

REDUCING NONRESPONSE IN BUSINESS SURVEYS

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1. INTRODUCTION

Efforts to reduce nonresponse errors require an understanding of the process of survey compliance, including the sources of nonresponse. Without this understanding post-survey nonresponse bias adjustment procedures may be ill-founded. In *business surveys*, which are increasingly afflicted by nonresponse (Christianson and Tortora, 1995), useful theories of business survey compliance should consider a set of micro-to-macro factors that influence the extent to which an informant complies with a survey request in an organizational context. Measures to control nonresponse should follow from a theoretical consideration and be tested accordingly. The business survey we discuss in this paper has an establishment as the unit of analysis, and an informant's reporting task primarily depends on the retrieval of records from an organization's information system.

The purpose of this paper is to study the extent to which advance and reminder/thank you letters influence nonresponse reduction. In a previous study we found that these letters significantly reduced the level of survey nonresponse (Chun and Robertson, 1995). We evaluate the effectiveness of these additional contacts by comparing response rates at several levels. We also explore the idea that timely knowledge of an establishments response status, gained by these additional early contacts, assists us in resource allocation. It is intuitive that knowledgeable resource allocation will make a survey more cost effective. To investigate this concept we examine a term we call the Information Rate (IR). We use this measure to index the information that we obtain as a result of the additional early contacts. The information (e.g., early identification of ineligible, refusals, and wrong addresses) is valuable as it helps us allocate resources up-front in a more knowledgeable, effective manner in order to focus on establishments which are still eligible to respond. An evaluation of the index shows that the short term stimulus provided by the additional contacts has a wider impact on the survey than we originally thought. Analyses of both the response rate and the information rate are discussed in this paper at the industry and employment size level, the two most important correlates of compliance (e.g., Bailey, Jansto, and Smith, 1992; Chun and Robertson, 1995; Slowinski, 1990).

In 1994 we conducted a small experiment ($n = 400$) to determine the separate and combined effects of advance letters, and reminder letters on nonresponse reduction in an establishment survey. The results we obtained from that study indicated that the combined use of advance and reminder/thank you letters increased the overall response rate by about 16.6 percentage points when compared to the control group that received neither contact. However, the detailed results were highly variable when being analyzed at the industry and size level, due to the small sample size. A more complete, large-scale experiment ($n = 6000$) followed in the

1995 survey to investigate the scope of nonresponse reduction at the industry and size level.

2. THEORY AND HYPOTHESES

As identified in Chun and Robertson (1995), relying on organization communication literature (Porter and Roberts, 1983), a theory of nonresponse reduction in business surveys should consider 1) micro variables such as survey characteristics (e.g., named contact, mode, sponsor, and appearance), and attributes of the informant (e.g., authority, motivation, knowledge, function, familiarity with information requested, and response burden), 2) macro societal/cultural norms (e.g., trust in government, issue of confidentiality, and acceptability of the mail as a communication channel), and 3) the meso-level organizational characteristics (e.g., information system, policy about non-mandatory surveys, industry type and size, financial and human resources, and the routing of mail) which moderate an informant's interaction with the instrument/interviewer. Tomaskovic-Devey, Leiter, and Thompson's (1994) recent efforts to theorize about organizational survey nonresponse focus on studying meso-level organizational ability and two micro variables including the authority to respond, and motivation to disclose information about the organization.

A decision to participate in an establishment mail survey boils down to a temporary social interaction between an informant within an organization and a survey instrument. The interaction is *social* insofar as the informant perceives the instrument content as the survey sponsor's message, and its format as the survey sponsor's appearance. A business informants' decision to comply with a survey request varies depending on mode, sponsor, topic of a survey, and the format as much as it varies in the context of the individual or household survey. The informant's interaction with a survey instrument also changes as his motivation and behavior vary depending on his organizational function, level of knowledge relevant to the survey questionnaire, authority to provide business information, perceived response burden, and familiarity with the survey topic.

As an informant provides information on behalf of a business establishment, his decisions to answer a survey request are also influenced by such immediate organizational constraints and regulations as gatekeepers, complexity of the information system, policy of complying with non-mandatory surveys, type of industry, size of establishment, human and financial resources, and routing of the survey instrument. For example, an attempt to speak with a business respondent usually passes through gatekeepers such as receptionists who confirm the survey's authority in order to keep their boss from "sales under the guise of surveys," or other unnecessary requests.

There are also macro-level social factors indirectly affecting the business informants' interaction with the survey instrument such as the level of general trust in authority,

protection of confidentiality of provided data, and social acceptability of the mail as a communication channel.

We designed a set of advance and reminder/thank you letters to reflect various compliance features drawn from this organizational communications perspective to reduce nonresponse in business surveys. We personalized the advance letter by addressing it to a person with authority (e.g., payroll supervisor) or a named individual in a relevant department, emphasized the importance of the upcoming survey, the utility of the data, and the fact that the establishment was randomly selected to represent many other establishments in the industry, and we promised confidentiality of data. In the reminder/thank you letter, we acknowledged those who returned the form and reminded those who did not to complete it, and reemphasized the compliance features noted in the advance letter. When combined, the advance letter and reminder/thank you letter are designed to invoke the following operationalized features of reducing nonresponse at different levels:

(Macro-sociological level)

- Multiple *mail* contacts deliver the message that the sampled establishment's participation is important. Their contents are designed to be viewed by the informant more as a means of officially communicating the importance of the sampled establishment to the survey, and less as an invasive attempt to capture sensitive business data. This recognition stimulates the informant's positive attitude toward an additional contact.
- Trust in the survey and government survey sponsor is promoted by promising confidentiality of business data in both letters.

(Meso-social-psychological level)

- Legitimacy and authority is conveyed by the Bureau of Labor Statistics (BLS) government address on the envelope, the cover letter on BLS letterhead, and a signature by the BLS commissioner.
- Unique attributes of the respondent are suggested by noting that the establishment represents many others in the survey and cannot be substituted.

(Micro-process/human relations level)

- Informants are prompted to be mentally and organizationally prepared.
- Both personalized letters help to identify a correct informant within the organization who is knowledgeable, motivated, and familiar with the information requested.
- Early contacts by the advance letter promote early Post Office Returns (POR) of those establishments whose addresses are incorrect. This information allows us to allocate resources up front in a more efficient manner.
- Both advance and reminder letters are *personalized* by addressing them to the payroll supervisor of the establishment or to a named individual when the name is known.

The hypotheses we test in this study are reduction of nonresponse (as evidenced indirectly by an increase in the

response rate) and increase of the information rate at the industry and size level.

H1: Overall Response Rates

Response Rate: We expect that those establishments receiving both advance and reminder/thank you letters should produce significantly higher response rates than the control group receiving neither contact. The group receiving personalized additional early contacts is motivated by the eight compliance inducing features discussed above, and thus should be more likely than the control group to participate in the survey.

Information Rate: A second concept we will examine and test is the information rate. Examining the information gained due to the additional contacts yields more than just the obvious increase in respondents. We also obtain information more quickly on establishments which have moved, gone out of business, or gone out of scope for the survey. This information allows us to allocate the remaining survey resources to establishments which still have an opportunity to respond. We expect that those establishments receiving both advance and reminder/thank you letters should produce significantly higher information rates than the control group receiving neither contact. The effect of the advance and reminder/thank you letters is short-term, as those informants who are influenced by these additional contacts are likely to respond very soon after receiving them. The positive effects of the letters are likely to be reduced over time and approach zero at some time after the reminder/thank you letters are sent.

H2: Industry/Size Level Rates

Looking within industries, it is expected that the effect of advance and reminder letters is larger among manufacturing industries than among nonmanufacturing industries due to the perceived response burden related to the availability of hard data. Manufacturing industries are asked for data about production employees whose records are likely to be available in an information system. Some nonmanufacturing industries do not maintain the required information. For example, hours data may not be available for commissioned workers or piece workers. Nonmanufacturing industries tend to have more employment mixes of part time, full time and temporary workers than do manufacturing industries. The response burden due to these organizational constraints among nonmanufacturing industries is therefore likely to lead informants to refuse responding to the survey more often than their manufacturing industry counterparts (Goldenberg, 1993).

With regard to the establishment size, it is expected that the effect of the multiple contacts is stronger among the medium size establishments than among the small or large establishments. Small establishments usually have owners who have various competing tasks and are less likely to have a computerized information system. Large establishments may have an employee who is assigned to a task of reporting to government surveys and yet is inundated with various government survey requests. Large establishments may also have a very complex record-keeping systems in which it might be difficult to produce data that corresponds to the classifications requested by a government survey. In contrast

to the small or large establishments, the medium size establishments are likely to have relatively uncomplicated computerized information systems, and they may also assign an employee to the job of answering government surveys. The information load in medium size establishments is larger than the small establishments but is reasonably smaller than the large establishments.

H3: Detailed Industry Rates

It is also expected that the effect of additional contacts is larger among industries with production workers (predominantly manufacturing industries) than it is among industries with nonsupervisory workers (nonmanufacturing industries). Hours information for production workers is simple, and is well kept in production worker led industries such as mining, construction, and manufacturing. In contrast, the hours information desired is complex and hard to quantify among some nonsupervisory worker led industries such as trade, transportation, and finance-insurance-and-real-estate.

3. RESEARCH DESIGN

The Hours at Work Survey (HWS) is an annual survey measuring the number of hours paid and hours at work of nonsupervisory or production employees at about 6,000 establishments nationwide. The HWS has been conducted by the BLS since 1981. The information obtained is one factor used in the estimation of national productivity by industry. The HWS, which involves a self-administered mail survey followed by replacement mailings (facsimile on request) and computer-assisted telephone interview, provides the researcher with a rare opportunity to analyze the effect on nonresponse reduction of sending advance letters and reminder/thank you letters in business surveys.

The split-half experiment ($n = 6000$) was fully embedded in the HWS conducted in 1995. A treatment group receiving both advance letters and reminder/thank you letters was tested against a control group which received neither contact. Treatment and control groups all received an initial and two replacement mail questionnaires. The sample was stratified by two major industrial divisions and by four employment size classes (<50, <500, <2500, 2500+).

Response Rate: Nonresponse reduction is indirectly measured by calculating an increase in response rate. Response rate is calculated as follows:

Response Rate

$$= \text{Usable Establishments/Eligible Establishments}$$

where usable establishments are those establishments which have responded to the survey with data passing all edit checks, and eligible establishments are those establishments which are viable for survey purposes. Establishments excluded from the eligible group are those which have been made ineligible because of a change in industry to a nonsampled industry, or by going out of business. Refusals are included in eligible establishments.

Information Rate: The response rate above is calculated as a ratio of usable responding establishments to eligible

establishments. Ineligible establishments are excluded in the denominator. However, knowing that an establishment is ineligible is also an important piece of information. The faster we can make this determination, the faster we can concentrate resources on potential respondents. For example, finding that a sample establishment is out of business by sending an advance letter helps us to avoid sending an additional survey package to the establishment. Furthermore, if we know that an establishment has refused to respond early in the survey cycle because of these additional contacts, we know not to use any additional resources (e.g., follow-up with a replacement questionnaire) on the establishment. The quicker we can remove establishments from the "no status" category, and place them in other categories, the more cost effective our survey will be. This strategic resource allocation ultimately gives us more opportunity to increase the response of eligible establishments. Therefore, the efficient use of resources is also important for reducing nonresponse. We can thus construct the Information Rate (IR) by developing the ratio of establishments for which we have some information to all establishments including ineligibles and refusals. The IR is calculated as:

$$\text{IR} = \text{Informed Establishments/All Establishments}$$

where Informed establishments are those for which we know some type of information such as usable establishments, refusals, out of scope, out of business, unusable establishments, duplicate establishments, and unsuccessful mailouts.

4. FINDINGS AND DISCUSSION

All of the response rates and Information Rates reported in this paper are based on the results measured immediately after the second replacement mail packages were sent. Thus they all appear low. The final overall survey response rate was about 70 percent.

Overall response results: We compared the overall response rate and the IR across the two groups. It is evident in Table 1 that the test group receiving advance and reminder/thank you letters increased the response rate by 7.5 percentage points to approximately 26.2 percent.

In Table 2, as expected, we found that the test group boosted the IR by a significant 11.7 percentage points to about 42.1 percent. Hypothesis 1 is thus supported, indicating that the advance and reminder/thank you letters significantly reduce the amount of nonresponse and increase the information rate for the survey.

Industry/Size Based Results: Rates in Tables 1 and 2 also appear to support Hypothesis 2. First, nonresponse reduction and IR increase in the test groups were all significant at the two major industry categories and different size levels. Second, industry-wise, the increase in response with additional contacts came from manufacturing establishments at a higher rate than from nonmanufacturing establishments (8.4 percent vs. 6.1 percent in Table 1). The IR (Table 2) also showed that manufacturing establishments contributed more to the information obtained about the business status

(12.3 percent vs. 11.0 percent in Table 2) than did the nonmanufacturing establishments. Third, size-wise, establishments in HW-Size 2 (establishments with 50 to 499 employees) and HW-Size 3 (establishments with 500 to 2499 employees) receiving additional contacts increased their response rate by 7.9 percentage points to 29.4 percent, and 8.2 percentage points to 23.7 percent, respectively. As expected, this is a higher increase than that obtained in HW-Size 1 and HW-Size 4.

When we look at the information rate (Table 2), large establishments in Size 4 (establishments with 2500 or more employees) increased the IR by 15.4 percentage points, the highest of all. For IR purposes, our attempt to contact medium size establishments did not appear to be as effective in yielding information as it was with the other size groups.

We then examined response and IR at each industry by size level, as figures in Tables 3 and 4 indicate. Nonresponse was significantly reduced in Manufacturing establishments at all size levels (6.9 to 10.1 percentage points). Among nonmanufacturing establishments, nonresponse reduction was significant at all size levels except Size 4, which are large establishments with at least 2500 employment. The size of nonresponse reduction was also relatively smaller (6.0 to 6.6 percentage points) in these establishments than it was in the manufacturing group.

The information rates in Table 4 indicate a pattern similar to the nonresponse reduction seen in Table 3. Manufacturing establishments contributed to increasing the IR at all size levels (10.1 to 23.0 percentage points), and their IR varied from 38.8 percent in Size 4 to 51.3 percent in Size 2. Among nonmanufacturing establishments, the IR increase was again significant at all size levels except Size 4, but the size of the IR increase was about the same as those among manufacturing establishments (10.5 to 13.6 percentage points) when excluding the insignificant Size 4. Their IR varied from 40.2 percent in Size 1 to 19.4 percent in Size 4.

Detailed Industry Rates: As expected, the effect of the additional contacts at sub-industry level appeared to be stronger among establishments with production employees (Table 5) where we expect hours data to be less complex, and more consistently kept in an information system. Significant nonresponse reduction was made among mining (16.8 percentage points), durable goods (7.7 percentage points), and non-durable goods manufacturing (9.2 percentage points). Durable goods industries include lumber and wood products, electronic and electrical equipment, and transportation equipment manufacturing. Nondurable goods industries include food and kindred products, textile mills, chemicals and allied products, petroleum and coal products, and leather products. Among several service-producing industries which primarily employ nonsupervisory workers (instead of production workers), the additional contacts have not produced any significant nonresponse reduction. In other words, establishments in finance, insurance, and real estate, and trade industries including retail and wholesale were not significantly affected by the additional contacts. Previous studies by focus groups (Chun, and Stone, 1994) and a

response analysis survey (Goldenberg, 1993) revealed that these industries had difficulty reporting hours at work information for salaried workers, commissioned workers, or workers paid by a method other than hours (e.g., miles driven, and pieces completed). For example, salaried employees work more or less than 40 hours a week, and their hours at work are not usually tracked. When asked for hours at work information on a mail-questionnaire follow-up, informants attributed their failure to respond to the absence or lack of the relevant data. The only exception in Table 5 was a remaining nonmanufacturing group with a significant 5.4 percentage points of nonresponse reduction. This group could be subjected to further analysis by looking into its subgroups such as transportation, communication, utilities, services, and construction industry, respectively.

Analysis of the IR in Table 6 indicate that the additional contacts significantly increased the IR among establishments with production workers, varying from 11.8 percentage points in durable manufacturing to 23.2 percentage points in mining industries. Among establishments hiring nonsupervisory workers, results mirrored those for the response rate. An exception was finance, insurance, and real estate where the IR increase was a significant 11.4 percentage points.

Logistic Analysis: Using logistic regression analysis, we evaluated the significance of several factors which affect the response rate and the IR. Values in Tables 7 and 8 are based on a reduced model that includes main effects and an interaction term that was found to be significant in the initial full model. These values indicate that the factors which significantly affect response rate and the IR are industry, Size 1, Size 2, Size 3, and the use of the advance and reminder/thank you letter. The interaction term of Industry and Size 1 was significant in both models. In other words, additional contacts, establishment size and industry alone do not independently determine response levels. For example, in nonmanufacturing, an increasing establishment size results in less response. However, in manufacturing we do not see this simple linear relationship. The IR followed a similar pattern. The findings from this multivariate logistic analysis complement earlier findings from the descriptive analysis.

5. CONCLUSIONS AND FURTHER RESEARCH

A large scale experiment conducted in 1995 by the BLS showed that the use of personalized advance letters and reminder/thank you letters significantly increased response rates and information rates. A statistically significant result was found for these personalized early contacts, increasing the response rate by about 7.5 percentage points, and the information rate by approximately 11.7 percentage points, when compared to the control group. This finding confirms the overall results in the previous small experiment. It also fully complements the household survey based findings which have been accumulated by the Dillman school since the 1970s.

We also learned that establishment size was a significant factor in determining the affect of additional early contacts for the manufacturing industries. That is, the larger manufacturing establishments experienced a higher

nonresponse reduction effect because of the additional early contacts than did the smaller establishments. Among nonmanufacturing industries with less than 2500 employees, establishment size didn't impact the level of nonresponse reduction. Nonmanufacturing establishments with 2500 or more employees were not significantly affected by the additional personalized contacts. With regard to the resource allocation implications of the early contacts, the IR values indicate that (except for nonmanufacturing establishments with at least 2500 employees) the additional contacts allowed establishments to be more quickly classified than the group who did not receive the contacts. This allowed resources to be more appropriately used on establishments which were still eligible, and potentially willing, to participate. Among manufacturing establishments, we gained more information about large and small establishments than medium size establishments. Among nonmanufacturing establishments with less than 2500 employees, establishment size did not appear to influence the scope of the IR.

Industry and employment size are evidently useful organizational variables for understanding the effect of the personalized additional contacts on reducing nonresponse. Future research will search for other correlates of nonresponse in business surveys. For example, we will test whether an establishment's being located in one or multiple locations makes any difference. It is relatively hard to locate an informant at a multi-site establishment. Sending the additional contacts to a multiple worksite may not be useful as the information would not be accessible there and the available information might not correspond to the survey specification. The utility of the information rate should be tested as a proxy for the cost effectiveness of additional contacts. Studying reasons for refusal in establishment surveys is important not only to measure what biases exist but to develop approaches to reduce refusals based on knowledge of refusals. Most of all, a micro-to-macro theory of business nonresponse should be further enhanced and tested in other business surveys.

Table 1. Response Rate Results - (Preliminary)

Industry	Group	n	RR (%)	Diff (%)
Full Survey	C	2747	18.7	
	AR	2727	26.2	+7.5 *
Manufacturing	C	1590	22.9	
	AR	1584	31.3	+8.4 *
NonManufacturing	C	1157	13.0	
	AR	1143	19.1	+6.1 *
HW-Size 1	C	861	18.0	
	AR	840	24.5	+6.5 *
HW-Size 2	C	1244	21.5	
	AR	1247	29.4	+7.9 *
HW-Size 3	C	497	15.5	
	AR	493	23.7	+8.2 *
HW-Size 4	C	145	9.7	
	AR	147	16.3	+6.7 *

Note: AR indicates those establishments who received the additional contacts, C indicates the Control group, RR indicates the response rate. Diff indicates the difference in response between the two categories for the group. An asterisk indicates that the result is significant at the one-tailed alpha = .05 level.

Table 2. Information Rate Results - (Preliminary)

Industry/Size	Group	n	IR (%)	Diff (%)
Full Survey	C	2806	30.4	
	AR	2805	42.1	+11.7 *
Manufacturing	C	1619	35.3	
	AR	1618	47.5	+12.3 *
NonManufacturing	C	1187	23.7	
	AR	1187	34.6	+11.0 *
HW-Size 1	C	898	29.2	
	AR	893	41.4	+12.3 *
HW-Size 2	C	1262	34.6	
	AR	1262	44.9	+10.3 *
HW-Size 3	C	501	26.1	
	AR	503	39.4	+13.2 *
HW-Size 4	C	145	15.2	
	AR	157	30.6	+15.4 *

Note: See Table 1. IR refers to the Information Rate.

Table 3. RR by Industry and Size - (Preliminary)

Industry/Size	Group	n	RR (%)	Diff (%)
Manufacturing HW-Size 1	C	347	19.9	
	AR	336	26.8	+6.9 *
Manufacturing HW-Size 2	C	814	26.4	
	AR	820	34.9	+8.5 *
Manufacturing HW-Size 3	C	347	19.9	
	AR	343	29.2	+9.3 *
Manufacturing HW-Size 4	C	82	13.4	
	AR	85	23.5	+10.1 *
NonManufacturing HW-Size 1	C	514	16.7	
	AR	504	23.0	+6.3 *
NonManufacturing HW-Size 2	C	430	12.3	
	AR	427	19.0	+6.6 *
NonManufacturing HW-Size 3	C	150	5.3	
	AR	150	11.3	+6.0 *
NonManufacturing HW-Size 4	C	63	4.8	
	AR	62	6.5	+1.7

Note: See Table 1.

Table 4. IR by Industry and Size - (Preliminary)

Industry/Size	Group	n	IR (%)	Diff (%)
Manufacturing HW-Size 1	C	357	29.4	
	AR	351	43.3	+13.9 *
Manufacturing HW-Size 2	C	829	41.1	
	AR	831	51.3	+10.1 *
Manufacturing HW-Size 3	C	351	31.9	
	AR	351	45.0	+13.1 *
Manufacturing HW-Size 4	C	82	15.9	
	AR	85	38.8	+23.0 *
NonManufacturing HW-Size 1	C	541	29.0	
	AR	542	40.2	+11.2 *
NonManufacturing HW-Size 2	C	433	22.2	
	AR	431	32.7	+10.5 *
NonManufacturing HW-Size 3	C	150	12.7	
	AR	152	26.3	+13.6 *
NonManufacturing HW-Size 4	C	63	14.3	
	AR	62	19.4	+5.1

Note: See Table 1.

Table 5. RR by Sub-industry - (Preliminary)

Industry/ Size	Group	n	RR (%)	Diff (%)
Full Survey	C	2747	18.7	
	AR	2727	26.2	+7.5 *
Mining	C	139	10.8	
	AR	134	27.6	+16.8 *
F.I.R.E.	C	148	11.5	
	AR	148	16.9	+5.4
Trade (R & W)	C	240	16.3	
	AR	236	18.6	+2.3
Retail Trade	C	143	14.7	
	AR	144	18.8	+4.1
Wholesale Trade	C	97	18.6	
	AR	92	18.5	-0.1
Durable Manufacturing	C	830	25.7	
	AR	827	33.4	+7.7 *
NonDurable Manufacturing	C	760	19.9	
	AR	757	29.1	+9.2 *
Remaining Nonmanufacturing	C	630	12.5	
	AR	625	17.9	+5.4 *

Note: See Table 1. F.I.R.E. refers to the Finance, Insurance, and Real Estate industries.

Table 6. IR by Sub-industry - (Preliminary)

Industry	Group	n	IR (%)	Diff (%)
Full Survey	C	2806	30.4	
	AR	2805	42.1	+11.7 *
Mining	C	144	21.6	
	AR	143	44.8	+23.2 *
F.I.R.E.	C	152	21.7	
	AR	151	33.1	+11.4 *
Trade (R & W)	C	246	27.2	
	AR	247	32.0	+4.8
Retail Trade	C	145	26.2	
	AR	146	26.7	+0.5
Wholesale Trade	C	101	28.7	
	AR	101	39.6	+10.9
Durable Manufacturing	C	842	37.8	
	AR	842	49.5	+11.8 *
NonDurable Manufacturing	C	777	32.6	
	AR	776	45.4	+12.8 *
Remaining Nonmanufacturing	C	645	23.3	
	AR	646	33.7	+10.5 *

Note: See Table 1.

Table 7. Logistic Regression RR (n=5,474)

Variable	Parameter Estimate
Intercept	-2.78
Industry	0.98
Sz1	1.15
Sz2	0.78
Sz3	0.40*
AR	0.44
Industry * Sz1	-0.77

Note: An asterisk indicates a parameter that is significant at the 0.05 level, all other parameters are significant at the 0.0001 level.

Table 8. Logistic Regression IR (n=5,611)

Variable	Parameter Estimate
Intercept	-2.03
Industry	0.85
Sz1	1.12
Sz2	0.77
Sz3	0.41*
AR	0.53
Industry * Sz1	-0.77

Note: An asterisk indicates a parameter that is significant at the 0.01 level, all other parameters are significant at the 0.0001 level.

Note: The opinions expressed in this paper are those of the authors and do not necessarily represent those of the US Bureau of Labor Statistics.

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