Executive Summary: Many park and recreation agencies use mail surveys to collect information. One concern is that those who return the surveys may have different views on an issue than non-respondents. This concern is reduced if a high response rate is obtained, which leads to the question, “What response rate is considered acceptable and achievable?” Literature suggests that 70% is an appropriate criterion for special-interest groups, but that this rate is not attainable for general population groups who have relatively little interest in the issues addressed in the survey. This study explored three research questions: Do overall response rates differ across different types of populations? Do patterns of response rates between waves of mail surveys differ across types of populations? What factors can be identified that account for differences in overall response rates? Data from 14 park and recreation surveys were reviewed. In each survey, three waves of questionnaires were distributed. The survey samples were classified into three interest categories: recreation, professional, and general. The analyses reaffirmed that overall response rates of 70% are a reasonable expectation from recreation interest samples, but among professional and general interest groups response rates of 60% and 55%, respectively, are a more realistic expectation. The ratios of responses between the three waves among recreation interest and general population samples were consistent, averaging approximately 60:28:12. However, among professional interest samples, the distribution of 37:47:16 showed a contrastingly heavy dependence on the middle wave. Differences in response rates appeared to be attributable primarily to saliency of an issue to respondents.

Key words: surveys, questionnaires, response rates, parks and recreation

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because in many situations the alternatives of using the telephone or personal interviewers to collect data are more difficult or require more resources to implement.

The authors have found it increasingly difficult to undertake telephone surveys over the past decade for two reasons. First, the rapid growth of telemarketing appears to have eroded the willingness of people to engage in conversations with those seeking information from them. Second, an increasing number of individuals are using answering machines and caller I.D. to screen their calls, so it has become much more difficult to access potential respondents. It seems likely that these challenges will accentuate in the coming years. The mail survey is likely to be preferred over the personal interview by many park and recreation agencies because it is substantially less expensive than using existing or hiring additional employees to conduct personal interviews, especially if the survey seeks input from stakeholders who do not visit the agency’s facilities.

Two other advantages of the mail survey are often cited. First, it affords respondents' privacy, so they are less subject to socially desirable biases in response than are telephone or personal interviews. Second, they can complete the questionnaire at their own paces and at a time that is convenient for them, so their judgements may be more thoughtful and thorough than data collected by other modes (Aquilino, 1994; Martin & Nagao, 1989).

There are several sources of error that can lead to inaccurate and misleading results from mail surveys. Among the most common errors are using sampling frames that are not representative of the population of interest, respondents giving socially acceptable rather than truthful answers, coder errors in transferring data from questionnaires to computers, inappropriate interpretation of the data, and response bias caused by those who return completed questionnaires having different views from those who do not respond. The concern in this paper is with this last error source.

Response bias would be removed as a source of error if all respondents returned completed surveys. However, it is unlikely that all recipients of a mail survey will return the questionnaire. This leads to a concern that those who return them may have different views on an issue than non-respondents. One guide to the representativeness of a sample’s respondents that is frequently adopted is the overall response rate (Babbie, 1995). If a high response rate is achieved, there is less chance of significant non-response bias than if a low rate is achieved. This leads to the question, "What response rate is considered to be acceptable and achievable?"

There appears to be an emerging consensus in the literature about what level of overall response rate can be reasonably anticipated. Babbie (1995) regarded a response rate of 50% to be adequate for analysis and reported 60% to be good and 70% to be very good. Babbie’s rules of thumb appear to be regarded by others as rather low. Dillman (1978), whom many regard as being the definitive authority on questionnaire design and response rates, reported that the average response rate among 48 surveys that had used the
The approach to mail surveys he advocated was 74%, and none obtained less than a 50% return. The Dillman approach is described in the next section of the paper. Other authors concur that it is realistic to obtain at least a 70% response (Cole, 1980; Goyder, 1985; True, 1983; Miller, 1977; Weisberg & Bowen, 1977).

In the parks and recreation field, Brown & Wilkens (1978) reported that response rates from 17 mail surveys ranged from 56% to 88%. These surveys all focused on behavioral aspects of outdoor recreation or rural land use. They concluded that "the interest of the study topic to the survey audience is the primary factor explaining differences in response rates among studies," (p. 227) and that "the return rate has been at least 65% of deliverable questionnaires, if the topic of the study is one with which the study audience is well-acquainted" (p. 227). In a later paper discussing 38 subsequent mail surveys that addressed various leisure and natural resources topics, Brown, Decker, & Connelly (1989) reported that response rates varied from 41.7% to 89.8%, with a mean of 71.8%. They categorized the survey populations into general public, general recreation groups, and specific recreation groups and ascribed saliency values to the surveys. They concluded that "a specific recreation or leisure population for whom the survey topic was highly salient would be expected to respond at a rate about 21% higher than the general public's response rate on a topic of low salience" (p. 107). These studies offer empirical support for the 70% criterion that appears to have wide acceptance.

Brown et al.'s (1989) work suggests that response rate is influenced by the type of population from which a sample is drawn. This theory was endorsed by Dillman (1978), who noted that response rates from specialized populations are usually higher than those attained from general populations. Specialized populations are defined as those that can be characterized as relatively homogeneous. In recreation literature, it has been suggested that "homogenous" can be operationalized as those who are engaged in the same activity in the same resource setting (Becker, Dottavio, & Mengak, 1987). Since specialized user populations by definition are likely to have an interest in the questions included in the survey, it is reasonable to hypothesize that their response rates will be higher than those of samples drawn from general populations of whom many may have no interest in the variables being studied.

In the past four years, the senior author has undertaken 14 surveys that all used a similar approach to collecting data. The studies sampled three types of populations: two specialized and one general, and the 14 data sets were classified accordingly. The first type of specialized sample consisted of recreation interest samples drawn from seven populations comprised of visitors who had demonstrated an interest in the recreation activity focused upon in the study. These user populations were associated with state parks, museums, and festivals (Table 1).

The second type of specialized sample was comprised of those drawn from professional interest populations of agency or organizational personnel
who supplied services, rather than the visitors who used them. They were
differentiated from recreation interest groups because it has been suggested
that respondents who are in organizational positions may feel some public
or professional responsibility, beyond that of being an individual citizen or
recreationist, to respond (Brown, et al., 1989). The four data sets in this
category consisted of personnel responsible for business relocation deci-
sions, community economic development functions, organizing festivals,
and serving at-risk youth populations (Table 2).

The third category of data sets was drawn from general populations.
These populations consisted of residents or visitors in a community whose
level of interest in the study variables was unknown (Table 3). It was
previously noted that homogeneity has been operationalized in recreation
studies as those who engage in the same activity in the same resource
setting. Data set 13 (Table 3) was comprised of respondents who were
believed to be over 55 years of age and to have relocated to the Texas Rio
Grande Valley in the previously 12 months. Following Goudy’s (1978)
reasoning, these features suggested that the population could be viewed as
homogeneous on key characteristics. However, because the homogeneous
characteristics were not recreation activities, and because patterns of
recreation behavior were the dependent variables of interest in that study,
data set 13 was classified as representing a general population.

Three research questions were explored with these data sets: Do overall
response rates differ across different types of populations? Do patterns of
response rates between waves of mail surveys differ across different types of
populations? What factors can be identified that account for differences in
overall response rates?

Data Collection Procedures

The approach used to collect data in all 14 studies was modified from
that recommended by Dillman (1978) and it involved distributing three
waves of questionnaires. This data collection design has been widely
adopted in the park and recreation field. A brief description of each data
set is given in Tables 1, 2, and 3. For wave 1, respondents were either given
a questionnaire on site and requested to mail it back to the researchers (data
sets 1 through 5), or mailed a questionnaire (data sets 6 and 7). Two to four
days after, they were mailed a reminder card reiterating the importance of
the study and requesting return of their questionnaire. Two weeks after the
initial mailing, a replacement questionnaire with a follow-up letter was
mailed to non-respondents (wave 2). Finally, a similar package with
another replacement questionnaire was mailed four weeks after the initial
contact to those who still had not responded (wave 3). Each response was
coded by wave when it was returned. The two major departures from
Dillman’s recommended procedures were that no pre-notice postcards or
letters were sent to respondents in advance preparing them for receipt of the
survey, and that the wave-3 letter was not sent out by certified mail.
In addition to these standardized procedures, all the data sets incorporated the following design features that have been recommended for maximizing response rates in mail surveys (Brown, et al., 1989; Dillman, 1978; Dillman, Clark, & Treat, 1994; Fox, Crask, & Kim, 1988; Gitelson, Kersteter & Guadagnolo, 1993; Heberlein & Baumgartner, 1978): (a) first class postage was used on all mail-outs; (b) questionnaires were formatted in 7" x 8 1/2" booklets (except for data set 13, where the booklet size was 11" x 8 1/2") with attractive cover design art work; (c) pre-paid return envelopes were included in each wave; (d) cover letters included an inside address, were personalized and were hand signed; (e) letters of endorsement and support from the sponsoring agency were used; (f) cover letters were on university letterhead; (g) there was a confidentiality statement in the cover letters, and (h) a benefits message was included in the cover letters indicating how respondents would gain from completing the questionnaire.

The surveys differed in the following ways:

1. In data sets 1 through 5, the instrument was handed to potential respondents on-site and they were requested to complete it when they returned home, while first-wave surveys were mailed to samples 6 and 7. Thus, with the former group there was a face-to-face contact, and there was also some pre-screening since a proportion of the on-site samples refused to cooperate with the study. However, in none of the studies did this on-site refusal rate exceed 8%.

2. Types of population surveyed: interest, professional, or general populations.

3. The opportunity to win a prize in a drawing was used as an incentive in six of the seven recreation interest samples, but not in any of the professional interest or general samples. The prizes were annual subscriptions to a glossy state parks magazine (data sets 1 and 6), annual season passes valued at $50 (data set 2), free airline tickets (data sets 3 and 4), and a day cruise on a famous tall-masted sailing ship (data set 5).

4. Length of surveys. All were eight-page questionnaire booklets, but the number of items within them ranged from 32 to 68.

5. Complexity of the instrument. Each questionnaire was predominately comprised of items requiring a scale or dichotomous response, but four of them included up to five open-ended questions. Three of the surveys sought reactions to alternative management scenarios that were described in paragraphs, to which respondents answered on scales.

6. Size of type. Fonts were either 10- or 12-point.
<table>
<thead>
<tr>
<th>Data Set #</th>
<th>Description of Data Set</th>
<th>Sample Size</th>
<th>Study Purpose</th>
<th>Nature of Instrument Administration</th>
<th>Ratio of Responses in Waves 1:2:3</th>
<th>Response Rates Wave 1 Wave 2 Wave 3 Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Visitors to 12 Texas State Parks</td>
<td>4291</td>
<td>Assess willingness to pay state park admission fees</td>
<td>Given a mail-back questionnaire</td>
<td>65:29:7 (68.7%)</td>
<td>65.2:29.2:7.5</td>
</tr>
<tr>
<td>2</td>
<td>Visitors to nine Texas State Parks</td>
<td>2373</td>
<td>Monitor visitor acceptance of a new pricing structure</td>
<td>Given a mail-back questionnaire</td>
<td>56:9:25:14 (67.8%)</td>
<td>56.9:28.5:7.6</td>
</tr>
<tr>
<td>3</td>
<td>Visitors to Main Street Days Festival in Grapevine, Texas</td>
<td>763</td>
<td>Evaluation of the festival</td>
<td>Given a mail-back questionnaire</td>
<td>52:9:33:13 (68.1%)</td>
<td>52.9:33.7:13.4</td>
</tr>
<tr>
<td>4</td>
<td>Visitors to Dickens on the Strand Festival in Galveston</td>
<td>600</td>
<td>Evaluation of the festival</td>
<td>Given a mail-back questionnaire</td>
<td>59:7:25:17 (77.3%)</td>
<td>59.7:26.1:17.2</td>
</tr>
<tr>
<td>5</td>
<td>Visitors to five museums in Houston and Galveston</td>
<td>1495</td>
<td>Identify benefits and constraints to museum visitation</td>
<td>Given a mail-back questionnaire</td>
<td>108:3:6:17 (72.4%)</td>
<td>108.3:6.1:17.6</td>
</tr>
<tr>
<td>6</td>
<td>Holders of an annual pass to Texas State Parks</td>
<td>2983</td>
<td>Assess willingness to pay state park admission fees</td>
<td>Mail survey</td>
<td>2372:242:182:10 (79.5%)</td>
<td>2372:242:182:10</td>
</tr>
<tr>
<td>7</td>
<td>Members of Galveston Historical Foundation (GHF)</td>
<td>396</td>
<td>Identify perceptions of GHF's work in historic preservation and tourism</td>
<td>Mail survey</td>
<td>289:157:4:10 (82.9%)</td>
<td>289:157:4:10</td>
</tr>
</tbody>
</table>

Table 1: A Profile of the Seven Studies Which Derived Data from Samples of Recreation Interest Populations
<table>
<thead>
<tr>
<th>Data Set #</th>
<th>Description of Data Set</th>
<th>How Sample was Selected</th>
<th>Nature of Instrument Administration</th>
<th>Study Purpose</th>
<th>Sample Size</th>
<th>Wave 1</th>
<th>Response Rates</th>
<th>Ratio of Responses in Waves 1:2:3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>8</strong></td>
<td>New businesses moving to the state of Texas</td>
<td>A list provided by economic development agencies</td>
<td>Mail survey</td>
<td>Determine relative importance of quality of life and recreation in business relocation decisions</td>
<td>82</td>
<td>36 (43.9%)</td>
<td>21 (25.6%)</td>
<td>16 (19.5%)</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Economic development agencies in Texas</td>
<td>A list provided by the Governor’s Office of Business Development</td>
<td>Mail survey</td>
<td>Determine relative importance of quality of life and recreation in business relocation decisions</td>
<td>277</td>
<td>90 (32.5%)</td>
<td>45 (16.2%)</td>
<td>234 (9.9%)</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td>Festival and event organizers in Texas</td>
<td>A list provided by the Texas Department of Commerce</td>
<td>Mail survey</td>
<td>Identify rationale for staging festivals and determine extent of market orientation among festival organizers</td>
<td>654</td>
<td>57 (8.7%)</td>
<td>208 (31.8%)</td>
<td>74 (11.3%)</td>
</tr>
<tr>
<td><strong>11</strong></td>
<td>National sample of recreation and park agencies</td>
<td>Mailing lists provided by the National Recreation and Park Association</td>
<td>Mail survey</td>
<td>Identify what recreation and park agencies are doing with regards to reaching at-risk children and youth</td>
<td>1001</td>
<td>279 (27.9%)</td>
<td>303 (30.2%)</td>
<td>79 (7.9%)</td>
</tr>
</tbody>
</table>

**Mean**  | 22.9% | 28.6% | 9.9% | 61.4% |
Table 3: A Profile of the Three Studies Which Derived Data from Samples of General Populations

<table>
<thead>
<tr>
<th>Data Set #</th>
<th>Description of Data Set</th>
<th>How Sample was Selected</th>
<th>Nature of Instrument Administration</th>
<th>Study Purpose</th>
<th>Sample Size</th>
<th>Response Rates Wave 1</th>
<th>Response Rates Wave 2</th>
<th>Response Rates Wave 3</th>
<th>Total</th>
<th>Ratio of Responses in Waves 1 : 2 : 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Visitors to Galveston</td>
<td>All guests who stayed at a selected hotel in the past four weeks</td>
<td>Mail survey</td>
<td>Evaluate interest and awareness in Galveston’s museums</td>
<td>486</td>
<td>172 (35.4%)</td>
<td>85 (17.5%)</td>
<td>35 (7.2%)</td>
<td>292</td>
<td>59.0:29.0:12.0</td>
</tr>
<tr>
<td>13</td>
<td>Individuals 55 or older who relocated to the Texas Rio Grande Valley in the past 12 months</td>
<td>Mailing list was purchased from a commercial source</td>
<td>Mail survey</td>
<td>Evaluate the influence of recreation amenities on retiree relocation decisions</td>
<td>764</td>
<td>180 (23.6%)</td>
<td>109 (14.3%)</td>
<td>40 (5.1%)</td>
<td>329</td>
<td>54.7:33.1:12.2</td>
</tr>
<tr>
<td>14</td>
<td>Residents of Galveston</td>
<td>Every nth name in the Galveston phone directory</td>
<td>Mail survey</td>
<td>Identify perceptions of GHF’s work in historic preservation and tourism</td>
<td>562</td>
<td>258 (45.9%)</td>
<td>76 (13.5%)</td>
<td>44 (7.8%)</td>
<td>378</td>
<td>68.2:20.1:11.7</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35%</td>
<td>15.1%</td>
<td>6.7%</td>
<td>56.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results

Research Question 1: Do Overall Response Rates Differ Across Different Types of Populations?

The trends in the data shown in Tables 1, 2, and 3 are consistent with the findings of Brown et al. (1989) and Dillman (1978) that were described earlier. The specialist samples had higher response rates than did the general population samples. The samples from general interest populations (12, 13, and 14) were defined by geographical rather than interest parameters. Hence, it is likely that for a substantial proportion of these respondents, there was relatively little saliency in the topic of the survey. The lack of topic saliency probably accounts for these studies reporting the lowest overall average response rate of 55.1% (60.1%, 43%, and 67.2%). In contrast, mean response rates from the recreation interest (Table 1) and professional interest (Table 2) samples were 72.0% and 61.4%, respectively, probably reflecting the larger proportion of respondents who were involved and concerned with the survey topics (Brown & Wilkens, 1978; Heberlein & Baumgartner, 1978).

Among the recreation interest samples, data sets 6 and 7, which were the two that were mailed rather than personally given to respondents, reported relatively high response rates of 79.5% and 72.9%, respectively. Only one of the five recreation interest samples, in which respondents were handed surveys, obtained a higher response rate. Ostensibly, this appears to be counter-intuitive since it may be expected that a face-to-face encounter with a researcher is likely to create a level of obligation not inherent when the first wave is mailed out. However, data sets 6 and 7 were comprised of state park annual pass holders and members of a historical foundation. It is likely that these groups have unusually high levels of personal interest, sense of obligation, and level of commitment to their facility of interest, which is manifested in their willingness to respond to surveys.

Research Question 2: Do Patterns of Response Rates Between Waves of Mail Surveys Differ Across Different Types of Populations?

Among the seven recreation interest samples, the mean response rates for waves 1, 2, and 3 were 43.3%, 20.4% and 8.2%, respectively (Table 1). These numbers are comparable to those reported by Heberlein & Baumgartner (1978) but are marginally lower. To facilitate comparisons, the percentages were standardized using a 100-point scale. The ratio between them is then expressed as 60:28:12. Although the overall response rates of the general population samples were lower (33.7%, 14.9% and 6.6% mean, for waves 1, 2, and 3, respectively) the ratio between the three waves of 61:27:12 was similar to that of the recreation interest samples (Table 3).

These patterns are substantially different from those exhibited by the professional interest samples, for which the wave means were 22.9%, 28.6% and 9.9%, respectively (Table 2), giving a ratio of 37:47:16. This pattern across waves is more evenly distributed with a smaller percentage respond-
ing to the initial wave, but a substantially larger proportion responding to the second wave. To some extent, this average picture is distorted by the extraordinary imbalance between waves 1 and 2 that occurred in data set 10. However, this data set offers a particularly dramatic illustration of the reasons for the more even distribution of returns from professional interest samples. When surveys are directed to specific professionals in organizations, they often have to be routed internally to the person best positioned to respond to them.

Data set 10 comprised a sample of festival organizers and the routing problem was particularly convoluted since they tend to work not only in different divisions of agencies, but also in different types of agencies. The complexity of the routing process may lead to surveys being misdirected or taking so long to find the targeted individuals that they are discarded as being too dated. The problem is compounded by personnel being likely to regard such information requests as low priority among their job responsibilities, causing them to delay responding to them.

**Research Question 3: What Factors Can Be Identified that Account for Differences in Overall Response Rates?**

With one exception, all the surveys were eight-page booklets measuring 7" x 8 1/2" with a picture, the survey title, and names of the sponsoring agencies on the front cover. The exception was also an eight-page booklet but measured 8 1/2" x 11". It was used to collect data set 13, and this group did have a substantially lower response rate than any of the other data sets. Ostensibly, it appears that the extra length was a major factor in the lower response rate. However, this explanation is not strongly supported by empirical findings in the literature. Brown et al. (1989) showed through their regression analysis that "each additional page was associated with a decline in response rates of about 0.67%" (p. 107). Similarly, others have reported that increased length is not a major factor (Dillman, 1978; Kanuk & Berelson, 1973). A more probable explanation for the unusually low response rate from this sample may be its target, which was an elderly age cohort of those aged 55 or older.

**Implications**

Historically, mail surveys have been criticized for inadequate response rates, which are usually lower than both telephone and personal interview modes. However, Dillman (1978) developed a series of techniques to improve mail response rates, and the evidence of this study affirms that overall response rates of 70% are a reasonable expectation for samples drawn from specialist populations of recreation interest groups. Among professional interest groups and among general population groups, however, response rates of 60% and 55%, respectively, may be a more reasonable expectation. The recreation interest group response rates are comparable to those likely to be obtained from telephone and personal
The difference in response rate between recreation interest and general population groups is consistent with Donald’s (1960) early maxim that “Rates tend to be high when respondents have special interest or involvement in the content areas covered by the questionnaire” (p. 100). The ratios of responses between the three waves among recreation interest and general population samples were reasonably consistent, with the proportion of total responses received from each wave approximating 60:28:12. Among professional interest samples, the return rate distribution was 37:47:16, which showed a heavy dependency on the middle wave. The relatively large proportion of responses forthcoming from the latter two waves suggest that follow-ups of this group are especially important.

In five of the seven tourism interest samples, the wave 1 survey was handed to people rather than mailed to them. This distribution may have created a level of obligation and commitment that enhanced the response rate, compared to that which would have been obtained if the wave 1 surveys had been mailed out. This makes it difficult to compare the findings reported here with those reported in other studies that mailed out wave 1 surveys. However, it does provide a baseline for comparison for others who hand out wave 1 surveys. In the authors’ experience, as the surveys described here indicate, this is a relatively popular approach in the field by agencies interested in surveying user populations.

The two recreation interest samples in which wave 1 was mailed were comprised of state park annual pass holders and historical foundation members who were likely to possess levels of commitment to their facilities of interest that exceeded that of casual visitors. This is likely to have had a positive influence on the response rate. However, for many agencies, these types of populations are the primary focus of their research efforts because users and committed stakeholders are their core constituencies. Monitoring their views is critical because they are likely to have a disproportionate effect on the financial and/or political viability of recreation agencies.

The use of incentives may have been a contributing factor to the higher response rates obtained from the recreation interest samples (Church, 1993; Gitelson, et al., 1993). However, Church’s meta-analysis of 74 studies that reported data for both incentive and control groups offered evidence of significant increases in response rates only if the incentives were included in the initial mailing and not where the incentive was made contingent on returned responses, as was the case with the six samples that used incentives in this study. His meta analysis indicated that people responded more favorably to incentives that were included with the questionnaire, but incentives did not work if they were contingent on a completed return and the good faith of the surveying agency.

High response rates may not fully protect researchers against nonresponse error. Babbie (1995), for example, warned that response rates “are only rough guides; they have no statistical basis, and a demonstrated
lack of response bias is more important than a high response rate” (p. 262). Detailed discussion of analyses related to response bias is beyond the scope of this study, but efforts were made to gauge it in all 14 of the data sets. The approach used was the “continuum of resistance” model proposed by Filian, (1976). This model compares the responses of those responding in wave 1 to those responding in subsequent waves, and from the analyses inferences are made to non-respondents. The model assumes that people who require more contacts to elicit a response would have been non-respondents if data collection had stopped at an earlier wave. Thus, people who respond to later waves are more like non-respondents than people who respond in earlier waves.

In the 14 samples used here, chi-squares or t-tests were undertaken on a total of 405 variables. On 82% of the variables, the addition of waves 2 and 3 led to no change in the results. Thus, analyses based on the continuum of resistance model suggested non-response bias was relatively small. However, others have demonstrated that substantial non-response bias can exist even with return rates of 70%, and that the premise that late wave respondents resemble non-respondents may be flawed (Brown & Wilkens, 1978; Carson, 1991; Dalecki, Whitehead, & Blomquist, 1993; Mitchell & Carson, 1989).

While the focus of this paper has been on response rates, it is important to reiterate that non-response bias is only one of several potential sources of error associated with mail surveys. Other common error sources are the use of inappropriate sampling frames and data error. Sampling frame error is likely to occur if the sample is selected from a list of the population, which is not representative of that population. For example, many individuals are not listed in the telephone book. Thus, if that is used as the source from which a sample is drawn, then the sample may be unrepresentative. Data error is any systematic bias that occurs during data collection, analysis, and interpretation. This includes respondents giving socially acceptable answers, mistakes made by coders in transferring data from the questionnaires to computers, and inappropriate interpretation of the data.

References


