

BUSINESSES' PERCEPTIONS OF CONFIDENTIALITY AND THEIR ATTITUDES TOWARDS DATA SHARING AMONG FEDERAL STATISTICAL AGENCIES

Diane K. Willimack¹
U.S. Census Bureau, Washington, D.C.

Abstract

While research on the privacy and confidentiality attitudes of individuals and households is extensive, a similar body of knowledge about business respondents does not exist. This paper presents some of the first empirical data available on confidentiality and data sharing attitudes in the business sector, based on results of the survey of Businesses' Perceptions of Confidentiality. Our findings present some provocative evidence about business respondents' attitudes towards data sharing and their relationship with variables such as data sensitivity, confidentiality concerns, trust in government, and respondent burden. Although our results are not representative of the U.S. business population, it is our goal to generate discussion and stimulate further research to more closely examine tendencies identified here.

Key Words: Confidentiality, Data Sharing, Respondent Burden, Business Surveys, Attitudes and Opinions

Introduction

Pledging and protecting the confidentiality of data collected on surveys is of paramount importance to federal statistical agencies. The belief is that such assurances are important, if not essential, to maintaining high response rates and data quality on government surveys. Attitudes on privacy, confidentiality, trust in government, and data sharing² have been well researched among household respondents. However, a similarly strong body of literature on business respondents does not exist.

The survey of Businesses' Perceptions of Confidentiality was designed to provide some of the first empirical evidence available describing the attitudes of business respondents on a variety of topics, including the sensitivity of business data, respondents' understanding of statistical agencies' confidentiality pledges and trust in the government's ability to uphold them, their knowledge of legal penalties for breaching data confidentiality, and their concerns about and support for data sharing for statistical purposes (Greenia et al., 2001a). This paper will focus on survey results related to respondents' attitudes on data sharing. Other papers present detailed summaries and analyses of other items collected (Greenia, et al., 2001a, 2001b).

Review of the Literature on Confidentiality and Data Sharing

Attitudes of Household Members

Research on the privacy and confidentiality attitudes of individuals and households is extensive. A draft annotated bibliography by Mayer (2000) lists 150 citations, most of which describe the attitudes of household members, rather than businesses. Studies over the past twenty years suggest that not only does the public doubt the U.S. Census Bureau's confidentiality pledge, there is also a tendency to believe that the Census Bureau shares data with other government agencies (National Research Council, 1979; DeMaio et al., 1986; Gates, 1996; Kerwin and Edwards, 1996; and the Privacy Research Team, 1997). Household

¹ This paper reports the results of research and analysis undertaken by Census Bureau staff and collaborators. It has undergone a Census Bureau review more limited in scope than that given to official Census Bureau publications. This report is released to inform interested parties of ongoing research and to encourage discussion of work in progress. The author acknowledges Nick Greenia, Statistics of Income Division, Internal Revenue Service, and Dr. Julia Lane, of the Urban Institute, the American University and the U.S. Census Bureau, for providing access to the data analyzed in this paper. She is grateful to Dr. Frederick Knickerbocker, along with Dr. Lane, for facilitating this work and to Laura Zayatz, Tom Mesenbourg, Kristin Stettler, Elizabeth Nichols and Nash Monsour for providing helpful review comments.

² Here, data sharing means the flow of data from one agency to another, not necessarily the mutual exchange.

survey findings that may have pertinence for business respondents include the following:

- Focus group participants failed to distinguish among different government agencies, believing instead that requested information is already available “from a government computer” (Response Analysis Corporation, 1978).
- Focus group participants were willing to tolerate apparent duplication in requests for data across multiple government agencies (i.e., respondent burden) in order to preserve privacy (Aguirre International, 1995).
- Respondents who believed that the Census Bureau already shared data were more likely to support future data sharing (Singer and Presser, 1996).
- Multivariate regression results showed “The more trust and confidence people have in government, ..., the more willing they are to have agencies share data.” (Singer et al., 1997).
- Respondents’ perceptions of the sensitivity of the requested information may affect the relationship between confidentiality assurances and survey response (Singer et al. 1995).
- Findings are mixed on a link between survey participation and trust in confidentiality assurances (National Research Council, 1979; Moore and McDonald, 1987; Kulka et al., 1991; Singer, 1994).

Attitudes of Business Respondents

In contrast, little published or unpublished research is available describing the attitudes of business respondents regarding privacy, confidentiality, and data sharing. A 1992 Office of Management and Budget (OMB) working group identified factors likely to affect businesses’ trust in government’s promises to protect business data, including the sensitivity of various data items, the perceived benefits of the survey, the costs to the business of survey response and procedures used to protect the data.

In research results that echo the household side, only 50% of business respondents believed that the Census Bureau kept individual companies’ data confidential and that data sharing already went on. However, these beliefs were unrelated to economic census response behavior (Zeisset et al., 1990).

Like household respondents, business respondents in 30 very large multiunit companies failed to distinguish among the various statistical agencies, instead viewing them as “one government.” Unlike household respondents, business reporters stressed respondent burden over confidentiality concerns, because a) they basically trusted Census Bureau confidentiality pledges and b) requested data was often publicly available in some form. These large companies generally supported data sharing among statistical agencies, but only if reporting burden was actually reduced (Nichols and Willimack, 2001).

In results from the survey of Businesses’ Perceptions of Confidentiality, Greenia et al. (2001a) found that the level and duration of sensitivity varied across different types of data items. Like household respondents, business respondents seemed evenly split in their beliefs that federal statistical agencies keep their data confidential. Greenia et al. (2001b) also found that a) the greater business respondents’ beliefs in government competence, the less concerned they were about providing data to either statistical or regulatory agencies and b) likewise, as trust increased, concerns about providing data decreased.

Methodology

The survey of Businesses’ Perceptions of Confidentiality was sponsored by the U.S. Census Bureau and conducted by the Urban Institute, using Dillman’s Total Design Method (1978) for mail surveys. The first mailing in late November, 2000, used first class postage and consisted of a paper self-administered questionnaire booklet and a cover letter on Urban Institute letterhead, bearing the signature of the principal investigator, along with a postage-paid return envelope. A follow-up thank-you/reminder postcard was sent ten days later. A second mailing to nonrespondents, which included a replacement questionnaire, cover letter and return envelope, followed after the Christmas holidays, 2000.

A detailed description of the survey, along with the entire questionnaire, can be found in Greenia et al. (2001a). Topics covered by the survey included:

- sensitivity of different types and levels of business data and the duration of their sensitivity;
- concern about providing business data to various government and non-government entities;
- attitudes about government competence in collecting and protecting data;
- beliefs regarding the confidentiality pledges of federal statistical agencies;
- knowledge of legal penalties associated with unauthorized disclosure of business data by federal statistical agencies or their employees;
- opinions about the enforcement of confidentiality laws relative to potential response behavior;
- support for data sharing among federal statistical agencies, and, if so, identification of agencies allowed to share data, from among the Census Bureau, the Bureau of Labor Statistics (BLS), the Bureau of Economic Analysis (BEA), the Statistics of Income Division of IRS (SOI/IRS), or others.

The survey questionnaire was mailed to a sample of 5,000 businesses obtained from Dunn and Bradstreet's commercial database, representing 11.3 million U.S. businesses. The sample was allocated equally across four strata defined based on the number of employees: 1-49 employees, 50-249, 250-499 and 500 and above. Since the survey was never expected or intended to be representative of the U.S. business population, we do not utilize sample weights in our data analysis. Thus results of our analyses describe only survey respondents, merely suggesting possible tendencies among members of the business population that require further investigation.

Results and Interpretation

Response Rates and Respondent Characteristics

There were 509 useable responses to the survey of Businesses' Perceptions of Confidentiality, resulting in an overall response rate of 10.6%.³ We suspect the low response rate is the consequence of multiple factors. First, survey participation was voluntary. The survey's sponsorship by the Census Bureau was very difficult to stress in the questionnaire, since the survey was not actually conducted by the Census Bureau, but, rather, administered by the Urban Institute. In addition, the survey was conducted during the holiday season, which is known to affect response rates in household surveys. Also, the target respondent was an authority figure in the business, from whom studies have shown greater difficulty obtaining survey response (Ramirez, 1996). Additionally, the low response rate may be indicative of a lack of salience of the survey topic, particularly relative to traditional requests for business data.

Because of the low response rate there is great potential for nonresponse error in our results. Thus, it is worthwhile to closely examine the characteristics of those who responded, and, to the extent possible, compare characteristics of respondents versus nonrespondents.

Table 4.1 shows that response rates declined as business size increased. Businesses in the services sector responded at a higher rate than in other industries, while those in manufacturing or retail showed the lowest response rates. Thus, to the extent that attitudes about data sensitivity, confidentiality and data sharing are related to size and industry characteristics, there is potential for bias in our results favoring small businesses and businesses in the service sector. While Greenia et al. (2001a) found some variation in responses to individual questions related to firm size, they found little or no significant relationship with either size or industry for most of the survey responses. Moreover, since previous business perceptions data was based solely on very large companies (Nichols & Willimack, 2001), the representation of small businesses in this research was heartening.

Respondents were split evenly between single units and multiunits. One-third of respondents identified themselves as the company's chief executive officer, and another quarter were the owners of the business. Respondents identifying themselves as chief executive or chief financial officers were more likely to be

³Response rate = #Useable questionnaires received / (Sample size - Undeliverables); Undeliverables = 213.

associated with large businesses and with multiunits. Not surprisingly, nearly two-thirds of respondents who identified themselves as business owners were associated with small businesses having fewer than 50 employees, and nearly all of these small businesses were single units. Since small businesses responded at a higher rate, responses may disproportionately reflect attitudes related to personal characteristics of business owners.

Table 4.1 Characteristics of respondents to the survey of Businesses' Perceptions of Confidentiality				
	n	Percent of Respondents	N ^a	Response rate ^{a, b}
Size (# employees)^c				
1 - 49	157	30.84%	1152	13.63%
50 - 249	140	27.50	1201	11.66
250 - 499	111	21.81	1208	9.19
500 or more	101	19.84	1226	8.26
Industry^c				
Agriculture, Mining & Contract Construction	41	8.06%	426	9.60%
Manufacturing	78	15.32	961	8.10
Transportation, Communication & Public Utilities	29	5.70	262	11.20
Wholesale Trade	32	6.29	305	10.50
Retail Trade	57	11.20	677	8.40
Finance, Insurance & Real Estate	45	8.84	431	10.40
Services	227	44.60	1725	13.20
Single Unit / Multiunit^d				
Single Unit	268	52.65%	–	–
Multiunit	241	47.35	–	–
Respondent Identity^d				
Chief Financial Officer	39	7.66%	–	–
Controller / Accounting Manager	24	4.72	–	–
Chief Executive Officer	173	33.99	–	–
Owner	145	28.49	–	–
Other	67	13.06	–	–
Unknown	81	15.91	–	–
Total	509	–	4787	10.64%

^a Source: Greenia et al. (2001a).
^b Response rate = #Useable questionnaires received / (Sample size - Undeliverables).
^c Based on frame data.
^d Based on survey responses.

Distributional Results

Three survey questions specifically requested business respondents' attitudes about data sharing:

- Item 7c: Respondents' degree of agreement/disagreement with the statement, "I believe that federal statistical agencies do not share data provided by businesses with other government agencies."
- Item 7e: Respondents' degree of agreement/disagreement with the statement, "I believe that any federal agency, such as the Internal Revenue Service, Small Business Administration and Federal Trade Commission, can access data my company has provided to other federal agencies whenever it wants."
- Item 10: Respondents' selection from among the Census Bureau, BLS, BEA, SOI/IRS or other federal agencies (respondent specified) in response to the question, "If data sharing were legal, among which federal statistical agencies would your company be willing to allow its data to be shared, for statistical purposes only?"

Greenia et al. (2001a) report that nearly 80% of respondents believed that federal statistical agencies do share business data with other government agencies, according to their responses to Item 7c, and opinions did not vary with the size of the business. Also, 70% of survey respondents reported believing that other government agencies (such as IRS, SBA, and FTC) can access business data whenever they want, according to their responses to Item 7e. Thus it is clear that most of this survey’s business respondents believe data sharing already occurs and expressed some degree of distrust or cynicism about government data sharing practices. These results are not unlike those for householders reported earlier.

Table 4.2, which summarizes Item 10, shows that almost 60% of survey respondents expressed willingness to allow one or more of the listed statistical agencies to share data. Nearly 50% of the respondents were willing to allow data sharing at least among the Census Bureau, BLS and BEA, and almost half of these were willing to include SOI/IRS as well.

Table 4.2 Summary of Item 10: If data sharing were legal, among which federal statistical agencies would your company be willing to allow its data to be shared, for statistical purposes only?	
Agencies	Percent of Respondents
Census Bureau & BLS & BEA & SOI/IRS	22.6%
Census Bureau & BLS & BEA	25.5
All other combinations of listed agencies ^a	11.4
Total supporting some data sharing	59.5%
n=509	
^a This includes 18 cases marking only one statistical agency.	

Table 4.3 shows support for data sharing by each listed agency with at least one of the other agencies. At 58%, the strongest support was for the Census Bureau, while only one in four respondents were willing to allow SOI/IRS to share data. This might be due to a lack of understanding that SOI is the statistical, not the enforcement, arm of IRS. It might also be possible that the term “data sharing” is misleading: respondents might be comfortable with IRS sending data to the Census Bureau, but not the reverse. Clarifying this potential ambiguity may be important to agencies like the Census Bureau, which rely on IRS administrative records for frame-building and coverage evaluation.

Table 4.3 Support for data sharing by each agency with at least one of the other three	
Agency	Percent of Respondents
Census Bureau	58.0%
BLS	54.4
BEA	52.4
SOI/IRS	24.0
n=509	

Although not statistically significant, bivariate analyses examining relationships between Item 10 responses and other variables of interest suggested some interesting tendencies. First, our survey respondents viewed data sharing among the Census Bureau, BLS, and BEA with some equanimity, but were less comfortable with data sharing by IRS. This pattern was essentially the same across business size classes and industries. However, larger businesses with 250 employees or more exhibited a slightly higher overall rate of support for data sharing. This may suggest the business size threshold at which respondent burden outweighs confidentiality concerns.

Data sharing attitudes appeared to reflect the role or duties of various positions within a business. Most supportive of data sharing were CEOs who may evaluate data sharing from a cost-benefit perspective – the benefits of respondent burden reduction attained through data sharing outweigh the risks of exposing sensitive data due to breaches of confidentiality. Least supportive were CFOs, controllers or accounting managers who may possess attitudes of protecting the data they are responsible for keeping.

Respondents with softer opinions (responses of somewhat agree/disagree to Items 7c and 7e) tended to favor data sharing at a slightly higher rate than those who held their beliefs strongly. Regardless of the strength of their opinions about the government’s current data sharing practices, all respondents were considerably less inclined to allow SOI/IRS to share data – although this may reflect a lack of clarity about the direction in which the data flow.

Those who strongly believed that IRS/SBA/FTC can indeed get business data whenever they want were less

inclined to allow the specific individual agencies to share data, showing reluctance to grant access to other agencies. Oddly, those who tended to believe that IRS/SBA/FTC cannot get business data whenever they want were more willing to grant SOI/IRS data sharing privileges. Perhaps these respondents recognized that respondent burden could potentially be reduced if federal statistical agencies were permitted to obtain data from SOI/IRS.

Multivariate regression analyses

Based on our interpretation of the literature and experience with business reporting patterns, we propose the following conceptual model relating business respondents’ attitudes about data sharing with characteristics of the business and their attitudes about government reporting:

$$\text{Support for Data Sharing} = f(\text{respondent burden, data sensitivity, trust in government, belief in government competence}) \quad (4.1)$$

We expect that support for data sharing would increase with respondent burden, trust in government and belief in government competence. We also expect greater sensitivity of business data would result in less support for data sharing. We further hypothesize that respondent burden increases with the size of the company and that burden is greater for multiunit companies as opposed to those with only one unit (aka single units). We also expect that respondent burden varies with the major industry within which the firm operates. We hypothesize that trust is related to business respondents’ concerns about providing data to federal statistical or regulatory agencies, their experience with government reporting and their positions within the company.

In order to support regression analysis of attitudes about data sharing relative to these hypothesized constructs, variables were defined using responses from the survey of Businesses’ Perceptions of Confidentiality or data from the sample frame. Thus we identified the following empirical model:

$$y_i = f(\text{Log(employment), Multiunit, Sensitivity Score, Time Sensitivity, Trust in Federal Statistical System, CEO/CFO, Owner, Concern/Federal Regulatory Agencies, Concern/Federal Statistical Agencies, Belief/Govt. Competence}) \quad (4.2)$$

where the y_i are defined in Table 4.4a. The independent variables⁴ are defined in Table 4.4b, along with an explanation of their interpretation and the expected direction of effects on data sharing attitudes.

Table 4.4a Dependent variables used in multivariate regression analysis.		
Variable Name	Definition	
Support for data sharing	$y_1 = Q10a$	1 if the respondent is willing to allow data sharing by the Census Bureau; 0 otherwise.
	$y_2 = Q10b$	1 if the respondent is willing to allow data sharing by BLS; 0 otherwise.
	$y_3 = Q10c$	1 if the respondent is willing to allow data sharing by BEA; 0 otherwise.
	$y_4 = Q10d$	1 if the respondent is willing to allow data sharing by SOI/IRS; 0 otherwise.
	$y_5 = Q10mult$	1 if the respondent is willing to allow data sharing by at least one agency listed in Q10; 0 otherwise.
	$y_6 = Q10$	Number of agencies in Q10 among whom the respondent is willing to allow data sharing.

Table 4.4b Independent variables used in multivariate regression analyses.				
	Variable Name	Definition	Expected Sign	Interpretation / Hypothesis
<i>Burden</i>				
Size ^a	Log(employment)	log(number of employees)	+	The larger the employment size of the firm, the greater the respondent burden, the more likely to favor data sharing.
Complexity	Multiunit	1 if multiunit in Q2; else 0	+	Multiunit firms have greater complexity than single units and will more likely favor data sharing.

⁴We dropped industry dummy variables from our final model due to their lack of significance in both preliminary regression results and bivariate analyses, and because they cost degrees of freedom relative to our small sample size.

<u>Data sensitivity</u>			
Data items	Sensitivity Score	Total number from list of 11 data items marked Very/Extremely Sensitive	! The greater the number of very/extremely sensitive items, the less likely the respondent (R) is to support data sharing.
Duration	Time Sensitivity	Average duration, in years, data are considered sensitive	! The greater the average, the longer the overall time sensitivity of the various data items, the less likely R is to support data sharing.
<u>Trust in government</u>			
	Trust in System	The average response from among valid agree/disagree responses to 5 items on confidentiality	+ The greater the average score, the greater Rs' trust that stat agencies protect business data, the more likely they are to favor data sharing.
Confidentiality concerns	Concern / Fed. Reg. Agencies	Concern abt providing data to fed. reg. agencies; Range: 1 (Not at all) to 4 (Extremely)	! The lower Rs' concern about providing data to fed. regulatory agencies, the more likely they are to favor data sharing.
	Concern / Fed. Stat. Agencies	Concern abt providing data to fed. stat. agencies; Range: 1 (Not at all) to 4 (Extremely)	! The lower Rs' concern about providing data to fed. statistical agencies, the more likely they are to favor data sharing.
Govt. reporting experience	Multiunit	1 if multiunit reported in Q2; else 0	+ Multiunits are believed to have more experience filing government forms. The greater the experience, the greater the trust, the more likely to favor data sharing.
Respondent identity	CEO/CFO	1 if CEO or CFO in Q12; else 0	? This variable represents "preconceived" or personal notions of trusting the government.
	Owner	1 if owner in Q12; else 0	
	Other	Omitted category	
<u>Government competence</u>			
Respondent opinions about govt. competence	Belief / Govt. Competence	Rs' agreement with: "Fed. govt. is better than private sector at protecting business data from <unauthorized> release." Range: 1 (strongly agree) to 4 (strongly disagree)	! The greater Rs' belief in govt. competence, the more likely they are to favor data sharing. (Note the direction of the scale –lower numbers indicate stronger agreement with the statement and greater belief in govt. competence.)

^a Data from the sample frame.

A separate linear probability model was estimated for each of the y_i and results appear in Table 4.5. The model explains a statistically significant 8-12 percent of the variation in business respondents' attitudes about allowing specific federal statistical agencies to share data. Respondent burden variables, such as the size or complexity of the firm, or the identity of the respondent are not significantly related to attitudes about data sharing. On the other hand, several attitudinal variables play a significant role.

Only for SOI/IRS does the number of business data items considered somewhat/extremely sensitive (Sensitivity Score) have the hypothesized association with data sharing attitudes. Time Sensitivity is nonsignificant also. However, the sensitivity variables become statistically significant in the absence of variables describing respondents' concerns about providing data to federal regulatory or statistical agencies and their belief in government competence to protect data, suggesting respondents' concerns – or lack thereof – mediate the effect of data sensitivity on their willingness to allow data sharing. That is, if respondents' concerns about providing data to government agencies can be relieved, then the sensitivity of the data is no longer an issue affecting respondents' attitudes favoring data sharing.

The variable describing business respondents' trust in federal statistical agencies (Trust in System) is significant in all of the estimated equations, with the exception of the one for the Census Bureau. The positive coefficient means that the greater the expressed trust in federal statistical agencies, the more likely is the business respondent to be willing to allow those agencies to share data. Similar to the household side, business respondents' trust in federal statistical agencies' confidentiality pledges appears to be a key variable related to attitudes about data sharing. It seems that maintaining and improving this level of trust is critical for respondents' support of data sharing among federal agencies.

The variable describing business respondents' concerns about providing data to federal statistical agencies is statistically significant in all equations except the one for SOI/IRS. In contrast, the variable describing business respondents' concern about providing data to federal regulatory agencies fails to achieve significance. This suggests that business respondents may indeed be able to distinguish between federal regulatory agencies and their statistical counterparts, contrary to the aforementioned Nichols and Willimack (2001) finding that businesses tend to consolidate federal agencies into "one government." Yet businesses they interviewed did distinguish the IRS from all other agencies, and wanted IRS excluded in any serious implementation of data sharing. This may explain the lack of significance of both concern variables in the SOI/IRS data sharing equation. It may simply be difficult for business respondents to consider even a statistical division of IRS to be a statistical agency – particularly since there is a much greater public awareness of the Census Bureau and BLS as statistical agencies as a result of census and survey data collection efforts.

Table 4.5 Regression results for model (4.2).

Independent Variables	Dependent variables					
	Support for data sharing by --					Number of agencies allowed to share data
	Census Bureau	BLS	BEA	SOI/IRS	One or more agencies	
Log(employment)	-0.002	0.005	-0.002	0.001	-0.004	0.002
Multituit	0.027	0.005	0.045	-0.019	0.024	0.058
Sensitive Score	0.006	-0.000	-0.017	-0.022*	0.002	-0.034
Time Sensitivity	-0.003	-0.003	-0.003	-0.001	-0.002	-0.009
Trust in system	0.057	0.113**	0.096**	0.150***	0.094**	0.417***
Respondent is CEO or CFO	-0.018	-0.025	-0.005	-0.001	-0.027	-0.048
Respondent is bus. owner	-0.008	-0.025	-0.023	-0.018	-0.023	-0.073
Concern / fed. reg. agencies	0.002	0.002	-0.001	-0.001	0.002	0.002
Concern / fed. stat. agencies	-0.122***	-0.126***	-0.092***	-0.020	-0.107***	-0.360***
Belief in govt. competence	-0.018	0.015	-0.005	-0.043	-0.013	-0.051
Constant	0.852***	0.597***	0.670***	0.196***	0.776***	2.315***
n	323	323	323	323	323	323
adjusted R ²	0.08***	0.10***	0.08***	0.09***	0.08***	0.12***

* significant at 10%; ** significant at 5%; *** significant at 1%

Furthermore, these results also suggest that being able to affect respondents' level of concern about providing data to statistical agencies is likely to affect their attitudes favoring data sharing. However, this is not so for regulatory agencies. Greenia et al. (2001b) also suggest that lower levels of concern about providing data to either regulatory or statistical agencies are associated with greater trust in confidentiality pledges and stronger beliefs in government's competence to collect, use and protect data. This implies that by increasing business respondents' trust in government and belief in its competence, their concern about providing data to government statistical agencies will be reduced, which may subsequently improve their willingness to allow agencies to share data. Thus, it is possible that greater public awareness that SOI/IRS is a statistical agency, as well as understanding that data only flow from IRS to other authorized agencies, such as the Census Bureau and BEA (rather than vice versa), might strengthen confidence in confidentiality pledges, and hence the perceptions of data sharing.

Conclusions

Although admittedly not representative of the U.S. business population, our results provide some initial

empirical evidence about business respondents' attitudes towards data sharing among federal statistical agencies that is indeed provocative. Key findings include:

- The greater business respondents' trust in federal statistical agencies to protect their data, the more likely they are to favor data sharing.
- The favorability of attitudes towards data sharing may be improved by relieving business respondents' concerns about providing data to federal statistical agencies.
- It appears the effect of data sensitivity on respondents' willingness to allow data sharing can be mediated by relieving their concerns about providing data and improving their beliefs in government competence.

Other interesting tendencies exhibited by these data are:

- Business respondents believe that federal statistical agencies already share data.
- They generally express reservations about including SOI/IRS in data sharing arrangements.
- Respondent burden appeared not to be associated with attitudes favoring data sharing, contrary to our expectations. However, bivariate results suggest the possibility of identifying a threshold, related to firm size, at which burden potentially outweighs confidentiality concerns.
- Likewise, although not statistically significant in the multivariate analyses, bivariate results suggest a potential logical relationship between respondents' roles in the business and their attitudes towards data sharing.

It is notable that these results resemble those from household surveys on data sharing attitudes – that trust in government is a key predictor of favorable attitudes towards data sharing, and that those who believe the government already shares data tend to support data sharing. However, this is also somewhat disconcerting.

One would like to believe that business respondents' attitudes would be driven more by the context of business dealings with the government, which differ from households in their frequency and propriety, rather than by personal feelings. That is, business respondents appear to be people first and business people second.

This brings us to some concluding thoughts about the limitations of this study and suggestions for future research. First, the measures we constructed for these analyses may be considered somewhat rudimentary, subject to the limitations of the survey questions themselves. As the first survey of its kind among business respondents, no doubt the questions will benefit from refinements based on limitations in interpretation noted in this paper and in the Greenia et al. (2001a, 2001b) papers. Moreover, we may not be measuring the right things. For example, we defined respondent burden in terms of business size and complexity, which turned out to be nonsignificant in our multivariate analyses. Perhaps a more appropriate measure would be respondents' perceptions of burden, a more subjective phenomenon than the variables we used.

Lastly, of course, we cannot stress enough the great concern raised for potential nonresponse bias in the results reported here, if the opinions of nonrespondents do indeed differ significantly from those of the respondents. We reiterate that our goal in sharing these results, however suspect they may or may not be, is to generate discussion and stimulate further research with sufficient sample sizes and authoritative survey sponsors in order to achieve adequate response rates and representativeness of the target business population. We welcome statistically defensible research to confirm or refute our initial efforts, and encourage research linking attitudes to survey response behavior as well. Not only do the statistical agencies have much to be gained from this research, but so do businesses, if demonstrated support for data sharing leads to actions that reduce respondent burden.

References

- Aguirre International. (1995). Public concerns about the use of administrative records. Report submitted to the U.S. Bureau of the Census, July, 1995.
- DeMaio, T. J., Marquis, K.H., McDonald, S. –K., Moore, J.C., Sedlacek, D.S., & Straf, C.B. (1986). Cognitive and motivational bases of census and survey response. Proceedings of the Census Bureau's Second Annual Research Conference, U.S. Bureau of the Census.

- Dillman, D.A. (1978). Mail and telephone surveys: The total design method. New York: Wiley-Interscience.
- Gates, J. (1996). Results of the Joint Program on Survey Methodology (JPSM) 1995 Practicum Survey on Privacy and Confidentiality. U.S. Bureau of the Census memorandum to M. Riche, B. Benton, P. Schneider, N. Gordon, R. Marx, S. Miskura, J. Thompson, R. Killion, M.C. Miller, the Division Chief's Council, and the Team for Administrative Records Planning from Jerry Gates, January 19, 1996.
- Greenia, N., Jensen, J.B. & Lane, J. (2001a). Business Perceptions of Confidentiality. In Doyle, P., Lane, J, Zayatz, L. & Theeuwes, J. (eds.) Confidentiality, Disclosure and Data Access: Theory and Practical Applications for Statistical Agencies, North Holland.
- Greenia, N., Jensen, J.B. & Lane, J. (2001b). Confidentiality Perceptions and Response: Preliminary Evidence from Businesses. Paper presented at the American Statistical Association conference, August, 2001, Atlanta, GA.
- Kerwin, J. & Edwards, S. (1996). The 1996 Study of Public Attitudes Toward Administrative Records Use: Final report. Report presented to the U.S. Bureau of the Census, December 18, 1996.
- Kulka, R.A., Holt, N.A., Carter, W., & Dowd, K.L. (1991). Self-reports of time pressures, concerns for privacy, and participation in the 1990 mail census. Proceedings of the 1991 Annual Research Conference, U.S. Bureau of the Census.
- Mayer, T.S. (2000). Draft: Privacy and confidentiality related research pertaining to the Census Bureau: An annotated bibliography. Unpublished paper. U.S. Bureau of the Census.
- Moore, J.C., & McDonald, S. -K. (1987). The Census Community Awareness Program: An evaluation of the potential and actual effectiveness of CCAP based on evidence from the 1986 Los Angeles Census Test. Report prepared for the U.S. Bureau of the Census, February, 1987.
- National Research Council. (1979). Privacy and Confidentiality as Factors in Survey Response. Washington, D.C.: National Academy of Sciences.
- Nichols, E. & Willimack, D. (2001). Balancing Confidentiality and Burden Concerns in Censuses and Surveys of Large Businesses. Paper presented at the 2001 Federal Committee on Statistical Methodology Research Conference, November, 2001 in Arlington, VA.
- Privacy Research Team. (1997). SPARU Results: Implications and Considerations for Decennial Census Promotion and Outreach Messages. Privacy Research Team Memorandum No. 2.
- Ramirez, C. (1996). Respondent Selection in Mail Surveys of Establishments: Personalization and Organizational Roles. American Statistical Association 1996 Proceedings of the Section on Survey Research Methods, pp. 974-979.
- Response Analysis Corporation. (1978). Communication themes to enhance cooperation in the 1980 U.S. census. Report prepared for the U.S Bureau of the Census, February 1978.
- Singer, E. (1994). The Appeals and Long Form Experiment (ALFE): The short form debriefing analysis. Report submitted to the U.S. Bureau of the Census, January 26, 1994.
- Singer, E. & Presser, S. (1996). Public attitudes toward data sharing by federal agencies. Paper presented at the Annual Research Conference, Bureau of the Census.
- Singer, E., Schaeffer, N.C. & Raghunathan, T. (1997). Public attitudes toward data sharing by federal agencies. International Journal of Public Opinion Research, 9, 277-285.
- Singer, E., Von Thurn, D. R., & Miller, E.R. (1995). Confidentiality assurances and response: A quantitative review of the experimental literature. Public Opinion Quarterly, 59, 66-77.
- Zeisset, P.T., Mesenbourg, T.L., & Marske, R.A. (1990). 1987 Economic Censuses Advertising and Response Behavior Study. Proceedings of the 1990 Annual Research Conference. U.S. Bureau of the Census.