates of completed surveys, but the email method exhibited the quickest turnaround. A hybrid approach, consisting of a combination of postal and electronic means, showed the least favorable results. Postal mail was 2.9 times more cost effective than the email approach and 4.6 times more cost effective than the hybrid approach.

Conclusion: Researchers seeking to increase practicing pharmacists' survey participation and reduce response time and related costs can benefit from the analytical procedures tested here.

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Keywords: Pharmacist workforce; Research costs; Response rate; Response time; Survey research

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Survey research is a tool used to collect information about a sample drawn from a well defined population of persons, households, or organizations. It provides researchers with an opportunity to collect valuable data although alternative tools such as observations, panels, focus groups, and interviews may provide, at times, superior information. A drawback of survey research is its multidisciplinary nature; researchers must blend psychological (*i.e.*, item wording) and statistical (*i.e.*, sample estimation) concepts to create a quality survey design.¹ Creating and implementing robust surveys is difficult because three sources of errors are likely to emerge: sampling error, sample bias, and non-sampling error.

Sampling error refers to differences between the population parameter and a subset estimate even when rigorous selection procedures are employed. A sample bias is a systematic deviation of an estimate from the parameter. A non-sampling error is a deviation unrelated to the sampling of respondents (*i.e.*, construction, administration, or characteristics such as gender or age). In an effort to minimize the unwanted presence of sample biases and non-sampling errors, some analysts have advocated for a high response rate as a necessary condition for survey validity.^{2,3}

In recent years, however, survey researchers have experienced declining response rates,^{4,5} a trend acknowledged by public and private organizations.⁶ For example, the median response rate for the Behavioral Risk Factor Surveillance System of the Centers for Disease Control and Prevention declined from a median of 70–75% in the 1980s to 57% in 2010,⁷ and the response rate for The Pew Research Center for the People & the Press fell between 1997 and 2003 from 36% to 27% for a standard survey and from 61% to 51% for a rigorous survey.⁸ The gap between increasing demands from publishers and reviewers for high response rates and the actual responses obtained in the field has created concern among survey researchers. Biased results pose a threat to validity; yet analysts must cope with the reality of declining response rates.

Considering the potential for error in survey methodology and the virtual absence of any systematic attempt to examine these issues in relation to the pharmacist workforce, this study sought to explore the extent to which survey response rates, average response times, and economic costs are affected by conditions under which surveys are administered. Based on

previous studies, four classifications commonly described as affecting survey outcomes were examined: delivery method, questionnaire length, item placement, and gender of respondent.^{9,10} While other classifications may influence response rate and average response time, economic and practical considerations limit the ability to include further analyses.^{11,12}

Research related to variation in response rates has produced inconsistent results because factors affecting response rates are influenced by differences in study design and survey attributes.¹³ The classification system used here focused on designing models of measurement error as useful tools for understanding their effect on survey results.¹⁴

In the early years of the web, electronic surveys showed great promise; however, more recent findings show that electronic surveys do not consistently outperform postal mail.¹⁵ Some research suggests that healthcare professionals prefer traditional mail surveys.^{9,16} Specifically in dental medicine, postal mail surveys yield the highest response rate, even if dentists are given a choice to respond online¹⁷; yet the email and web delivery methods have the potential for more complete responses and lower costs.

Results are inconclusive on the influence of questionnaire length on survey response. Several surveys report that longer questionnaires are associated with lower response rates,¹⁸ while others indicate no significant effect.¹⁹ Burchel and Marsh find that length affects rate of response but not the occurrence of missing and/or incomplete data.²⁰

Item placement in a survey may affect the nature of responses obtained.²¹ For example, placing demographic questions at the end of the form yields a slightly higher response rate than placing them at the beginning of the form.²² The argument in favor of this practice is that the early part of a questionnaire must hook respondents into completing the survey; people may get tired of supplying basic information up front and quit providing answers to more substantive questions prematurely. This proposition has not been tested with practicing pharmacists.

The nature of gender differences in response is not clear. Results from a study focusing on college students have suggested the existence of gender differences in patterns of response to web versus paper surveys; male students were more responsive to web surveys, while women were more likely to choose paper.²³ However, gender differences in

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