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**Privacy and Confidentiality Research
and the U.S. Census Bureau
Recommendations Based on a Review of the Literature**

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**Privacy and Confidentiality Research and the U.S. Census Bureau:
Recommendations based on a review of the literature**

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Abstract: In the course of its mission as the nation's collector and provider of official statistics, the U.S. Census Bureau is committed to respecting the privacy concerns of respondents and protecting the confidentiality of the data they provide. It is suspected, however, that concerns about privacy and confidentiality are gaining more attention and may affect people's willingness to cooperate with the censuses and surveys the Census Bureau conducts. This paper explores a number of issues regarding privacy concerns and attitudes, confidentiality beliefs, and their relationship to the functions of the U.S. Census Bureau. The review discusses: a) the individual definitions of privacy and confidentiality, and the relationship between the two concepts; b) public attitudes over the last several decades; c) how attitudes and perceptions might affect the Census Bureau (e.g., survey nonresponse, data quality, cost of enumeration, etc.); d) the importance of the Census Bureau's ability to maintain public confidence in order to maintain public cooperation; e) how issues associated with privacy and confidentiality affect the Census Bureau now, and speculation as to their possible effects in the future; and f) recommendations about what might be done to address current and future problems associated with privacy and confidentiality.

Key Words: privacy; confidentiality; attitudes; nonresponse

1. INTRODUCTION

In the course of its mission as the nation's collector and provider of official statistics, the U.S. Census Bureau is committed to respecting the privacy concerns of respondents and protecting the confidentiality of the data they provide. The American Statistical Association (1979), however, reported that issues of privacy and confidentiality were gaining more attention and were contributing to additional respondent suspicion and reluctance to participate in surveys. The general notion is that people are becoming increasingly concerned that they are losing control over their personal information, and fear that if they divulge certain information it may somehow be used against them. Even though the Census Bureau has a sound record for maintaining confidentiality, some people still do not believe the Census Bureau's pledge to do so, and think that some census and survey requests invade their privacy. A continuing concern for the Census Bureau is that such public attitudes about privacy and confidentiality may affect people's willingness to cooperate with the censuses and surveys it conducts. The Census Bureau has therefore made a considerable effort over the years to research and understand the perceptions, attitudes and behaviors associated with privacy and confidentiality.

This paper explores a number of issues regarding privacy concerns and attitudes, confidentiality beliefs, and their relationship to the functions of the U.S. Census Bureau. Because they are conceptually distinct yet integrally linked together, the individual definitions of privacy and confidentiality are discussed first, and the relationship between the two concepts explored. Next, a review of literature documenting public attitudes over the last several decades explores the evidence of public concern regarding privacy and confidentiality and discusses the difference between the perception and the reality of these concepts. In addition to attitudes of the general public, attitudes held by hard-to-enumerate groups as well as Census Bureau interviewers are also reviewed.

Although the literature shows mixed results, the general conclusion is that a substantial number of people are concerned about privacy and confidentiality, and that these concerns are at least as prevalent as they have been in the past, if not more so. The review continues with an exploration of how such attitudes and perceptions might affect the Census Bureau in terms of survey nonresponse, data quality, cost of enumeration, etc. Topics discussed include how privacy and confidentiality concerns have affected censuses in other countries, how particular events can lead to public outcry (e.g., Japanese Americans in WWII), and the influence of political events (e.g., congressional activity). A discussion of the importance of the Census Bureau's ability to maintain public confidence in order to maintain public cooperation follows.

The paper continues with an analysis of how issues associated with privacy and confidentiality affect the Census Bureau now, and speculation as to their possible effects in the future. Literatures regarding measures that have been taken to address these issues (e.g., outreach, confidentiality assurances, disclosure limitation techniques, etc.) are also reviewed. Finally, the paper concludes with recommendations about what might be done to address current and future problems associated with privacy and confidentiality.

2. DEFINITIONS: PRIVACY AND CONFIDENTIALITY

What is privacy? What is confidentiality? How are they related? The President's Commission on Federal Statistics (1971) suggested that misunderstandings about these terms are common due to considerable variation in their definition across individuals and organizations. The confusion often occurs because people fail to distinguish between the two concepts and often use the terms interchangeably. The Commission stressed the importance of establishing clear definitions for privacy and confidentiality and keeping the terms distinct. They defined the right to privacy as "as the individual's right to decide whether and to what extent he will divulge to the government his thoughts, opinions, feelings, and the facts of his personal life"(p. 197). They suggested that confidentiality denotes restrictions imposed on how information can be transmitted and used and "should always mean that: a.) Disclosure of data in a manner that would allow public identification of the respondent or would in any way be harmful to him is prohibited; and b.) Data are immune from legal process" (p. 222). Although there are variations of these definitions it seems appropriate to use these as the working definitions for privacy and confidentiality for the purposes of this paper.

Privacy, therefore, refers to the extent to which individuals or groups control the transfer of information between themselves and other parties. Divulging private information involves an interaction between two or more parties, which makes privacy, in this context, distinct from concepts such as solitude and isolation. Thus, every time the Census Bureau requests information from a household for the decennial census or a demographic survey, it is involved in a complicated interaction regarding privacy concerns and confidentiality beliefs.

The concepts are linked because privacy concerns vary not just across interviews, but also across interview conditions, including such factors as the perceived legitimacy of an organization's request for information, and trust in an organization's ability to maintain data confidentiality. Once data are collected an individual has no control over the use of their information. If people do not think their information will be kept confidential, they might opt to keep more of it private by limiting their cooperation with census and survey requests (Bulmer, 1979a; Cope, 1979). In addition, it is likely that individuals will have greater concerns about confidentiality if the requested information is considered to be of a more private nature (Hakim, 1979). Bulmer (1979c) suggested that it is imperative that the public trusts the Census Bureau not to ask invasive questions and to maintain the confidentiality of their data, claiming that the completion of the census would not be possible without a high degree of voluntary cooperation from the public.

It also seems likely that concerns about privacy and confidentiality may generalize across organizations and affect individuals' perceptions and attitudes regarding providing information overall. With the increasing frequency of telemarketers and survey organizations, it is not uncommon for people to feel overwhelmed by the number of requests for information made of them. In addition, it is also increasingly common to hear of instances in which organizations have sold personally identified information about its patrons to a third party (e.g., Amazon.com). Factors such as these may lead to a reduction in trust in all organizations' willingness or ability to keep information confidential, making people feel that they must be more vigilant in protecting their private information themselves. Therefore, to truly understand the factors that influence an individual's decision to cooperate with a request for information from the Census

Bureau, it is necessary to understand all of these factors, their contexts, and how they function as an integrated unit.

Another issue is the inevitable conflict between an individual's right to privacy and the government's need for information (Petersen, 1979). There are no clear-cut rules to determine when it is appropriate to ask individuals to provide private information to the government and when it is not. In the case of the census, the questions are limited to those for which there is a legal mandate, and they are generally acceptable to the public. An individual's willingness to answer potentially invasive questions, however, may change over time. For example, a question about income, which raises concerns today, might not have elicited the same reaction in 1940 (Taeuber, 1979). Groves, Cialdini & Couper (1991; 1992) suggested that individuals balance the right to privacy with the benefits of giving information to a requestor, and that as the legitimacy of the requestor increases, information is likely to be viewed as less private (see also Gerber, 2001). For these reasons it is important for the Census Bureau to design censuses and surveys with careful consideration of participants' privacy. That is, the Census Bureau must balance the benefits of obtaining certain kinds of information with the costs for the participant associated with divulging personal and potentially sensitive information. It is necessary to develop and maintain the public's confidence in the Census Bureau's willingness and ability to keep personal information confidential. In return for giving up part of their individual privacy, people must be assured that their information will only be used for statistical purposes and that the reasons for asking for such information are justified.

It would be misleading to suggest that concerns regarding privacy and confidentiality are new issues for the census (and other surveys). Census Bureau policies regarding such issues have evolved since the first census in 1790, and over the course of time there have been a number of situations of interest (see Bohme & and Pemberton, 1991; and Bryant & Dunn, 1995, for a review). The current review, however, will focus on research that has been conducted on issues related to privacy and confidentiality only over the last several decades. The first goal of the paper is to first review the research that has already been conducted in order to develop an understanding of the issues and how they affect the Census Bureau now, and whether there are any trends that might suggest how these issues might affect the Census Bureau's programs in the future. A second goal is to suggest appropriate research to monitor privacy- and confidentiality-related public attitudes and their effects, and to develop effective strategies to neutralize or counter any negative effects (e.g., nonresponse).

3. TRENDS IN ATTITUDES ABOUT PRIVACY AND CONFIDENTIALITY

Of particular interest are people's attitudes and perceptions about the concepts of confidentiality and privacy, the relationship between the two, and how (if at all) these attitudes and perceptions change over time. There is a distinction that can be drawn between the reality of confidentiality and the public's perceptions and attitudes about confidentiality. Census data are protected by law (e.g., Title 13 United States Code) as manifested in a variety of disclosure limitation techniques (see Federal Committee on Statistical Methodology, 1994, for a review). Yet, no matter how careful and devoted the Census Bureau is to protecting the confidentiality of personal information, as the review to follow will demonstrate, many people do not believe that

their information will really be kept confidential. In addition, depending on the individual, and the subject matter and other conditions of the interview, the information request may or may not be considered an invasion of privacy. If a person deems the information requested to be of a private nature, and/or they do not trust the Census Bureau to keep their information confidential once they release it, that person may decide that it is not worth the risk to cooperate with the request. The following section examines research conducted to explore people's perceptions and attitudes about privacy, confidentiality, and other issues related to the Census Bureau's censuses and surveys. The discussion will focus on both the general public and Census Bureau interviewers.

3.1 The General Public

There has been a substantial amount of research conducted over the last few decades regarding people's attitudes about the Census Bureau and its activities. A starting place for an examination of this research are the focus groups and other qualitative studies that have been conducted over the years to gain insight into how the general public feels about the Census Bureau regarding invasion of privacy, data confidentiality, and related issues.

3.1.1 Qualitative research.

These studies in general highlight a variety of negative attitudes and perceptions regarding census-related privacy and confidentiality issues. A general caveat for interpreting the results of focus groups, however, is that the information is qualitative in nature and only derived from a very small number of people. It is therefore impossible to use these results to make valid generalizations as to the frequency, salience, or magnitude of these attitudes outside of the study population. Nonetheless, it is important that the Census Bureau is aware of the nature of the perceptions and attitudes about privacy and confidentiality held by the general public, as well as some members of specific demographic groups. Such information helps identify areas for further research that would better determine the prevalence of such beliefs, how they affect the Census Bureau, and what can be done to create more positive attitudes and perceptions.

Table 1 attempts to bring together the findings from a great number of focus groups (and other small, qualitative studies) regarding people's attitudes about privacy and confidentiality. The list of attitudes and concerns compiled from these focus groups should not be considered exhaustive, and may not include all the attitudes and perceptions (negative or positive) about privacy and confidentiality associated with the Census Bureau. They are intended to represent major themes in the concerns people have expressed regarding privacy, confidentiality, and related issues. The results of the studies suggest that there are six main concerns held by people (presented in the shaded areas of the table along with the citations for the studies that have found such results). Listed under the shaded areas are a number of additional concerns that are related to these main concerns, but that are somewhat different and were found with less frequency. The citations are listed in chronological order to provide a very rough idea about trends over time. In addition, citations in bold typeface represent studies conducted with specific "hard-to-enumerate" demographic groups (e.g., low income, minority, etc.).

Table 1

Attitudes and Perceptions of Privacy and Confidentiality

<p>Did not believe/understand that census data are kept confidential.</p>	<p>Ira O. Glick & Associates, Inc. (1978a) Ira O. Glick & Associates, Inc. (1978b) Moore & Rothwell (1978b) NBO, Ltd. (1978) Response Analysis Corporation (1978) Henderson & Gay (1985) Bush (1985; 1986a; 1986b) Freeman (1986) Market Dynamics, Inc. (1985; 1986) Prism Corporation (1986) Alu Like, Inc. (1987) Daniel Yankelovich Group, Inc. (1987) Hainer (1987) Vigil (1987) Cialdini, Wolf & Jardine (1990) Dillman & Reynolds (1990) Gerber (1990) Mitchell (1990) Newhouse (1992) Research/Strategy/Management and Belden & Russonello (1995)</p>
<ul style="list-style-type: none"> • Said that people disagree on the definition of confidentiality (Response Analysis Corporation, 1978). • Don't trust local enumerators (Henderson & Gay, 1985). • Thought information in computers is not secure (Henderson & Gay, 1985). • Were unaware of the legal restrictions associated with the use of census data (Aguirre International, 1995). 	
<p>Thought that the census asks for information that is an invasion of privacy.</p>	<p>Ira O. Glick & Associates, Inc. (1978a) Response Analysis Corporation (1978) Olson & Klein (1980) Bush (1985; 1986a) Market Dynamics, Inc. (1985; 1986) Hainer (1987) Cialdini, Wolf & Jardine (1990) Dillman & Reynolds (1990) Mitchell (1990) Alaska Native Foundation and the United States Bureau of the Census (1991) Newhouse (1992)</p>
<ul style="list-style-type: none"> • Lied if there was information they did not want to divulge (Market Dynamics, Inc., 1985; 1986, NBO, Ltd., 1978). • Thought that privacy is an issue for many people but confidentiality is not (Singer & Miller, 1992b). • Thought that the information requested was available elsewhere (Moore & Rothwell, 1978b; NBO, Ltd., 1978). 	
<p>Had concerns about/were afraid of interagency data sharing.</p>	<p>Ira O. Glick & Associates, Inc. (1978a) Response Analysis Corporation (1978) Henderson & Gay (1985) Bush (1985; 1986a; 1986b) Market Dynamics, Inc. (1985; 1986) Prism Corporation (1986) Gerber (1990) Mitchell (1990) Aguirre International (1994) Research/Strategy/Management and Belden & Russonello (1995)</p>

<ul style="list-style-type: none"> • Felt that they had little control over their personal information (Singer & Miller, 1992b). • Feared a centralized computer bank of personal information (Aguirre International, 1995). • Were sensitive to the potential misuse of Social Security numbers (Aguirre International, 1995). • Thought that one-way data sharing might eventually lead to a two-way exchange of information (Aguirre International, 1995). • Were concerned that record sharing with the Census Bureau might lead to more intrusive questioning by other government agencies (Aguirre International, 1995). • Thought that the tendency for government agencies to share information for coercive purposes is growing (Aguirre International, 1995). • Had misconceptions, negative attitudes, and an unclear understanding of the use of administrative records by the Census Bureau (Aguirre International, 1995). 	
Did not trust/were afraid of the government.	Bush (1985; 1986a) Market Dynamics, Inc. (1985; 1986) Hainer (1987) Mitchell (1990) Alaska Native Foundation and the United States Bureau of the Census (1991) Singer & Miller (1992b) Aguirre International (1994) Research/Strategy/Management and Belden & Russonello (1995)
<ul style="list-style-type: none"> • Were afraid of losing benefits (Bush, 1985; 1986a; 1986b). • Were suspicious of the census (Alu Like, Inc., 1987). • Questioned the legitimacy of the Census Bureau’s authority to collect such information (Cialdini, Wolf & Jardine, 1990). 	
Wanted to know how the uses of the census/how it would benefit them	Ira O. Glick & Associates, Inc. (1978a) Ira O. Glick & Associates, Inc. (1978b) NBO, Ltd. (1978) Bush (1985; 1986a) Cialdini, Wolf & Jardine (1990) Dillman & Reynolds (1990) Singer & Miller (1992b)
<ul style="list-style-type: none"> • Were unaware of the Census Bureau and its purpose (Alu Like, Inc., 1987; Moore & Rothwell, 1978b; Singer & Miller, 1992b). • Did not think the census was important because it does not affect their everyday lives. (Alaska Native Foundation and the United States Bureau of the Census, 1991) 	
Were afraid that census data would be used against them/others.	Ira O. Glick & Associates, Inc. (1978a) Bush (1985; 1986a) Market Dynamics, Inc. (1985; 1986) Prism Corporation (1986) Daniel Yankelovich Group, Inc. (1987) Mitchell (1990)
<ul style="list-style-type: none"> • Were only willing to report information that will not bring harm to themselves or others (Response Analysis Corporation, 1978). • Thought the purpose of the asking race/ethnic questions was to segregate minorities (Market Dynamics, Inc., 1985; 1986). 	

Note: bold typeface represent studies conducted with “hard-to-enumerate” groups (e.g., low income, minority, etc.).

Also of interest, Gerber (2001) recently conducted an ethnographic study of the privacy context of survey response. Results of ethnographic interviews revealed that respondents viewed the decision to provide “private information” as situational and dependent on the full context in which the request occurs. Of particular importance to the respondent is that the request for the information comes from a legitimate organization and that the questions must be relevant to the sponsor’s mission. In addition, results suggested that in order to provide private information

respondents must feel that there is a positive balance between the benefits and risks of providing such data. The author suggested that privacy statements and explanations of the uses and benefits of data be given for specific questions instead of the questionnaire as a whole. The author also warns that it is risky to include topics that appear to be only distantly related to the purpose of the data collection. Regarding explanations of confidentiality, the author suggested that in addition to descriptions of official policies, the statements should include explanations of why data is protected from outside intrusions.

As can be seen in Table 1, there is a fair amount of consistency in the concerns that people reported in focus groups over the last few decades, with similar attitudes and perceptions reported from the late 1970s through the mid 1990s. In addition, it is also evident that the concerns voiced by focus group participants included both privacy concerns (e.g., the census asks for information that is an invasion of privacy) and confidentiality concerns (e.g., census data are not kept confidential). A very general conclusion that can be drawn from this evidence is that it appears that the concerns and perceptions that people held decades ago are still issues for people as time approaches the present. As noted above, however, these studies provide neither evidence as to how widespread or strong these attitudes are, nor as to how much (if at all) they affect behaviors of most relevance to the Census Bureau. Focus groups do serve the purpose of establishing what kinds of perceptions and attitudes people hold, but they should be considered a starting point for further research that can establish their distribution, magnitude, and impacts.

Table 1 also shows that the Census Bureau has focused a considerable amount of research effort on the privacy attitudes and data confidentiality perceptions and beliefs of hard-to-enumerate populations. These groups generally include members of minority groups; those with lower incomes, immigrants, people receiving benefits from federally funded programs, etc. Response rates for the decennial census are typically much lower for these populations than for the general public (see Cecco, 1994; Word, 1997), and special efforts are made to reach them to encourage participation (see review on Outreach below). The results of the focus groups show that hard-to-enumerate populations tend to have concerns regarding privacy and confidentiality that are similar to the general public. Most of the research regarding the perceptions and attitudes of hard-to-enumerate populations this research, however, has taken the form of focus groups. Because this is qualitative research, it is unclear if such concerns are more or less prevalent in the hard-to-enumerate populations than the general population. It would be of benefit to the Census Bureau if future research focused on quantitative measures of public perceptions, attitudes and concerns, and how they relate to cooperation with the census for various demographic groups of the population. This would allow for a more definitive understanding of the nature of concerns for particular groups, the impact of these concerns on nonresponse, and the best way to address concerns via outreach and education.

3.1.2 Quantitative research.¹

A clearer picture of how the general public feels about privacy and confidentiality issues associated with the Census Bureau comes from a number of quantitative research studies (e.g., surveys and polls) that have been conducted over the years. Louis Harris and Associates (1979)

¹ Appendix A lists the mode, response rate, sample and sample size for the surveys described in the quantitative research cited in the following sections.

reported the results of a comprehensive national poll conducted to investigate public opinion on privacy and confidentiality in the United States. Results suggested that there was a growing public concern regarding issues of privacy. Results specific to the Census Bureau suggested that: (a) approximately 45% of the public were not confident that the Census Bureau keeps data confidential; (b) 24% of the public thought that the Census Bureau asks for too much personal information; and (c) 26% and 19% of the public were not too confident or not confident at all, respectively, that the Census Bureau does not share data with other government agencies. Similarly, Moore & DeMaio (1979) reported that the results of the Lower Manhattan Applied Behavior Analysis and Attitude Survey (ABAAS) indicated that although the Census Bureau was viewed more favorably than the federal government in general, there was some doubt that it adheres to its pledge of confidentiality. In addition, McDonald (1984c) reported comparable data from the Roper Center report on attitudes toward the Census that indicated that only 74% of respondents answered that all information collected by the Census Bureau is strictly confidential.

McDonald (1984a) presented recommendations of the Subgroup on Public Perceptions for research regarding confidentiality issues based on the review of a number of public opinion surveys. She concluded that: (a) low levels of trust in the government in general and the view of government as a “monolithic entity” negatively affect public beliefs about the confidentiality of census data; and (b) increasing computer literacy is associated with increasing concern about invasions of privacy and increasing concern that personal information will not be kept confidential. A particularly interesting observation was that there is not necessarily a clear link between privacy and confidentiality attitudes and cooperation with the decennial census (the difference between attitudes and behaviors). The author suggested that future research should have, as one focus, the relationship between attitudes and behaviors. Similarly, McDonald (1985a) stated the long-term research goal as “the development of an ability to predict the potential for the emergence of widespread popular resistance to cooperation with census and survey activities.” The focus of such a project, she suggested, would be to understand the potential catalysts of collective behavior (e.g., collective nonresponse) that might threaten the Census Bureau’s ability to carry out censuses and surveys.

McDonald (1985c) presented the results of behavioral research undertaken by the Center for Survey Methods Research in order to investigate public perceptions about privacy and confidentiality and their relationship to respondent behavior. A number of particularly interesting points were discussed: (a) informational privacy and data confidentiality are different concepts and the problems they present require different solutions; (b) geographic and regional variations are associated with differences in privacy concerns; (c) “sensitive” questions raise more confidentiality concerns; (d) privacy and confidentiality concerns may vary from survey to survey; and (e) potential respondents may engage in a cost-benefit analysis when deciding to provide personal information for a survey if their attention is focused on privacy/confidentiality issues. In addition, the author concluded that results from public opinion polls indicating general concerns with issues of privacy and confidentiality may suggest possibility of a “ripe climate of opinion” that may cause response rate difficulties, and therefore necessitates that public opinion regarding these issues be monitored over time.

In an innovative investigation of privacy concerns Goyder & McKenzie (1985) created a privacy index using a quantitative approach of documenting the number of privacy related items

about the census that appeared in newspapers. Such an analysis allowed for trends in privacy concerns to be examined over time. A privacy-values index was created “by expressing number of privacy-related items about the census as a percentage of all census items.” Results indicated that concerns about privacy and confidentiality regarding the census have increased every decade from 1930 to 1980. The authors suggested that survey response is affected by the ranking that privacy and confidentiality concerns hold in an individual’s value system (see also Goyder, 1987).

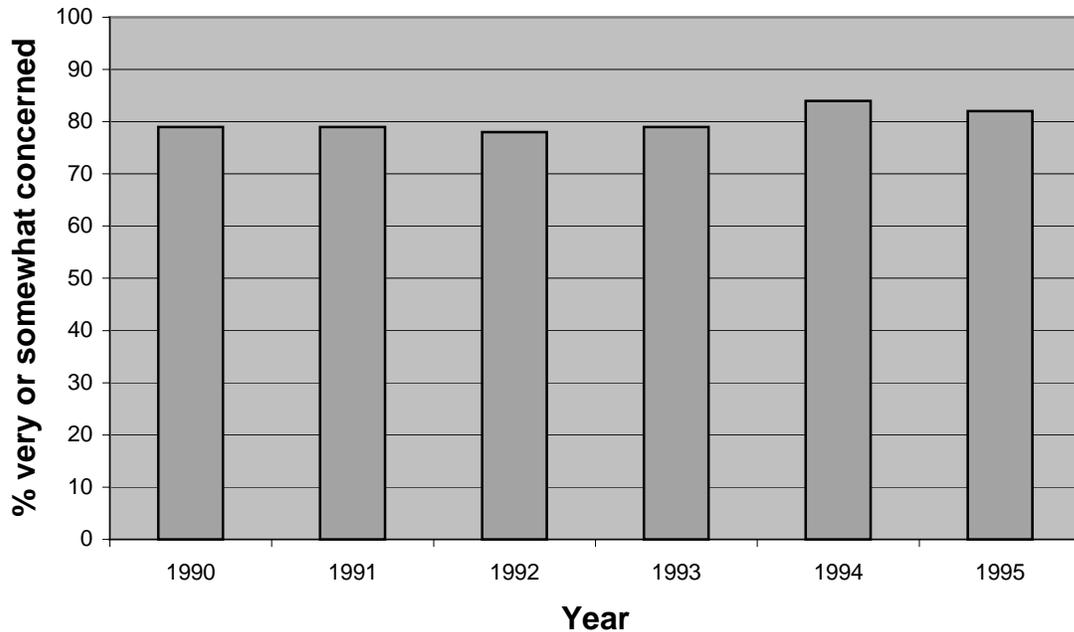
Moore & McDonald (1987) reported the findings from the 1986 Test Census evaluating the Census Community Awareness Program’s (CCAP) ability to supplement the 1990 Decennial Census promotional campaign for hard-to-enumerate areas. Results suggested that: (a) 43% of nonrespondents indicated that they would have participated if they were certain their information would be kept confidential; (b) improving confidence in confidentiality would influence low income nonrespondents more than higher income nonrespondents; (c) “doubts about confidentiality” is a barrier to completing and returning the census form; (d) only hearing messages about census confidentiality did not increase response for the 1986 Test Census in Los Angeles; and (e) respondents correctly identifying Census Bureau confidentiality policy were more likely to mail back their census forms. Again, the authors suggested that ignorance about, and disbelief in, the confidentiality pledge contributes to a “climate of opinion” that might lead to a collective nonresponse impacting the ability to conduct the decennial census. They recommended that the Census Bureau should focus on developing methods that effectively improve public perceptions of the confidentiality of census data (see also Moore, 1987).

The Gallup Organization (1990) summarized a telephone poll investigating individuals’ attitudes and knowledge regarding the census. Results indicated that 28% of respondents are not all confident that census data are kept confidential. Of particular concern was that data are shared with other government agencies. Results such as these supports the general conclusion drawn from the focus group research, suggesting that doubts about census confidentiality continued to be of concern to the general public.

During the early to mid 1990s Louis Harris and Associates (1990; 1991; 1992; 1993; 1994; 1995) reported the results of a series of national public opinion surveys regarding privacy issues in general. Whereas this investigation did not specifically address attitudes about the Census Bureau, it is interesting to note that the results suggested that public concern about privacy remained consistently high over that period of time. When asked “How concerned are you about threats to your personal privacy in America today – very concerned, somewhat concerned, not very concerned, or not concerned at all?” 46% and 33% were very concerned and somewhat concerned, respectively, in 1990. Results were similar in the following years with 48% and 31% (1991), 47% and 31% (1992), 49% and 30% (1993) 51% and 33% (1994), and 47% and 35% (1995) of participants reporting that they were very concerned and somewhat concerned, respectively. At the very least these results suggest that a large majority of the population are at least somewhat concerned about threats to their personal privacy, and they also suggest that there has been no reduction in the public’s concern about their personal privacy from 1990 through 1995, and possibly even a slight increasing trend (see Table 2).

Table 2

Concern about threats to personal privacy (1990-1995)



Source: Louis Harris and Associates (1990; 1991; 1992; 1993; 1994; 1995)

Starting in the early 1990s the focus of privacy and confidentiality research conducted by the Census Bureau began to include issues regarding the use of administrative records to collect information about respondents. Singer, Bates & Miller (1992) summarized the results of the Simplified Questionnaire Test (SQT), which showed a significant drop in the overall response rate for those asked to provide their Social Security number on a census-like questionnaire. Respondents who received the form requesting SSNs were more likely to indicate that there were questions on the form that they did not want to answer, with a large majority of these respondents identifying the SSN request as the question that they did not want to answer. Similarly, the Census Bureau's Privacy Research Team (1997) reported the results of the 1996 Study of Public Attitudes Toward Administrative Records Use (SPARU). Results suggested that: (a) 80% of the respondents indicated they had lost control of how their personal information is used; (b) 63% of the respondents thought their right to privacy was not well protected; and (c) 85% of the respondents thought that other government agencies could get personally identifiable information from the Census Bureau, or were not sure.

Singer, Schaeffer & Raghunathan (1997) reported the results of a number of survey questions exploring public attitudes about data sharing among federal agencies. Results showed that willingness to have federal agencies share data was related to trust and confidence in government and political efficacy, and that that concern about data sharing was related to opposition to the Census Bureau getting data from other agencies. Results also showed that people were not very knowledgeable about the benefits or risks associated with data sharing

(e.g., only 55% said that they had read or heard about data sharing), yet they still had opinions regarding the issue. The authors suggested that these opinions were predictable based on people’s trust in government, confidence in the Census Bureau’s confidentiality pledge, belief that they might influence government, and willingness to share information.

Gates & Bolton (1998) reviewed a number of research efforts designed to investigate the expanded use of administrative records to augment data for households that fail to respond to the census and other missing data circumstances. From an assessment of the results of this research a set of key findings about public attitudes regarding the census was developed, along with corresponding concepts the Census Bureau should communicate for each key finding (see Table 3).

Table 3

Public Privacy/confidentiality perceptions and related communication concepts

<u>What People Think</u>	<u>Concepts to Communicate</u>
The Census Bureau already shares data.	We don’t sell personal data to marketers. We don’t share personal data with other agencies.
The Federal Government uses one computer – they all work together.	Laws, regulations, and policies limit access and specify uses.
Individuals have lost control over how personal information is used.	Personal information is used for purposes specifically spelled out in the Constitution.
There is no law requiring the Census Bureau to keep information confidential or private, or prohibit data sharing.	Title 13 and the Privacy Act require us to protect data and set penalties for breaking the law.
The Federal government cannot be trusted and does not care about me.	The Census Bureau tries to count everyone. Everyone counts.

Brittingham, Eisenhower & Shin (1999) reported the results of the 1999 Knowledge, Attitudes, and Perceptions Survey (KAP-1), which collected public opinions regarding data collection, dissemination and use by the government. The survey focused on the public’s trust and confidence in the government, and barriers to participation in the census. Results showed that: (a) 34% of respondents did not trust the Census Bureau’s promise of confidentiality; (b) 20% of respondents thought the census was an invasion of privacy; and (c) 40% thought that most people answer the census questions because they have to answer them. The authors concluded that the public’s knowledge, attitudes and perceptions vary by education, income, age, and race/ethnicity and that outreach efforts should reflect these differences.

Martin (2000) examined the public’s perceptions, and changes in perceptions, related to privacy and confidentiality for the 2000 census, and also compared these results to the 1990 census. Analysis was conducted using survey results from five cross-sectional surveys conducted by InterSurvey (between March 3 and April 13, 2000) and the results from the 1990

Census Outreach Evaluation Survey (two stratified cross sectional surveys conducted before and after the census). Martin found that in both the 1990 and 2000 censuses: a) the number of people who thought the census was an invasion of privacy increased after the censuses began, with a significantly greater increase in this concern in the 2000 census; b) people who were aware that the census was required by law were more likely to believe that it was an invasion of their privacy; c) there was no increase in the public's trust in confidentiality associated with mailing packages that contained confidentiality assurances and explained legal protections; and d) that for the duration of the census there was an increase in relationship between mistrust in confidentiality and the belief that people's answers could be used against them, with the belief that people's answers could be used against them increasing significantly in 2000 but not 1990.

Martin (2000) also reported differences between perceptions for the 1990 and 2000 censuses. Martin suggested that trends from 1990 to 2000 indicated significant increases in both the belief that people's answers could be used against them and the awareness of the legal requirement to participate in the census. The author suggested that whereas some people viewed both the 1990 and 2000 censuses as a threat to privacy, there was some indication that people were more sensitive about this threat in 2000 than in 1990. In addition, Martin noted a blurring between the concepts of privacy and confidentiality in the 2000 census that was not evident in the 1990 census, with more people in the 2000 census indicating that a threat to privacy is also a threat to confidentiality. The author suggested that this might indicate that the public does not discriminate between privacy and confidentiality concerns. Finally, for the 2000 census, concerns about privacy and confidentiality rose after the forms were mailed out to households, and the increase in concerns was greater for those households that received the long form. In addition, results suggested that people who were aware of the political controversy concerning the long form were sensitized to privacy concerns regardless of the form they received.

Martin (2000) was able to statistically compare results between the surveys conducted in 1990 and 2000. The results of surveys conducted in 1980 are also interesting to examine in this context, but due to a number of differences between the surveys (e.g., timing of data collection, wording of questions, response option differences, etc.), only very general conclusions can be drawn from such data. It is possible, however, to get a general sense of the public's attitudes regarding privacy and confidentiality associated with the census over time. Tables 4 and 5 report the responses to three similar questions asked on the 1980 Knowledge, Attitudes, and Practices (KAP) Survey, the 1990 Outreach Evaluation Survey (OES), and the 2000 InterSurvey Survey (see Fay, Bates and Moore, 1991; Martin, 2000). Table 4 shows the responses to the questions at data collection periods before Census Day (April 1). For both the KAP and The OES data collection occurred in January but the earliest data collection for the InterSurvey was the first week of March. Table 5 shows the responses to the questions at data collection periods after (or just prior to) Census Day. Data collection for both the OES and InterSurvey occurred in early April, but data collection for the KAP was the last week of March. With these caveats in mind, it is still useful to review these results.

Table 4
Pre-census attitudes regarding privacy and confidentiality

Question	KAP - 1980	OES - 1990	InterSurvey - 2000
The Census Bureau's promise of confidentiality can be trusted. (% agree)	66%	78%	51%
The census is an invasion of privacy. (% agree)	20%*	14%	10%
People's answers to the census cannot be used against them. (% agree)	66%	78%	58%**

* Percent calculated by data supplied in a personal communication with Nancy Bates.

** The InterSurvey question was worded "My answers to the census could be used against me." The table reports the percent of participants who disagreed or strongly disagreed with this statement.

Table 5
Post-census attitudes regarding privacy and confidentiality

Question	KAP - 1980	OES - 1990	InterSurvey - 2000
The Census Bureau's promise of confidentiality can be trusted. (% agree)	73%	79%	50%
The census is an invasion of privacy. (% agree)	17%*	20%	20%
People's answers to the census cannot be used against them. (% agree)	72%	81%	53%**

* Percent calculated by data supplied in a personal communication with Nancy Bates.

** The InterSurvey question was worded "My answers to the census could be used against me." The table reports the percent of participants who disagreed or strongly disagreed with this statement.

Designing statistical tests to accurately compare the responses to all three surveys presents great challenges (and are not presented here), but it is interesting to note the wide degree of fluctuation in attitudes reported across the three decades. For example, these results suggest a slight increase in trust from the 1980 to 1990 censuses regarding the Census Bureau's promise of confidentiality, but then a large drop-off in 2000.

It is possible that these differences might be real, suggesting that the different combinations of factors influence people's attitudes about confidentiality at different times, or that the factors themselves change over time. On the other hand, it is also possible that these results simply reflect a great deal of measurement error associated with differences in the ways the surveys were conducted (e.g., mode, question wording, etc.). It is clear that although there

were similarities between these surveys, there were also differences that make comparing the results between the surveys difficult. Regardless of the extent to which these fluctuations are “real,” they all suggest a substantial proportion of people who doubt the Census Bureau’s ability to keep data confidential (i.e., 21-50%), and people who think the census is an invasion of privacy (i.e., 10-20%). This suggests that it is in the Census Bureau’s best interest to systematically measure public attitudes about privacy and confidentiality in the form of a well-designed (and consistently designed) survey that is administered at regular intervals, so that trends in public attitudes could be accurately monitored over time.

3.2 Interviewers

As the review above clearly indicates, a number of studies suggest that a substantial proportion of the general public, as well as specific subgroups, continues to have privacy and confidentiality concerns. There is speculation, with varying levels of support from research, that such attitudes affect the willingness of individuals to cooperate with requests for information from the Census Bureau (see discussion on nonresponse below). In addition, there is also some indication that there are misunderstandings among some Census Bureau field staff regarding the Census Bureau’s confidentiality policies, and evidence that some interviewers themselves have doubts about the Bureau’s ability to maintain data confidentiality. For instance, Rothwell (1969) reported that a number of crew leaders and enumerators in the 1968 Trenton Dress Rehearsal indicated disbelief in the confidentiality of census data. Lavin (1989) reported that when the field staff was asked a question asking whether agencies (e.g., the FBI or IRS) could obtain an individual’s census data, 20% responded yes, 56% said no and 24% were not sure. Lavin suggested that these results were mostly due to a lack of understanding of the safeguards used by the Census Bureau to protect the confidentiality of data and concerns about the use of administrative records. Similarly, Groves and Couper (1998) reported that 16.7% of Census Bureau interviewers and 32.2% of non-Census interviewers agreed that the Bureau would give individual survey data to government agencies (e.g., FBI, CIA, INS, IRS, etc.). The authors suggested that interviewers’ attitudes about the legitimacy of their organization’s confidentiality assurances have the potential to affect the interviewer’s efforts to reassure respondents and persuade them to participate in surveys. Their results, however, showed that even though Census Bureau interviewers have stronger beliefs in the legitimacy of confidentiality assurances relative to other survey organizations, Census Bureau interviewers still showed a level of mistrust higher than desired.

Why is this important? Interviewers are the Census Bureau’s “front line” in the constant struggle to persuade an often-skeptical public that they should participate in the agency’s censuses and surveys. Their attitudes about privacy and confidentiality may affect the interactions they have with potential respondents and thus may affect unit and item nonresponse. For example, Singer and Kohnke-Aguirre (1979) reported that interviewers who expected certain questions to be sensitive and difficult to ask obtained higher nonresponse for those items than did interviewers who were less concerned about these issues (see also Sudman, Bradburn, Blair, and Stocking, 1977). Similarly, Singer, Frankel and Glassman (1983) found that interviewers who had optimistic expectations about the ease of persuading respondents to participate in a survey obtained significantly higher response rates than those who had more pessimistic expectations. These studies suggest that interviewers who think particular questions are an invasion of privacy

may obtain higher levels of item nonresponse for such questions, and that those who are skeptical about confidentiality themselves may experience more unit nonresponse due to confidentiality concerns.

The topic of interviewers' attitudes and beliefs about privacy and confidentiality is not a new concern for the Census Bureau. McDonald (1985b) reported that Senior Field Representatives (SFRs) at the 1985 conference of the Los Angeles Senior Field Representatives said that in order to address respondent concerns regarding privacy and confidentiality the interviewers must have certain information at their disposal (e.g., Census Bureau confidentiality policies, the use of Social Security Numbers, why certain questions are asked, how the data are used, etc.). The SFRs indicated that interviewers would benefit from training that specifically addressed "how to deal with privacy and confidentiality concerns in an interview situation" (p.4). Lavin (1989) also suggested that in order to convince respondents of the confidentiality of Census data, the field staff must first be convinced. She suggested "the field representatives pride themselves on their guardianship of Census confidentiality, but they did not have knowledge of what protections of confidentiality are practiced by the other parts of the organization" (p.19).

Mayer (1999) conducted a study to measure Census Bureau interviewers' attitudes regarding privacy and confidentiality, compare those attitudes to previous assessments (e.g., Lavin, 1989). The results were similar to those found by Lavin. When interviewers were asked if they thought that another government agency could get access to Census Bureau data 22% responded yes, 53% said no and 26% were not sure (Lavin reported 20%, 56%, and 24%, respectively). These results suggest continued skepticism on the part of interviewers regarding data confidentiality with 44% and 48% of Census Bureau interviewers indicating that they have at least some doubt that the Census Bureau will be able to keep its survey data completely confidential. Mayer suggested, as did other studies (e.g., Baca, 1983; Lavin, 1989; McDonald, 1985b), that interviewers would benefit from training that addresses the Census Bureau's confidentiality policies, and also addresses effective ways to react to respondents' concerns regarding issues of privacy and confidentiality during the interview process.

3.3 Conclusions about attitudes.

From this review of research regarding perceptions and attitudes it is clear that over the course of the last several decades concerns about privacy and confidentiality have remained an issue for some people in the general population, hard-to-enumerate populations, and even in the Census Bureau staff. Whereas the results of the focus groups and some of the surveys indicate that there appears to be a core group of concerns that people report regarding both privacy and confidentiality, the results found by Martin (2000) suggest that the relationship between these concerns, and their relationship with cooperation to the census and other surveys, might be becoming more complex (e.g., people may not discriminate between privacy and confidentiality concerns). As time has progressed additional factors such as the use of administrative records, that advent of new data dissemination media (e.g., American FactFinder), and advances in technology (e.g., computers and data linking capabilities) have been added to the privacy/confidentiality equation, and it is likely that new factors will continue to be added in the future.

4. THE EFFECTS OF ATTITUDES

As the review above indicates, a substantial percentage of the general public (and even a small proportion Census Bureau interviewers) continues to have important privacy and confidentiality concerns regarding the Census Bureau's censuses and surveys. Should the Census Bureau be worried about these concerns? Is there evidence that attitudes and perceptions about privacy and confidentiality affect the ability of the Census Bureau to do its job? How might these attitudes and their effects change in the future? A review of the relevant literature is a starting point to begin to answer these questions. Of particular interest are the effects that privacy attitudes and confidentiality attitudes have on issues such as nonresponse, data quality, and the costs of enumeration. Careful examination existing information will provide both an increased understanding of this relationship and a beginning of a plan to address such problems in the future.

4.1 Nonresponse

Research conducted over the course of the last few decades has shown mixed results about the effects of privacy and confidentiality concerns on survey and census response rates. The following review will first discuss the evidence that suggests that privacy and confidentiality concerns, in varying degrees, do indeed affect unit nonresponse. It will then present some evidence to the contrary.

Bernstein (1979) reported that results of the Public Information Campaign Evaluation Survey 1977 Census of Oakland showed that out of all possible reasons that people don't fill out and mail back their census forms, eight percent of respondents indicated it is because they think the census is an invasion of privacy. Similarly, DeMaio (1980), in a comparison of the characteristics of respondents of a personal interview panel study to those who refused to respond (either in the initial interview or sometime thereafter), found that the two most commonly reported reasons for refusing to participate were concerns of the invasion about privacy and unfavorable past experiences as survey respondents.

Alston & Rowland (1991) reviewed the long-term trends in public cooperation with government and private sector surveys. Their goal was to attempt to illuminate the social environment associated with the census in the past, present and future. The authors suggested that the increasing level of nonresponse seen in Census Bureau censuses and surveys is influenced by factors such as a negative perception of the federal government, concerns about privacy, public apathy, and increasing demands from the private sector.

Fay, Bates & Moore (1991) reported the results of analyses conducted with the Outreach Evaluation Survey and the Survey of 1990 Census Participation linking respondent characteristics with self-reports of census mail response. Results indicated that the majority of respondents believed that census data are kept confidential; a result that remained unchanged compared the 1980 census. In addition, however, confidentiality attitudes showed a relationship with response in 1990 (but not in 1980), suggesting that those who doubt the Census Bureau's confidentiality assurances are less likely to cooperate with the census. In a related study, Kulka,

Holt, Carter & Dowd (1991) reported results from the Survey of 1990 Census Participation, especially regarding time pressures and concerns about privacy and confidentiality. The results indicated that people with high levels of concern about privacy/confidentiality were less likely to self-report that they returned the census form. The authors reported that multiple regression analyses showed that concerns about privacy and confidentiality, alienation, and trust in government accounted for approximately nine percent of the variance for census participation. Similarly, Singer, Mathiowetz & Couper (1993) examined the relationship between respondents' concerns regarding privacy and confidentiality and mail response to the 1990 census. Results showed that these concerns were significantly associated with mail response but only accounted for about three percent of the variance.

In contrast to the evidence provided in the literature above, other research has failed to find a relationship between privacy and confidentiality attitudes and response rates. Marquis (1977) discussed social changes potentially responsible for the increase in refusal rates and the continued difficulty in maintaining response rates. He suggested that people might refuse to participate in interviews because of concerns that their answers may be misused, concerns that were compounded by the increasing ability to access and link large databanks organized by personally identifiable information. Analysis of refusal rate trend data, however, suggested very little increase in a 10-15 year span. The author concluded that concerns regarding privacy have not adversely affected past survey response rates, but that The Privacy Act of 1974, requiring that respondents be notified of the voluntary nature of survey participation, may make issues of privacy more of a problem in the future.

Meyers & Oliver (1978) discussed the public's concerns with invasions of privacy and violations of confidentiality, as well as hostility towards the government, and their relationships to the difficulties associated with maintaining satisfactory response rates for surveys, particularly the National Medical Care Expenditure Survey (NMCES). The authors detailed concerns regarding negative public reaction to an article appearing in a news publication at the beginning of the first wave of data collection and subsequent nonresponse. The fact that the survey showed an overall response rate of 93 percent, however, led the authors to conclude that concerns about privacy and hostility toward the government were "relatively unimportant reasons for refusing to participate in NMCES" (p. 511). They cautioned, however, that surveys with different types of subject matter might elicit different reactions and different reasons for nonresponse. Similarly, Sosdian & Sharp (1980), in a discussion of nonresponse in mail surveys, suggested that research does not show confidentiality concerns and informed consent procedures affect survey response, and that the strongly held beliefs of survey organizations regarding such issues are unwarranted. Instead they suggested that rather than hostile resistance to surveys, nonresponse may be attributed to a lack of access to respondents.

Singer & Presser (1996) reported the results of the 1995 Joint Program in Survey Methodology (JPSM) practicum survey conducted to investigate public attitudes regarding data sharing by federal agencies and what other attitudes might predict them. Regarding confidentiality, the results of the study showed that there was a lack of trust (only 9 % of respondents said they believed the general public or other government agencies could not gain access to identified census records) in the Census Bureau's confidentiality assurance but variations in assurances did not appear to greatly affect cooperation rates. The authors

concluded that attitudes people have about confidentiality are not an important factor in people's (self-reported) cooperation with the census or in their attitudes about data sharing. Instead, they suggested, general beliefs and attitudes about the importance of the census, the government and disclosure of personal information affect peoples' attitudes regarding data sharing (see also Gates, 1996).

Kerwin & Edwards (1996) reported the results of a Random Digit Dial (RDD) survey replicating the 1995 JPSM study to investigate public attitudes regarding the use of administrative records to supplement census data, and compared results of the two surveys. Results showed few changes in results between the 1995 and 1996 studies and in general did not find an increase or decrease in support for the government agencies sharing records with the Census Bureau. The authors suggested that the public do not know that the Census Bureau doesn't share information with other agencies and they do not trust of the Bureau's pledge of confidentiality. They further suggested that general views about privacy and the government (e.g., distrust of the government, alienation, etc.) might be an underlying factor contributing to the public's views regarding administrative records use. Singer, Presser, & Van Hoewyk (undated) provided additional analysis on a replication and comparison of the two studies. They suggested that although there were few significant changes between the attitudes measured in 1995 and 1996, the 1996 results showed that respondents were less trusting of the government, felt less political efficacy, and had greater concerns about privacy than the respondents in 1995. The results reported by Singer & Presser (1996) and Kerwin & Edwards suggest that it might not be attitudes about confidentiality, but rather attitudes about privacy, that most influence peoples' decisions to cooperate with survey requests.

Singer and Van Hoewyk (2000) used the data from the 1996 privacy survey conducted by Westat, Inc. (see Kerwin & Edwards) to explore the relationship between knowledge and feelings about the census and respondents' self-reported willingness to disclose their Social Security Number (SSN). Results showed that knowledge about census uses (e.g., legislative apportionment and revenue sharing) was not as strongly related to reported willingness to provide SSN as were feelings about the census (e.g., importance of the census, seriousness of the undercount, trust in the government, data sharing, etc.). In addition, results showed that knowledge about census confidentiality (e.g., not sharing data with other agencies) by itself was not predictive of willingness to provide one's SSN, but knowledge AND feelings were predictive. The authors suggested that in addition to knowledge, feelings play a role in shaping behavioral intention, and therefore should be considered when creating Census Bureau publicity campaigns.

Couper, Singer & Kulka (1998) examined survey participation as a form of community involvement by using Survey of Census Participation (SCP) results to investigate the public's sense of civic obligation and its effects on mail response to the census. Factors used in the analysis included motivational factors (structural and attitudinal measures of alienation), knowledge and attitudes about the census, concerns regarding privacy and confidentiality, literacy, facility with English, and time available to the respondent. Results suggested that the decline in census participation is not particular to factors associated with the census but rather reflects a general decline in the public's sense of civic duty and increased concerns about confidentiality. Similarly, Buckley (1999) found that respondents who had concerns about

confidentiality, but not privacy, were significantly less likely to mail back their forms for the 1998 Census Dress Rehearsal.

Singer et al. (2001) reported the results of two surveys (pre-census, July – October 1999; post-census, April – July 2000) that replicated the original JPSM survey of privacy attitudes (see Singer and Presser, 1996). Results showed that knowledge about the census and attitudes towards privacy and confidentiality showed only small year-to-year changes (e.g., 23.5, 19.0, 23.0 and 20.9 percent of respondents reported that the census is an invasion of privacy in 1995, 1996, 1999 and 2000, respectively). Results also showed, however, that respondents' approval of data sharing and their willingness to provide their Social Security Number (SSN) declined consistently from 1995 to 2000. Results of matching survey responses with the actual census mail-back return behavior showed that respondents with concerns about privacy and misuses of the census were less likely to return their census forms. Finally, results indicated that respondents who were exposed to publicity (negative and positive) about the census were: (a) more knowledgeable about the census; (b) more likely to think the census was important; (c) more likely to believe that their results would be kept confidential; and (d) more likely to think that people are obligated to cooperate with the census. Of particular interest are the authors' recommendations that the Census Bureau: (a) continue to monitor the trends in attitudes regarding privacy and confidentiality; (b) conduct research regarding the most effective ways to communicate confidentiality practices to the public; and (c) conduct qualitative research investigating barriers to trust in the Census Bureau and the government. In a related study, Guarino, Hill & Woltman (2001) found that including a request for SSN for even one household member resulted in a significantly lower mail response (2.1 and 2.7 percent in high and low census coverage areas, respectively) compared to no request for SSN.

The preceding review offers some evidence that concerns about privacy and confidentiality can potentially affect the willingness of people to cooperate with survey and census requests. As Moore (no date) suggested, "confidentiality knowledge/belief is not strongly or consistently related to individual census cooperation" (p.1; see also McDonald, 1985c). Some might argue that if there is indeed an effect of such attitudes it is not very large, probably will not significantly impact response rates, and therefore does not justify the concern shown by survey organizations. As a number of studies suggested, it might be more general attitudes about civic duty, the government and the importance of the census that contribute more to a respondent's decision to cooperate with the census or not. The review of these studies also suggests, however, that attitudes about privacy and attitudes about confidentiality might have differential effects on people's behavior (e.g., Kerwin & Edwards, 1996). Still, even the studies that did not find a significant link between attitudes about privacy and confidentiality and survey cooperation warned that their conclusions may not apply to other surveys and that circumstances might change in the future that could potentially change the causal relationship. Therefore it would be irresponsible for the Census Bureau to disregard this evidence in its entirety. Just because there has not been a major drop in response rates due to privacy and confidentiality concerns does not mean that such a situation is not possible. In fact, the following sections will provide evidence that issues of privacy and confidentiality do have potential to affect the Census Bureau's ability to collect data, and should be at least carefully monitored.

4.2 Data Quality

In addition to nonresponse, attitudes and perceptions about privacy and confidentiality may also affect the quality of the data collected by the Census Bureau. Hakim (1979) suggested that “the accuracy and completeness of the information collected in the census forms may be prejudiced if respondents are not fully reassured that the information is completely confidential, and this will affect the validity and reliability of the statistical data compiled from the census returns” (p.133). Indeed, Ira O. Glick & Associates, Inc. (1978a) reported that some people thought that giving misinformation was a good way to sabotage the census system. In addition, NBO, Ltd. (1978) reported that focus group participants indicated that census questions that were too personal were either left blank or answered dishonestly. Whereas there is a dearth of quantitative research that examines the relationship between privacy and confidentiality attitudes and item nonresponse, conclusions from qualitative research indicate that item nonresponse and misinformation are potential hazards resulting from respondents who have privacy and/or confidentiality concerns.

4.3 Cost of Enumeration

Another problem linked to public concerns about privacy and confidentiality is the cost of enumeration. If, as the review above suggests, privacy and confidentiality concerns do add to nonresponse and reduce data quality, the cost of enumeration is increased due to the additional efforts and resources that must be expended to complete the enumeration. For example, if people do not complete and mail back their census forms because they think it is an invasion of their privacy, the Census Bureau must then foot the cost to send follow-up enumerators to the residences of those households to attempt to complete the enumeration. Even if the form is completed at this point, there could still be additional costs associated with reduced data quality from item nonresponse or misinformation.

4.4 Census Confidentiality Concerns in Other Countries

As the literature thus far has suggested, concerns regarding privacy and confidentiality have been determined to, at the most, have only a small effect on the ability of the United States Census Bureau to collect information from the public. This has not been the case in other countries, however. In fact, in recent years there have been privacy/confidentiality issues related to censuses of the population in a number of West European countries with varying results.

Hakim (1979) suggested that the public debate surrounding the 1971 17th Decennial Census of Population and Housing in Great Britain was due to concerns regarding confidentiality of the census returns, and specific questions that were considered invasions of privacy. Cope (1979) reported that public discontent about and hostility toward the census led to discussions in Parliament and in some cases the public burning of census forms. Hakim reported that a survey conducted a week before the census showed that only 47% of the respondents thought that census information would be kept confidential. In addition, the survey results indicated that for those survey respondents who refused to complete their census form, 57% were concerned that the census was an invasion of their privacy. Raising the most concerns were questions about country of birth, fertility, and employer and employment qualifications. Cope reported that

discussions following the census suggested the need for increasing public awareness of the uses of census data and the procedures used to safeguard this information. Further exploration of the technology associated with non-disclosure was also suggested.

McDonald (1984c) reported the findings of a review of census experiences in eleven western European nations. Comparisons made between events taking place in these nations revealed that concerns with privacy and confidentiality were associated with six of the nations included in the review (England, the Federal Republic of Germany, Italy, the Netherlands, Norway, and Sweden). Protests in England, the Federal Republic of Germany, and Northern Ireland were related to concerns about privacy and confidentiality and potential misuses of census data. The author reported that the majority of protests were nonviolent (e.g., rallies, burning of forms, advertisements) and had the common factor of the involvement of special interest groups or charismatic individuals leading the protests.

Butz & Scarr (1987) summarized the problems associated with the 1987 German census (originally scheduled for 1981). Although the census was first postponed due to funding difficulties, in 1983 there were large-scale anti-census protests and over 1000 lawsuits were filed against the census. Butz (1985) suggested that the cause of the agitations was ungrounded fears that government agencies would use census data against individuals. The author speculated that the rise in such fears stemmed from the increased use of microdata and developments in computer technology. He also suggested that proclamations by high officials and newspapers stating that census data are not necessary endangered the government statistical system in general. In March of 1983 the Constitutional Court suspended the census based mostly on the lack of confidentiality protection provided by the planned dissemination procedures. In November of 1985 a law was passed detailing the content, field procedures and data release provisions for the census, which was used to plan for the 1987 census. The census was implemented, but still met with opposition by some protest groups, which in some cases published anti-census pamphlets (Butz & Scarr, 1987; Choldin, 1988).

Choldin (1988) suggested that a “privacy issue” has arisen as a new political issue in a number of West European countries resulting in political conflicts between government statisticians and civil libertarians or “privacy advocates.” The author suggested the issue presented itself in both the form of anti-census campaigns and governmental regulation of the protection of computerized data sets. The author reported the rise of protest groups who waged attacks on censuses in various countries (e.g., Great Britain’s 1971 census; the 1971 Netherlands census; and the 1987 German census).

4.5 Conclusions about the Effects of Attitudes

The literature reviewed above suggests that privacy and confidentiality issues could affect the Census Bureau in a number of ways. Whereas there is varying evidence as to the degree that such attitudes and perceptions have affected nonresponse to the Census Bureau’s censuses and surveys to date, other evidence suggests that these attitudes could affect the Census Bureau in other ways (e.g., data quality and cost of enumeration). In addition, evidence from census experiences in other countries suggests that even though the United States Census Bureau

has not yet encountered such a large-scale public outcry, that does not preclude the possibility of such a situation in the future.

Moore & McDonald (1987) warned that a “ripe climate of opinion” might result from public concerns and attitudes regarding issues of privacy and confidentiality associated with the census. They suggested that this might lead to a collective nonresponse impacting the ability of the U.S. Census Bureau to conduct the decennial census (see also McDonald, 1985c). The events in other countries support the idea that the Census Bureau not only must carefully monitor public perceptions, attitudes and concerns regarding privacy and confidentiality, but also must take proactive steps to educate the public about the purpose and uses of census data, and the steps taken to protect confidentiality. McDonald (1985a) suggested that the long-term research goal should be to develop the ability to predict resistance to cooperation with the census. Moore & McDonald, and Moore (1987), recommend that the Census Bureau develop methods to improve public perceptions of confidentiality of census data. Perhaps this idea should be taken a step further, such that the Census Bureau develop a contingency plan to respond to any such widespread resistance. One might imagine an integrated privacy and confidentiality research effort that would include: a) measures to monitor public perceptions and attitudes, and factors influencing them; b) analysis designed to understand the link between respondents’ attitudes and behavior; c) the development of a list of possible future privacy/confidentiality situations; and c) the establishment of strategies designed to counteract the negative impact of privacy/confidentiality concerns and/or prevent possible undesirable scenarios from ever occurring at all.

5. PRIVACY AND CONFIDENTIALITY “NEAR MISSES” IN THE UNITED STATES

As indicated above, the United States has not experienced a wide-scale privacy/confidentiality related public outcry to the Census Bureau’s efforts to collect data as have occurred in a number of other countries. There are, however, a number of instances in which privacy/confidentiality issues have created circumstances that could have potentially caused significant problems for the Census Bureau.

5.1 The St. Regis Case

Corcoran (1963) described the circumstances associated with the Supreme Court case *St. Regis Paper Co. v. The United States*. For the economic censuses the Census Bureau typically provides a second copy of the form for respondents to fill out and retain for their own records. In December of 1961 the Supreme Court ruled that these company-retained copies of census reports could be subpoenaed and used against the reporting company in legal proceedings (i.e., that the St. Regis Paper Company was required to submit copies of their economic census forms to the Federal Trade Commission). Corcoran suggested this decision lowered the business community’s confidence in the reporting system and jeopardized the Federal statistical system. In October of 1962 Public Law 87-813 amended section 9 of title 13 to extend the confidentiality protection to cover company-retained copies of census reports.

5.2 Questions Regarding Religion

Petersen (1979) reported that there was significant opposition to the inclusion of a question regarding religious affiliation on the 1960 census questionnaire. The opposition came mainly from a number of Jewish and liberal organizations that made emotional comparisons to the question and the circumstances associated with Nazi Germany. The author suggested that even though a very small portion of the population were opposed to the question, the Census Bureau withdrew its proposal to include the question, and also rejected suggestions to include like questions on the 1970 questionnaire. Petersen suggested that such actions by the Census Bureau indicated a desire to maintain good public relations, and the decision that the need for these particular data did not merit the possible antagonism of the respondents.

5.3 Japanese Americans

The literature regarding privacy and confidentiality concerns and their effects in other countries shows that a particular event or set of circumstances can spark a public outcry that significantly affects the ability of a country to conduct a census of the population. One particular event that has continued to cause some degree of controversy for the United States Census Bureau is the alleged involvement of the Census Bureau in the incarceration of Japanese Americans during World War II. Okamura (1981) proffered a number of documents that suggested that although the Census Bureau did not reveal names and addresses of individuals, it did work with the War Department, thus betraying the trust of census respondents. Clemence (1983) presented counter evidence that suggested the Census Bureau did maintain its pledge of confidentiality. More recently, Seltzer and Anderson (2000) compiled a detailed reconstruction of the actions of the US Census Bureau regarding the Japanese Americans' internment. The authors questioned the possibility of a violation of census confidentiality laws and assurances, whether or not there was a deliberate cover-up of Census Bureau involvement, and differential treatment afforded to individuals reporting "Japanese" as their racial classification. Although the authors did not provide any concrete conclusions, and suggested that further research is necessary, they provided enough evidence to, at the very least, warrant the correction of Census Bureau documents that stated that the Census Bureau actually took extraordinary measures to protect the confidentiality of Japanese Americans.

Evidence such as this prompted the director of the Census Bureau to issue a number of formal statements. Prewitt (2000) stated, "the historical record is clear that senior Census Bureau staff proactively cooperated with the internment, and that census tabulations were directly implicated in the denial of civil rights to citizens of the United States who happened to also be of Japanese ancestry" (p. 1). He continued by saying "the record is less clear whether the then in effect legal prohibitions against revealing individual data records were violated" (p. 1). Prewitt suggested that regardless of whether or not the Census Bureau violated such legal prohibitions, it does not excuse the abuse of human rights that occurred, and he apologized for the Census Bureau's role in the internment. Prewitt further stated that any Census Bureau documents that "would lead the reader to believe that the Census Bureau behaved in a manner as to have actually protected the civil rights of Japanese Americans" (p. 1) would be corrected.

It is unclear what, if any, lasting impact the events associated with the internment of the Japanese Americans in WWII has had on people's perceptions of the Census Bureau's ability to maintain confidentiality of census data. As the literature would suggest, however, it is a

continuing concern to some. Prewitt's (2000) recent statement indicated his belief that it is important that the Census Bureau accepts responsibility for its actions and forthrightly admits mistakes and takes the appropriate actions to make sure such situations are never repeated. It remains to be seen if Prewitt's actions have resolved the issues associated with the Japanese internment, or whether this will be a continuing area of concern.

5.4 Privacy Issues in Congress

Before the 1970 census, growing concerns about invasions of privacy (e.g., wiretapping investigations, use of psychological testing for personnel administration in the Federal Government, establishment of a data center, etc.) led congress to introduce several bills designed to limit the information requested by the Census. Instead of the traditional approach to preserving individual privacy through legal provisions designed to protect the confidentiality of individual census returns, these new bills proposed to limit the questions that the Census Bureau could ask. In particular Congressman Betts (R., Ohio) suggested that some census questions violated citizens' privacy and did not relate to the Constitutional purpose of the census. He proposed to limit the mandatory census questions to seven, allowing for questions inquiring about socio-economic characteristics as long as they were not mandatory (Anonymous, 1968). Similarly, Cook (1969) reported that as of mid-April of 1969 there had been 65 bills introduced to the House of Representatives attempting to limit the 1970 census on the grounds that it constituted an undue burden on respondents and invaded individuals' privacy (see also, Kantner, 1969).

Petersen (1979) reported that the 'The National Right to Privacy Committee' organized a mail campaign and local newspaper advertisements in an attempt to undercut a 1970 census pretest in Dane County, Wisconsin. In addition, the pretest in Chesterfield and Sumpter Counties, South Carolina, was publicly attacked by Senator Strom Thurmond. The author suggested that discussions in congress continued until after the census questionnaires had been printed and that perhaps the main reason that the anti-census bills failed to pass was because it would not have been possible to prepare and distribute new questionnaires in time.

Privacy issues do not appear to have been a major concern for the congress for the 1980 and 1990 censuses, but a number of privacy concerns were raised and voiced in association with Census 2000. These concerns were raised by both the general public and by members of congress. In congress, discussions focused on sentiments that some of the questions, especially on the long form questionnaire, were an invasion of privacy and were not necessary for an enumeration of the population. A number of bills were proposed related to privacy issues. For example, House of Representatives Bill 4085 (2000) proposed amending title 13, United States Code, to limit the information requested by the decennial census to only that required by the Constitution. Similarly, House of Representatives Bill 4291 (2000) proposed amending title 13 such that the census questionnaires would only contain questions needed to complete an enumeration of the population. In addition, a number of proposed bills addressed the penalties associated with not completing the census form. House of Representatives Bill 4154 (2000) and House of Representatives Bill 4158 (2000) proposed amending title 13 such that the penalty for not answering the decennial census would apply only to those questions necessary to complete the enumeration of the population as required by the Constitution of the United States.

Similarly, House of Representatives Bill 4188 (2000) proposed amending title 13 such that the penalty for failing to answer questions on the decennial census should not apply if the short form questions are answered.

Unlike previous censuses, however, in 2000 a number of political figures made public statements regarding the supposedly intrusive nature of the census questions. In particular, an article from the March 31, 2000, edition of the Washington Post quotes a spokesman for Senate majority leader Trent Lott (R., Mississippi) as saying that Mr. Lott “believes that people ought to provide ‘the basic census information’ but that if they ‘feel their privacy is being invaded by [some] questions, they can choose not to answer’” (146 Cong. Rec. H1668). They also report that Senator Chuck Hegel (R., Nebraska) said, “‘just fill out what you need to fill out, and [not] anything you don’t feel comfortable with’” (146 Cong. Rec. H1668). George W. Bush was quoted in an article from the April 4, 2000, edition of the New York Times as saying that “he could understand why some ‘don’t want to give all that information to the government. And if I had the long form I’m not sure I’d want to, either’” (146 Cong. Rec. H2000). In addition, Sweet (2000) reported that Bush said, “‘if they are worried about the government intruding into their personal lives, they ought to think about it’” (146 Cong. Rec. H2002). A number of newspaper articles suggested that statements such as these were irresponsible and did the country a disservice. For example, an article from the April 2, 2000, edition of the Star Tribune suggested that such critiques cast the government in the light of the “enemy of the people” (146 Cong. Rec. H1994). Such articles point out such facts as: a) that all the census questions were approved by Congress; b) that most questions were asked previously; and c) that the long form questionnaire was actually shorter than it was in 1990. These comments and associated press further support the idea that concerns regarding privacy and confidentiality continued to be an issue in the 2000 Census as they have been in past censuses, and that the danger of such comments creating resistance to cooperation with the census remains a possibility.

6. ATTEMPTS TO CHANGE ATTITUDES

So far the evidence seems to suggest that, at the very least, attitudes/perceptions/concerns about issues of privacy and confidentiality have a small effect on the ability of the Census Bureau to conduct its job (e.g., nonresponse, data quality, cost of enumeration, etc.). Other evidence, however, suggests that it is possible that such concerns could have a significant impact (e.g., large nonresponse effects or even the postponement of the census, as in some other countries). So what has the Census Bureau done, or what should it be doing to address these problems or potential problems? There are a number of areas of interest including outreach, confidentiality assurances, building public confidence, and disclosure limitation.

6.1 Outreach

One strategy the Census Bureau has used to inform the general public about the purpose of the census and to address people’s concerns regarding privacy and confidentiality is through outreach programs. Moore & Rothwell (1978a) reported the results of the Public Information Campaign for the 1976 Census of Camden, New Jersey. Results showed that about 3/5 of the respondents recalled hearing that the confidentiality of census data is protected by law, but

familiarity with the Census Bureau confidentiality policies was not significantly related to a higher rate of cooperation with the census. The authors suggested that this might have been because the question only asked if individuals “knew” about the statement of confidentiality and that results may have been different if individuals were asked if they “believed” the confidentiality statement. Similarly, Moore (1982a; 1982b) reported the results of the Knowledge, Attitudes, and Practices (KAP) Survey, conducted to evaluate the effectiveness of the 1980 Census public information campaign. Results showed that there was little evidence that attitudes about the census (e.g., the usefulness, importance and benefits of the census, concerns about confidentiality, motivations to cooperate, etc.) changed due to the outreach effort.

Matchett (1983) reported the recommendations for the 1990 Census outreach activities developed by the 1990 Census Outreach Planning Committee. Of particular interest was the recommendation to take an aggressive stand to counter the public’s fear of losses of confidentiality due to lack of computer safeguards. The recommendation suggested stressing that Census data are less personal than information required for other reasons (e.g., school registration, credit card and loan applications, medical histories, etc.).

The Gallup Organization, Inc. (1988a) detailed the results of the Census Awareness Evaluation, which was conducted to assess the awareness, knowledge, attitudes and behavior of individuals associated with the 1988 Census Dress Rehearsal. Particular attention was paid to differences between demographic subgroups and the impact of the advertising campaign. Results showed that accurate knowledge and positive attitudes about the Census increased over the course of the advertising campaign for all subgroups, especially knowledge about confidentiality and knowledge that participating in the census is required by law.

The Gallup Organization, Inc. (1988b) reported the results of quantitative and qualitative research conducted to evaluate the effectiveness of the Census Bureau’s advertising campaign for the 1988 Dress Rehearsal. This research focused specifically on contrasts between black and non-black individuals’ awareness of, knowledge about, attitudes toward and behavior associated with the census. Results showed that non-blacks are significantly more likely than blacks to disagree that the census is an invasion of privacy and agree that people’s answers cannot be used against them. In addition, results indicated that for both blacks and non-blacks the proportion of people agreeing that the Census Bureau’s promise of confidentiality can be trusted increased significantly between the surveys conducted in January and March presumably due to the exposure to information about the census.

Fay, Bates & Moore (1991) reported the results of analyses conducted on data from the 1990 Census Outreach Evaluation Survey and the Survey of 1990 Census Participation linking respondent characteristics with self-reports of census mail response. They suggested that the outreach effort did little to change the public’s attitudes about the census. Similarly, Bates & Whitford (1991) discussed the results of the 1990 Outreach Evaluation Survey and the 1980 Knowledge, Attitudes, and Practices Survey regarding the drop in mail response rates associated with the 1990 census. Results suggested that whereas the 1990 outreach did not significantly improve the public’s attitude toward the census, attitudes had not worsened since the 1980 census.

A number of studies have investigated ways to maximize outreach effectiveness for particular demographic groups. Kissam, Herrera & Nakamoto (1993) reported the results of focus groups and in-depth interviews conducted to investigate the response and reaction of Hispanics of different national origin to the 1990 Spanish language census form. Outreach recommendations included: (a) emphasizing the important benefits of census data for the Hispanic community; (b) emphasizing “the theme of confianza (trust);” and (c) using local resources to help the community complete forms. Miskura (1994) described the outreach and promotion activities used for the 1995 Census Test sites intended to increase awareness for local test census groups. One activity of particular interest was the request for Regional Offices to work with Headquarters to develop outreach messages to address confidentiality concerns that were relevant to specific areas. Wobus, de la Puente & Vazquez (1995) reported the results of a qualitative evaluation of 1995 outreach efforts designed to establish cooperative partnerships with local governments and study methods to enumerate undercounted areas and populations. Results indicated that Hispanics fear immigration authorities and that undocumented immigrants may never participate in the census. The report recommends stressing confidentiality in Hispanic outreach efforts. Results also showed that African-Americans fear that census results will be used against them. The report suggested stressing the benefits of the census in African-American outreach efforts. Similarly, the Oakland Census Community Outreach Council (1995) reported an evaluation of the community outreach program associated with the 1995 Census Test in Oakland, California. The report indicated that factors such as immigration, poverty, language and cultural barriers contributed to lower response rates. In particular, it suggested that anti-immigrant sentiments and legislation increased the desire of many Oakland residents to remain anonymous, especially to a government agency. It also suggested that community outreach activities might be able to provide education and awareness to help increase census participation. Finally the Privacy Research Team (1997) recommended that public outreach should strive to inform the public about the Census Bureau’s legal responsibilities regarding data confidentiality while respecting people’s trust when providing personal information. At the current time, there are no research results available regarding the relationship between outreach efforts and response to Census 2000.

The literature reviewed suggests mixed results regarding the effectiveness of outreach efforts, with some efforts showing increases in knowledge about and positive attitudes toward the census, but little or no change in attitudes. The following suggestions, however, have been offered as ways to improve future outreach efforts: (a) emphasize the benefits of the census; (b) emphasize that the Census Bureau can be trusted; (c) emphasize confidentiality and inform the public about the Census Bureau’s legal responsibility to protect data; (d) address confidentiality concerns relevant to specific areas; and (e) use local resources (e.g., community outreach activities to provide education and awareness).

5.2 Confidentiality Assurances

Another method of addressing people’s concerns regarding the confidentiality of data is the confidentiality assurance given to respondents at the beginning of a census or survey. A number of studies have examined the effects of confidentiality assurances on survey participation and data quality. Singer (1978) reported the results of a study conducted to examine the effects of informed consent on response rates and data quality. Results showed that requesting a

signature from respondents adversely affected the response rate. In addition, those participants who refused to sign a consent form were also more likely to refuse to answer individual questions. The author suggested that if a signature is required it should be requested at the end of the interview to not affect the quality of the data. The results also indicated that assuring absolute confidentiality had a small effect on respondents' willingness to answer individual sensitive questions. Finally, the author suggested that because including more detailed and truthful information in the survey introduction did not adversely affect the results there is no need to withhold this information from respondents.

Reamer (1979) found that verbal guarantees of confidentiality might have increased participants' apprehension while having no effect on data quality or item response rate. He concluded that bringing attention to matters of confidentiality and anonymity might have sensitized participants to such concerns. Frey (1986) found that reminding respondents about confidentiality during a telephone survey negatively affected the data quality, with higher item nonresponse rates for the group that received the reminder compared to the control group. Because nonresponse was significantly higher only for income questions the authors suggested that confidentially reminders given immediately before sensitive questions (e.g., income) might negatively affect data quality. Groves (1990) suggested that the "credibility" of the confidentiality statement given by a researcher and its relation to the reduction of error is associated with social desirability (an effect in which the respondent does not reveal characteristics that might be considered negative or socially unacceptable). That is, if the respondent believes that his data will be kept confidential the effects of social desirability will be reduced or eliminated. He further suggested that social distance plays a role in this relationship such that it is more difficult to establish this credibility via telephone rather than in a face-to-face interview. Singer, Hippler & Schwarz (1992) reported the results of three experiments that examined the effects of variations in assurances of confidentiality in nonsensitive surveys on respondents' expectations of survey content and their willingness to cooperate. Results indicated that respondents were less willing to participate with more elaborate confidentiality assurances. The authors suggested that respondents who were given more elaborate confidentiality assurances were more likely to infer that the survey content was sensitive and would involve difficult, unpleasant, or embarrassing questions. The authors warn that detailed assurances of confidentiality should not be used for nonsensitive surveys because they may heighten, instead of relieve, respondents' concerns about the survey content.

Singer (1984) reported results of a survey conducted to explore public attitudes about issues of informed consent. Results suggested that: (a) income questions were the most sensitive (more than sexual behavior questions); (b) almost $\frac{3}{4}$ of the participants thought that a promise of confidentiality would increase interview cooperation; (c) of those who did not think that a promise of confidentiality would increase interview cooperation 44% thought that this was because there is no guarantee that this promise will be kept; and (d) as the education level of participants rose they were more likely to say that a promise of confidentiality would make a difference, that there were risks associated with a lack of confidentiality, and that there was no guarantee associated with a promise of confidentiality.

van Melis-Wright, Stone & Hermann (1992) investigated the psycholinguistic factors associated with the assurances of confidentiality given to survey respondents. The authors

suggested that people attach different meaning to words used in confidentiality assurances (e.g., confidentiality, privacy, disclosure, etc.) based on their personal circumstances, leading to wide variation in how individuals interpret such notices. The authors attempted to identify: (a) the meanings assigned to confidentiality and privacy; (b) the underlying dimensions of the terms used in confidentiality statements; and (c) how terminology affects respondents' willingness to share information. One component of the research involved the collection of terms used in confidentiality assurances and a subsequent analysis of their underlying dimensions (e.g., trust inspired by terms, and the level or manner that information is protected). The authors concluded that more analysis of this nature is worthwhile and necessary but stress that in addition to, or in place of, the effects of language in confidentiality assurances, cooperation with surveys may depend more on the public's confidence in the ethics and trustworthiness of the organization.

Singer (1993) reviewed the empirical literature associated with informed consent procedures for social research. She concluded that: (a) verbal confidentiality assurances show mode effects on unit and item nonresponse rates; (b) assuring anonymity rather than confidentiality produces modest effects; and (c) surveys that use technical means of assuring confidentiality (e.g., randomized response) produce higher estimates of sensitive behavior but are more difficult to conduct.

Billson (1993) reported the results of six focus groups conducted to investigate reactions to alternative messages created to affect the motivational factors associated with completing the census form. Of particular interest were manipulations of the confidentiality message (e.g., in normal paragraph form or in a shaded box) and their related comments. Results indicated that the shaded box did make the confidentiality notice more noticeable, but drew mixed reactions from the participants. The author suggested that the non-shaded message was preferred by those who did not have concerns regarding confidentiality, and that those who preferred the shaded message were more likely to have confidentiality concerns.

Singer (1994) reported the results of experiments conducted to explore methods to increase mail response for the 2000 census. The methods tested included pre-notice letters, reminder postcards, replacement questionnaires, mandatory or benefit messages on the envelope, motivational appeals included with the questionnaire, and variations of the confidentiality assurance. Results showed that a notice printed on the envelope indicating that response is required by law significantly increased mail response. Variations in the confidentiality assurance (e.g., a "strong assurance," highlighted and signed by the director) did not increase the mail response more than the standard assurance. The author concluded that an assurance of confidentiality was not seen as a motivating factor, even though the lack of an assurance may reduce response rates.

Singer, Von Thurn & Miller (1995) reported the results of a meta-analysis of the experimental literature regarding confidentiality assurances. The results did not support the general hypothesis that stronger assurances of confidentiality improve survey response rates, but did show that confidentiality assurances improve response rates for surveys that request sensitive information. The authors suggested that variables affecting the relationship between confidentiality assurances and survey response might include the respondents' perceptions of the sensitivity of the information requested and their trust in the confidentiality assurance itself.

They further suggested that elaborate assurances of confidentiality serve to increase respondents' perception of the sensitivity of the data regardless of its actual sensitivity.

Dillman, Singer, Clark & Treat (1996) examined the effectiveness of two appeals for participation as well as two confidentiality assurances used on census short forms. Results showed that variations in the confidentiality assurances and the benefits appeal ("Why it pays to be counted in the census") had no effect on completion rates. The mandatory appeal ("Your response is required by law"), on the other hand, showed a significant improvement in completion rates. Further, debriefing interviews indicated that there was no negative reaction to the mandatory appeal and the authors suggested that most respondents viewed this message as appropriate.

Kerwin (1998) reported the results of cognitive interviews conducted to identify weaknesses in confidentiality messages for the dress rehearsal census questionnaires and cover letters, and to suggest recommendations for improvements that could be made to the documents for Census 2000. Results indicated that most people were comfortable reporting the information on the short form but that people often had privacy concerns regarding the long form. The author suggested that these concerns were not likely to be addressed by simple revisions of the privacy statements. Instead, he suggested that an additional letter or brochure be developed addressing the collection and use of long form data, specifically addressing how the information could be used to make improvements in a particular community.

The studies investigating the effects of confidentiality assurances on survey cooperation and data quality show mixed results. One general conclusion is that for surveys of nonsensitive information, elaborate assurances of confidentiality might sensitize respondents to privacy and confidentiality concerns, serving to increase nonresponse and lower data quality. On the other hand, however, there is limited evidence that more elaborate assurances are helpful to sensitive surveys. In some instances, stronger confidentiality assurances have shown to be more effective in gaining cooperation, but this effect is not always replicated. In general, confidentiality assurances will not be effective if respondents do not believe that the promise will be kept. These results suggest that the Census Bureau might be best served by using clear, brief confidentiality assurances, but that its main goal should be to encourage the public's trust that the Census Bureau will perform ethically and in the best interests of the respondent. Because each survey has its own set of specific factors, in the cases where confidentiality messages are necessary, careful construction and testing of the statements is advised.

6.3 Public Confidence

As the research investigating confidentiality assurances suggests, one way the Census Bureau can reduce privacy concerns and improve confidentiality perceptions is to build and maintain public confidence. Bulmer (1979b) suggested that privacy and confidentiality are social issues and that steps must be taken to promote the goodwill, co-operation, and trust of the public. He suggested that mere statements of good intentions are not sufficient, but organizations must provide adequate technical solutions and communicate to the public that they regard privacy concerns and doubts about confidentiality as serious social issues. Melnick (1981) suggested that even though response to the United States census is required by law, that

without voluntary participation the task of obtaining such a vast amount of information would be impossible. Robey (1984) suggested that a number of questions regarding the invasion of individual privacy are raised by the activities of the Census Bureau. He suggested that the Census Bureau must be alert to the changing relationship it has with the public that provides its information. He further suggested that the Census Bureau must not stop its responsibility with the production of data products, but must endeavor to maintain the confidence of the public and promote the social benefits that come from the census.

Gates (1999) discussed issues associated with the Census Bureau providing access to statistical data products and public perception of the confidentiality of the data. He addressed real and perceived threats to confidentiality caused by new dissemination activities made possible by new technologies. Gates suggested that a perception that a data collection agency cannot be trusted, in the absence of an actual breach in confidentiality, could have a negative impact on future response rates. He also speculated that a lack of trust in government in general can lead to a lack of trust in a specific agency, and that a lack of trust in the private sector can generalize to government agencies. The author noted the importance of keeping the public's trust that the Census Bureau is operating in their best interests, for once that trust is lost, he suggested, it is an obstacle that is hard to overcome. Keeping this trust is often complicated by the fact that it is difficult to present confidentiality messages that are neither too complicated to be useful nor too simple to be valid.

6.4 Protecting the data - Disclosure limitation

The Census Bureau commits a considerable amount of effort to the protection of the data that it collects. In addition to the statutes and laws that protect Census data (e.g., Title 13, United States Code), the Census Bureau uses disclosure limitation techniques in combination with comprehensive physical and communications security measures to maintain the confidentiality of individually identified information (see Federal Committee on Statistical Methodology, 1994; Long & Gibson, 1998, for reviews). As public perceptions and technology change, however, the Census Bureau must remain vigilant in its efforts to develop and use the most state-of-the-art techniques for protecting confidentiality.

Cox, McDonald, and Nelson (1986) presented the results of a review of the confidentiality policies and practices in place at the Census Bureau in 1984. The review included discussions on disclosure avoidance, public use microdata, interagency data sharing, computer security, and how the public perceives and trusts the Census Bureau. Of particular interest was a discussion identifying three kinds of threats to confidentiality; direct, perceived, and indirect. The authors identified direct threats to confidentiality as situations in which confidential data are released to someone outside the Census Bureau inadvertently or through some unauthorized action. Perceived threats, they suggested, result from a combination of the increased public awareness of the power of computers, a decrease in trust of the government, and a lack of knowledge or understanding of the measures used to protect confidentiality. Finally, the authors describe indirect threats as those resulting from people "who use or manipulate census data in ways that appear to compromise confidentiality" (p. 200). The authors suggested that because they are not necessarily based on facts, perceived threats are more difficult to understand and address than direct and indirect threats. Even if these perceived threats bear no

resemblance to the reality of direct or indirect threats, they can still have just as real an impact on the Census Bureau (see also Cox et al, 1985). Long & Gibson (1998) suggested that it is equally important to protect the perception of confidentiality, as it is the reality of confidentiality of data. For example, some people might think that a small value in a table of reported data is a breach in confidentiality even when measures have been taken to protect confidentiality as required by Title 13.

Similarly, Dunn & Austin (1998) discussed the four major ways in which confidentiality can be violated; accidental release, malicious release, compulsory release, and statistical disclosure. They describe accidental release as the release of confidential data due to errors made by the staff, such as failing to follow the proper data management procedures. The malicious release of confidential data involves an unauthorized transfer of data by people such as disgruntled staff, or computer hackers. Compulsory release of information would involve the release of confidential data ordered by a court of law. Finally, a statistical disclosure might result from the release of an individual's personal information by someone who puts data together with information from other sources.

Butz and Gates (1986) discussed the laws and statutes that provide rights and protections to individuals from whom the Census Bureau collects personal information. They suggested that, whereas the measures by which personal information is protected are extraordinary, other available data and computational tools raise the probability that personal information will not remain absolutely confidential. The authors concluded that the Census Bureau operates appropriately and ethically with its uses of household survey data and its procedures to inform participants about these uses. The authors warned, however, that a continued assessment of data linking, data release, and respondent information policies is necessary.

Gates (1988) discussed the issues specifically associated with protecting the confidentiality of Census Bureau microdata products including: (a) plans for public use microdata; (b) alternatives to microdata; (c) administrative arrangements regarding microdata; (d) examples of solutions to requests for microdata; and (e) recommendations of legal arrangements to protect confidentiality for microdata files. He concluded that the Census Bureau must continue to provide data users the information they need while ensuring respondents that their data will be kept confidential and "will NOT be used to make determinations about them as individuals."

Gates (1997) discussed the difficulty data collection organizations face when addressing the demand for information while at the same time respecting individuals' privacy and protecting data confidentiality. The author suggested that it is necessary to make statisticians more accountable by applying appropriate laws, policies and technical controls. Suggestions included: (a) designing or redesigning systems with a focus on data protection; (b) acknowledging that there may be multiple ways of protecting privacy; (c) being forthright and honest; (d) assigning responsibility for promoting privacy to a senior official; and (e) anticipating problems and planning how to address them. As Gates (1995) suggested, data collectors need to think beyond the basic confidentiality protections provided by laws and make operational decisions that are fair to data providers.

From the literature reviewed in this section it is clear that protecting the confidentiality of data is a complex task. Even though the Census Bureau goes to great lengths to protect the confidentiality of individually identified information, it is not possible to eliminate every threat to confidentiality. As discussed above, even if the risks of direct and indirect breaches of confidentiality could be eliminated, there is still the matter of perceived threats to confidentiality. Addressing such problems is a complicated matter. On one hand it is logical that to build the public's trust it is necessary for them to understand the procedures the Census Bureau uses to maintain the confidentiality of their data. On the other hand, as we saw from the literature regarding confidentiality assurances, it is possible that drawing too much attention to matters of confidentiality may serve to sensitize respondents and create privacy and confidentiality concerns that may not have been an issue in the absence of a detailed description of confidentiality policies and procedures. Because the atmosphere regarding issues of privacy and confidentiality is constantly changing, it is necessary for the Census Bureau to not only be vigilant in their efforts to create, research and implement measures to protect the confidentiality of data, but it is also important to monitor the public's knowledge and attitudes regarding such matters. The Census Bureau should engage in research that investigates how various efforts to increase respondents' knowledge about confidentiality policies and procedures affects not only their trust in the Census Bureau, but also their willingness to cooperate with survey requests.

7. CONCLUSIONS AND RECOMMENDATIONS

Is the Census Bureau doing enough to address privacy concerns and to assure public confidence in its confidentiality practices? Whereas the answer to these questions are ultimately a matter of opinion, it seems fair to say that the Census Bureau is achieving the necessary minimum to manage current issues, but is perhaps not sufficiently prepared to manage issues that may be forthcoming. The bulk of this review has endeavored to detail what we know about privacy and confidentiality based on research that has been conducted over the past several decades. By documenting and organizing this information we see what has been done, what has worked and not worked, and what might happen if concerns about privacy and confidentiality are not addressed. The goal of this paper has been to create "the big picture" of how the different factors associated with privacy and confidentiality influence how the Census Bureau functions. From this "big picture" it is possible to make a number of recommendations as to how the Census Bureau can take the appropriate steps to address issues regarding privacy and confidentiality.

As the above review suggests, the equation regarding privacy and confidentiality is complex and dynamic. Whereas many concerns regarding privacy and confidentiality have remained the same over time, the equation is constantly changing with the addition of new and different factors. New technological advances not only make it increasingly difficult to protect confidentiality, but also create higher levels of concern regarding privacy and confidentiality. Evidence from a number of studies suggests that concerns about both privacy and confidentiality have been linked to nonresponse for the census and other surveys, but may only account for a small amount of the variance. Thus, concerns about privacy and/or confidentiality might influence respondents' decisions to cooperate in some cases but not in others (e.g., in surveys that include sensitive questions). The constant introduction of new factors, however, could change the magnitude of the impact of such concerns at any time. When designing measures to

address privacy and confidentiality issues, the Census Bureau must endeavor to account for as many of these factors as possible, and be aware that different combinations of factors could have different results depending on the particular circumstances associated with a specific census or survey.

So what should the Census Bureau be doing regarding privacy and confidentiality? In general, the Census Bureau should learn from the past, understand the present, and plan for the future. It is important for the Census Bureau to monitor as many of these different factors as possible, and not only document what attitudes and perceptions exist, but understand why people feel the way they do and how their attitudes and perceptions affect their behavior. This analysis should cover every process conducted by the Census Bureau including the design of censuses and surveys, data collection, processing and analyzing data, data dissemination, and data archiving. Specific recommendations include the following:

7.1 Security and Disclosure Limitation

At the bare minimum, the Census Bureau must continue to maintain its state-of-the-art physical and communications security measures and disclosure avoidance techniques. As new technologies are developed and implemented, the Census Bureau must determine how they will affect its ability to maintain confidentiality, and take the appropriate steps to minimize the possibility of a breach. Although the Census Bureau does an exemplary job of keeping up to date in its methods to maintain the confidentiality of data, this alone might not be enough to alleviate public concerns in the future.

7.2 Survey Design

The Census Bureau must design censuses and surveys with careful consideration of participants' privacy. Potential respondents may engage in a cost-benefit analysis when deciding to provide personal information for a survey if their attention is focused on privacy and confidentiality issues (e.g., McDonald, 1985c). The Census Bureau must therefore balance the benefits of obtaining certain kinds of information with the costs for the participant associated with divulging personal and potentially sensitive information (e.g., opt to not ask for certain sensitive information in return for lower unit and item nonresponse).

7.3 Quantitative Research

The Census Bureau should focus research on quantitative measures of public perceptions, attitudes and concerns regarding privacy and confidentiality, how they affect people's trust in the Census Bureau, and how they relate to respondent behavior (i.e., to cooperation with censuses and surveys). This would allow for a more definitive understanding of the frequency and magnitude of concerns for the general public and for particular demographic groups. This information could then be used to understand the impact of these concerns on nonresponse, how to anticipate problems, and the best way to address concerns via outreach and education. As Clark & Miller (1997a) suggested, the Census Bureau should conduct regular studies to assess public attitudes about privacy and confidentiality to identify trends and changes over time.

One might imagine a systematic, integrated privacy and confidentiality research effort that would include: a) measures to monitor public perceptions and attitudes, and factors influencing them; b) analysis designed to understand the link between respondents' attitudes and behavior; c) the development of a list of possible future privacy/confidentiality situations; and d) the establishment of strategies designed to counteract the negative impact of privacy/confidentiality concerns and/or prevent possible undesirable scenarios from ever occurring at all.

To this end, the Census Bureau might want to consider designing (or redesigning, as in the case of the Survey of Privacy Attitudes – see Singer et al. (2001)) a privacy and confidentiality attitudes survey that addresses the current and future needs of the Census Bureau. A project such as this should involve careful qualitative research to design and pre-test the survey (e.g., focus groups, expert reviews, cognitive interviews). For example, Tourangeau, Singer & Presser (2001) found that question order effects produced significant differences on answers to conceptually related items in the 1999 and 2000 Surveys of Privacy Attitudes (see Singer et al., 2001). Such a survey could then be implemented as desired, but the optimal situation would be one in which survey results could be linked to other respondent behavior (e.g., the 1999 and 2000 Surveys of Privacy Attitudes matched survey results with Census 2000 mail return rates). For example, the privacy/confidentiality survey results could be conducted as a telephone survey for the same sample as another demographic survey or it could be conducted as a supplement to a survey (e.g., CPS). This would allow analysis of the relationship between privacy and confidentiality attitudes and perceptions and actual respondent behavior. If conducted in conjunction with a panel survey it could provide a much-needed avenue for collecting data about nonrespondents (e.g., a person in the sample might participate in the privacy/confidentiality survey and then refuse to participate in the demographic survey at some point). This would provide the level of information necessary to identify specific concerns and problems and to develop appropriate measures to address them.

7.4 Outreach

The Census Bureau must develop methods that effectively improve public perceptions of the privacy and confidentiality of census data. These methods should be created using the knowledge gained from the both the qualitative and quantitative research discussed above. They would probably focus on privacy concerns by explaining the uses and benefits of census data, so as to educate the public on why the Census Bureau asks specific questions and how important each respondent's information is to their community and the nation as a whole. Concerns about confidentiality could be addressed by educating the public about the steps that the Census Bureau takes to protect individual data. As Clark & Miller (1997a) suggested, outreach messages should be carefully designed and cognitively tested to ensure that respondents will understand the intended meaning.

7.5 Interviewer Training

Mayer (1999) suggested, as did other studies (e.g., Baca, 1983; Lavin, 1989; McDonald, 1985b), that interviewers would benefit from training that educated them about the Census Bureau's privacy and confidentiality policies, and about effective ways to react to respondents'

privacy and confidentiality concerns during the interview process. Mayer and O'Brien (2001) reported the results of a study conducted to test an interviewer "Refusal Aversion Training" protocol, designed to teach interviewers the skills necessary to appropriately address respondent concerns and thereby avoid refusals. Concerns about confidentiality and privacy were identified as one of the major themes of respondent concerns, and were addressed in the training protocol (along with nine other themes). Results of the study showed that interviewers who received the training increased their response rates in a range of 3 – 7 percentage points.

7.6 Privacy Principles

The Census Bureau is currently undertaking a project to design a set of Privacy Principles that document the ethical considerations associated with collecting, processing, storing and disseminating census data. As Gates (1997) suggested, the Census Bureau must be forthright and honest in its conduct. Creation of these Privacy Principles is an important effort because it: a) explicitly states the ethical standards to which the Census Bureau adheres; b) provides a framework for subsequent policies and procedures; and c) results in a document that will be useful in relating this information to both Census Bureau staff and the general public.

7.7 Confidentiality Assurances

The Census Bureau must use clear, brief confidentiality assurances that have been carefully designed and pre-tested. Because each survey has its own set of unique factors, and research has shown that the decision to cooperate with survey requests is heavily context dependent (see Gerber 2001), the Census Bureau would be well advised to design and pre-test confidentiality messages specifically for each individual survey. Not only would it be of benefit to conduct cognitive interviews to ensure that potential respondents will understand the intent of the messages (e.g., how data is protected, how the data is used, etc.), it would also be of interest to test different versions of confidentiality messages to determine if a particular message can reduce unit and/or item nonresponse. It would also be of benefit to apply these design and pre-testing techniques to survey introductions and advance letters, since they are subject to similar kinds of privacy and confidentiality issues. Landreth (2001) described a project to redesign the advance letter for the Survey of Income and Program Participation (SIPP). The project has included focus groups with Census Bureau Field Representatives to determine problem areas of the current advance letter, and cognitive interviews to pretest a number of possible revised advance letters. In a third phase of the project, a split-panel design will be used to investigate the effects of a redesigned advance letter on nonresponse. Similar efforts to design and test messages associated with data products would also be of benefit.

7.8 Overall Conclusion

Clearly the concepts of privacy and confidentiality are multifaceted. They are distinct in their own right, yet integrally linked together in how they affect the Census Bureau. To truly understand how privacy and confidentiality factors influence an individual's decision to cooperate with a request for information from the Census Bureau, it is necessary to understand all these factors individually, their contexts, and how they interact with each other. The Census Bureau must continue to research these constructs, but must move towards a more coordinated,

integrated approach that efficiently utilizes all available resources and systematically addresses both research and practical problems associated with privacy and confidentiality.

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APPENDIX A

Mode, response rate, sample and sample size of surveys cited in quantitative research

Study	Mode	Sample	Sample Size	Response Rate
Bernstein (1979)	(nr)	(nr)	(nr)	(nr)
Brittingham, Eisenhower & Shin (1999)	telephone/Mail	RDD	1,052 completes	70.70%
Buckley (1999)	telephone	RDD	1,504	54%
	telephone	RDD	1,506	64%
Couper, Singer & Kulka (1998)	face-to-face	national probability	2,760	89.80%
DeMaio (1980)	(nr)	(nr)	(nr)	(nr)
Dillman, Singer, Clark & Treat (1996)	mail	national probability	30,000	76.4 - 78.1%
Fay, Bates & Moore (1991)				
KAP (wave 1)	face-to-face	national probability	3,772	64%
KAP (wave 2)	face-to-face	national probability	3,115	79%
ABAS	face-to-face	from census	8,550	94
OES (Wave 1)	face-to-face	from census	2,091	94
OES (Wave 2)	face-to-face	from census	2,059	95
SCP	face-to-face/phone	national probability	2,778	89%
Frey (1986)	telephone	stratified random	385	82
Gallup Organization, Inc. (1988a)	telephone	stratified random	5,696	(nr)
Gallup Organization, Inc. (1988b)	telephone	stratified random	5,696	(nr)
Gallup Organization (1990)	telephone	stratified random	(nr)	(nr)
Groves and Couper (1998)	(nr)	(nr)	(nr)	(nr)
Kerwin & Edwards (1996)	telephone	RDD	3,964	64.4
Kulka, Holt, Carter & Dowd (1991)	face-to-face	national probability	2,778	89.20%
Lavin (1989)	mail	(nr)	907	86.2
Louis Harris and Associates (1979)	face-to-face	(nr)	2,131	(nr)
Louis Harris and Associates (1990)	telephone	RDD	2,253	(nr)
Louis Harris and Associates (1991)	telephone	RDD	1,255	(nr)
Louis Harris and Associates (1992)	telephone	RDD	1,254	(nr)
Louis Harris and Associates (1993)	telephone	RDD	1,000	(nr)
Louis Harris and Associates (1994)	telephone	RDD	1,005	(nr)
Louis Harris and Associates (1995)	telephone	RDD	1,006	(nr)
Martin (2000)				
Intersurvey	Web TV	RDD	(nr)	81%
OES	face-to-face/phone	(nr)	2,000	95%
Mayer (1999)	mail	random	930	84.20%
McDonald (1984b)	(nr)	(nr)	(nr)	(nr)
Moore (1982a; 1982b)				
KAP (wave 1)	face-to-face	national probability	3,772	64%
KAP (wave 2)	face-to-face	national probability	3,115	79%
Moore & DeMaio (1979)	face-to-face	random	821	(nr)
Moore & McDonald (1987)	face-to-face	stratified random	2,253	95%
Moore & Rothwell (1978a)	face-to-face	segmented	500	83%
Reamer (1979)	face-to-face	experimetal groups	n=505	NA
Singer (1978)	face-to-face	national probability	2,084	67%

Singer (1984)	telephone	RDD	1,016 completes	52%
Singer (1994)	mail	stratified random	1,702	84.40%
Singer, Bates & Miller (1992)	(nr)	(nr)	(nr)	(nr)
Singer, Frankel and Glassman (1983)	telephone	RDD	1,100 completes	52.40%
Singer & Kohnke-Aguirre (1979)	face-to-face	national probability	2,084	(nr)
Singer, Mathiowetz & Couper (1993)	face-to-face	national probability	2760	89.80%
Singer & Presser (1996)	telephone	RDD	1,223 completes	65%
Singer, Schaeffer & Raghunathan (1997)	telephone	national probability	646 completes	50%
Singer et al. (2001)				
1999 SPA	telephone	national probability	4,830	62%
2000 SPA	telephone	national probability	5,936	61%
Sudman, Bradburn, Blair, and Stocking (1977)	face-to-face	national probability	1,172	(nr)

Note: (nr) = not reported