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Workplace Hazards and Workers' Desires for Union Representation

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This paper investigates "voice" responses to hazardous and otherwise disagreeable working conditions in the form of workers' expressed desires for union representation. Using data from three surveys conducted between 1977 and 1982, workers exposed to significant health and safety risks on the job are found to be substantially more likely to report a willingness to vote pro-union than are comparable workers not similarly exposed. This finding is obtained using both subjective and objective measures of hazard and both union and nonunion workers. Management resistance, however, appears to play a strong role in determining the actual extent of unionization. Between 41 and 48 percent of workers in hazardous jobs desire union representation but have not achieved it.

I. Introduction

Recent economic studies of trade unionism have departed from the traditional focus on wage policy and have emphasized the influence of collective bargaining on other dimensions of employment relations, including quits, layoffs, fringe benefits, and productivity. Labor unions are interpreted as facilitating the expression of collective worker "voice" as a complement to individual voice and exit strategies that can be adopted by workers acting alone. This new body of theory and evidence suggests a new set of explanations for the distribution of unionism across the economy.

Theories of the union as a monopoly price-maker focus logically on relative wages in union and nonunion jobs and on the determinants of unions' abilities to extend existing union pay scales to unorganized employers. The voice perspective, however, suggests that nonwage characteristics of jobs may influence workers' desires for union representation through their influence on the ease and expense of individual voice and exit strategies. In general, one would expect workers to desire collective means for expressing preferences when exit is costly and when individual expressions of voice are unsuccessful because of the public-goods characteristics of job quality.

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A number of studies report that jobs with hazardous and otherwise unpleasant conditions are more likely to be unionized than jobs with more desirable working conditions, other things equal (Duncan and Stafford, 1980; Leigh, 1982; Worrall and Butler, 1983; Hirsch and Berger, 1984). These studies contain no direct information on worker preferences, however, and so are unable to ascertain whether the observed association between working conditions and unionism is causal or due to unobserved third factors. There could be less unionization in safer jobs, for example, because the major growth in employment in the relatively safe service industries occurred after the historical surge of unionization during the 1930s and 1940s.

This study focuses on the influence of job characteristics on worker desires for union representation using three data sets that contain explicit information on preferences. It analyzes the desires for union representation by current union as well as current nonunion workers. Both subjective and objective measures of job characteristics are employed. Section II discusses a number of sample selection and variable measurement issues that have plagued previous studies. The econometric specification and data sources are presented in the following two sections. Findings on the total and partial correlations among working conditions and worker desires for union representation are presented in Section V. A final section discusses the implications of the findings for theories of union growth and for public policy.

II. *Sample Selection and Variable Measurement*

Those who study working conditions, union status, and worker preferences face two principal problems: sample selection biases and the appropriate choice of working condition variables.

Sample Selection. Most studies of worker attitudes toward union representation have been limited to samples of current nonunion workers. Kochan and Helfman (1981) and Farber (1983) employ the 1977 Quality of Employment Survey (QES), which does not ask workers currently covered by union representation how they would vote if a representation election were held again. Hills (1985) employs the 1978 wave of the Young Men's National Longitudinal Survey (NLS), which asks both union and nonunion workers for their preferences, but he deliberately limits his analysis of the nonunion sample. Leigh (1985) does employ the full NLS men's sample, but he does not examine the role of working conditions.

In principle, nonunion data samples can provide an unbiased answer to the question of whether nonunion workers in hazardous and otherwise disagreeable jobs are more likely to vote for union representation than nonunion workers in safer jobs. But they cannot answer the more general question concerning the extent to which working conditions influence worker attitudes. By selecting respondents for the sample based on the values of an endogenous variable (current union status), they tend to bias toward zero the estimated coefficients on the

working conditions variables. Intuitively, they prevent the analysis from capturing the influence of working conditions on worker preferences among the most pro-union workers, because these are disproportionately represented in the currently unionized sample.

The exclusive focus on nonunion workers also prevents these studies from shedding light on an important set of issues related to the attitudes organized workers hold toward their union representatives. Most workers in unionized jobs did not participate in the original organizing campaign but were hired into already unionized jobs. For these workers, job characteristics and union representation are jointly consumed products. These workers face a spectrum of decisions based on their attitudes toward their union, extending from hostility and willingness to vote for decertification at one extreme to active support and willingness to serve as union shop stewards at the other. These attitudes influence the bargaining power of the union organization, because internal unity crucially affects expected success in strikes and other union strategies.

These considerations suggest that three different samples are appropriate for studying three different, although related, questions. A combined union and nonunion sample is necessary for studying the general issue of how working conditions influence worker preferences for collective voice mechanisms. A sample composed of nonunion workers is necessary for predicting the relative success of union representation elections among workers in jobs with different characteristics, because these elections generally occur only in nonunion workgroups. Third, a sample of currently unionized workers will provide insights into the expected outcome of decertification elections, which occur only among unionized workers, as well as the more general question of rank-and-file attitudes toward their union representatives.

Measurement of Working Conditions. Two types of variables are usually available for measuring job quality. Some surveys ask respondents to rate the quality of their jobs in a number of dimensions, including exposure to hazardous conditions. In some cases, working conditions for industry or occupation groupings can be derived from other sources and merged with survey data sets using conventional industry and occupation codes. Each approach has its advantages and disadvantages.

The self-reported job characteristics have the obvious advantage of reflecting working conditions in the respondent's particular job rather than averages of working conditions across all jobs within a broadly defined industry or occupation. Additional survey questions can capture other dimensions of the job, allowing the analysis to separate the influence of hazardous conditions on worker behavior from that of disagreeable but not unsafe surroundings. These measures are clearly subjective, and one worker's evaluation of a set of working conditions may differ from that of another or of a trained industrial hygienist. The fact that these measures reflect worker perceptions of working conditions rather than the

evaluation of third parties is an advantage for studies that wish to focus on worker responses to improved perceptions.

For studies of worker desires for union representation, the main disadvantage of the subjective measures of working conditions is that workers' general level of satisfaction or dissatisfaction with the job may simultaneously influence their willingness to report the job as hazardous as well as the willingness to vote for union representation. To the extent this "halo" effect is important, the direction of causality may run from dissatisfaction to both the tendency to report hazards and to pro-union sentiment, rather than from perceived hazards to dissatisfaction and then to pro-union sentiment.

The most frequently used objective measure of working conditions is the industrial injury rate, published annually at the one- through four-digit SIC level by the Bureau of Labor Statistics (BLS). This measure is based on mandatory employer record-keeping and provides a precise and reliable measure of injury probabilities for particular industries. Under certain fairly nonrestrictive conditions (Dickens and Ross, 1984), using this measure in survey data sets will provide an unbiased estimate of the true influence of job hazards on worker behavior, contrary to the claim made by some authors that these measures inherently produce errors-in-variables biases.

There are two disadvantages to the BLS injury rate measure. It reflects only safety hazards that produce recordable injuries rather than long-term risks to health. More importantly, it reflects the injury experiences of all workers within each industry. Many of the survey data sets with which it is merged are restricted to worker subgroups, such as nonunion workers or particular age and sex groups.

III. *Specification*

From the point of view of understanding the success of union certification and decertification elections, the question of most immediate interest concerns the simple association between job quality and pro-union sentiment. For this question, it is important not to control for demographic characteristics of workers, even though they are known to influence attitudes toward unions. Different types of workers are assigned to jobs with different types of working conditions in a clearly nonrandom fashion (Lucas, 1974; Robinson, 1984), and controlling for worker characteristics would produce biased estimates of the predicted success or failure of unions in hazardous jobs *per se*.

Worker attitudes toward union representation are due in part to personal and cultural factors independent of the characteristics of their jobs. However, in order to measure the independent influence of job characteristics on expressed preferences for union representation, this study assumes that the logit or log odds ratio of the probability of a pro-union vote is a linear function of working conditions, wages, skill levels, demographic and regional characteristics of the work force, and the costs of employing exit (quit) strategies. Subjective and objective measures

of working conditions are used in separate analyses for purposes of comparison. Both subjective and objective measures of wages are also available, with subjective measures referring to the worker's own evaluation of the level of remuneration as adequate or inadequate.

IV. *Data*

This study employs the union and nonunion samples of the 1978 Young Men's National Longitudinal Survey and the 1980 Young Women's National Longitudinal Survey, both of which contain worker-reported measures of hazard exposure and other undesirable working conditions. Unfortunately, worker willingness to vote for union representation was not queried until the following round of interviews (1980 for young men; 1982 for young women). The questions on working condition are not posed in this later round of interviews. This study is thus limited to workers who remained in the same job between the two interviews.¹ To facilitate comparison with earlier studies, the nonunion sample of the 1977 Quality of Employment Survey (QES) is also analyzed. The QES poses questions concerning working conditions and attitudes toward union representation similar to those in the NLS and entails no problems resulting from the merger of data from different rounds of interviews.

Similar measures of working conditions are available in all three data sets. Worker evaluations of working conditions are employed in the form of a vector of dichotomous variables indicating whether or not the respondent reports significant levels of hazard exposure, very unpleasant surroundings, no meaningful on-the-job training possibilities, no meaningful promotion possibilities, no job security, and poor quality supervision. Mildly affirmative answers to the working-condition question (e.g., "low" or "fair" exposure to hazards) are counted as negatives (e.g., no hazards). The rate of workplace injuries resulting in at least one day lost from work is merged with the Young Men's NLS using three-digit industry codes. This variable was not used with the women's NLS sample because it was judged to grossly misrepresent relative working conditions faced by (largely white collar) women workers in different industries. Given the strong association between current union status and industry injury rates, this variable will also produce an unreliable measure of actual conditions faced for nonunion QES workers.

Both subjective and objective measures of earnings are available. All three data sets ask respondents if they consider their rate of pay to be satisfactory. These questions are used in the form of a binary variable taking the value one if the respondent feels strongly that the pay level is low and zero otherwise. Objective measures of earnings include average hourly earnings for NLS workers and annual earnings for QES workers, and was thus not merged with the QES.

¹Twenty-three percent of young men NLS respondents quit, were laid off, or were fired between 1978 and 1980. Of young women NLS respondents, 30 percent left their jobs between 1980 and 1982.

Worker dissatisfaction with wages is most usefully conceptualized as being due to a disparity in actual compensation and the workers' perceptions of the market value of their skills and the disutility of undesirable job characteristics. If skill levels and working conditions were adequately measured, one would expect to observe a close correlation between the influence on attitudes toward unionism and the subjective and objective measures of compensation. To the extent that skills and working conditions are imperfectly measured, the subjective measures of compensation may perform better than their objective counterparts in distinguishing the various determinants of worker preferences for union representation.

Demographic characteristics of workers used in all three data sets to control for cultural differences in attitudes toward unionism include race, age, years of job tenure, years of education, SMSA residence, and residence in the southeast. Worker gender is also controlled for in the QES.

V. Results

Table 1 presents descriptive statistics on the simple correlation between job characteristics and worker willingness to vote for union representation for the three data sets. Consistent with the union voice hypothesis, workers expressing pro-union sentiments are much more likely than anti-union workers to be employed in jobs with hazardous and otherwise disagreeable working conditions.

Pro-union workers in the Young Men's NLS, the Young Women's NLS, and the QES data sets are 56 to 89 percent more likely to report exposure to serious health and safety hazards than are anti-union workers. The average industry in-

Table 1
Working Conditions and Wages for Pro-union and Anti-union Workers

	Pro-union Workers			Anti-union Workers		
	NLS Men	NLS Women	QES Non-union	NLS Men	NLS Women	QES Non-union
Hazard	55.9%	34.0%	44.0%	29.6%	21.8%	27.3%
Injury Rate	46.8	—	—	39.5	—	—
Low Pay	24.8%	43.2%	53.8%	21.4%	28.6%	29.3%
Hourly Wage	\$7.05	\$5.68	—	\$7.85	\$5.56	—
Annual Earnings (\$1000)	—	—	\$10.7	—	—	\$14.8
Unpleasant Surroundings	38.1%	27.5%	33.3%	26.1%	22.7%	18.7%
No Training	34.1%	33.2%	21.5%	21.6%	25.5%	10.6%
No Promotions	50.5%	58.8%	67.8%	36.5%	53.9%	48.4%
No Job Security	21.9%	20.4%	36.0%	15.9%	17.7%	19.0%
Poor Supervision	23.3%	22.3%	22.1%	15.4%	14.5%	14.4%
N	963	688	245	985	796	481

jury rate for pro-union male NLS workers is 18 percent higher than the average rate for anti-union workers. Pro-union workers are substantially more likely to characterize their wage levels as low than are anti-union workers. Actual earnings among pro-union workers compared to anti-union workers are in fact lower for male NLS workers and for QES respondents; no meaningful differences exist for female NLS workers. A very consistent pattern is observed for the five additional measures of working conditions: for each job characteristic and each data set, pro-union workers are substantially more likely to report undesirable conditions than are anti-union workers.

Logistic parameter estimates for the determinants of worker attitudes toward union representation are presented in Table 2 for the full (union and nonunion) male and female NLS samples. These figures permit an evaluation of the relative strength of the various job characteristics and of the demographic and cultural characteristics of individual workers on the probability of pro-union sentiment.

Health and safety hazards exert a strong and consistent influence on expressed worker willingness to vote for union representation, using both data sets and both measures of hazard. Male NLS workers reporting hazardous conditions are 21 percentage points more likely to vote in favor of representation than are comparable workers in safe jobs. For NLS women the difference is 12 percentage points.² A two standard deviation increase in the industry rate would increase by seven percentage points the probability of voting pro-union for NLS men.

Wage levels play a much less important role in influencing worker attitudes toward unions. Neither low actual earnings nor worker perceptions that pay levels are low is significantly associated with pro-union attitudes among male workers. Female workers who perceive their wages as low, however, are 12 percentage points more likely to desire union representation than are comparable workers who do not report low wage rates.³

Of the remaining five job characteristics, lack of meaningful on-the-job training opportunities plays the most consistent role in influencing the desires of both male and female workers for union representation. Unpleasant physical surroundings and poor promotion possibilities also exert a significant influence on pro-union attitudes among male workers; female workers place greater emphasis on poor quality supervision. Black workers are substantially more likely to express pro-union sentiment than are white workers in both the male and female samples. Southerners are significantly less likely to desire union representation, controlling

²These figures are calculated as $bP(1-P)$, where b is the estimated logistic parameter on the hazard variable and P is evaluated at the sample average for the dependent variable.

³Female NLS workers earning low hourly rates of pay are not significantly more likely to vote for union representation than are comparable workers earning high wages. Among nonunion QES workers, however, low annual earnings are positively and significantly associated with worker desires for union representation. These regression results are available from the author.

Table 2
*Logistic Parameter Estimates for the Determinants of Worker Attitudes
 Toward Unionization: The Full NLS Men's and Women's Samples*

	NLS Men	NLS Men	NLS Women
Worker Reports Hazard	0.837 (0.105)	—	0.492 (0.127)
Industry Injury Rate	—	0.00543 (0.00215)	—
Worker Reports Low Wages	-0.042 (0.123)	—	0.479 (0.124)
Hourly Wage	—	-0.023 (0.016)	—
Unpleasant Surroundings	0.232 (0.112)	0.357 (0.113)	-0.070 (0.136)
Incompetent Supervisor	0.154 (0.131)	0.217 (0.133)	0.320 (0.150)
No Promotion Possibilities	0.380 (0.110)	0.350 (0.110)	-0.006 (0.125)
No Training Possibilities	0.325 (0.118)	0.394 (0.120)	0.309 (0.129)
No Job Security	0.217 (0.133)	0.167 (0.135)	-0.206 (0.149)
Age	-0.035 (0.017)	-0.033 (0.017)	0.006 (0.018)
Job Tenure	0.040 (0.012)	0.037 (0.013)	0.009 (0.014)
Education	-0.055 (0.021)	-0.075 (0.022)	0.028 (0.024)
Worker Is Black	1.164 (0.137)	1.204 (0.141)	1.253 (0.134)
SMSA	0.134 (0.111)	0.133 (0.115)	0.110 (0.126)
South	-0.259 (0.113)	-0.358 (0.115)	-0.370 (0.123)
Intercept	0.607 (0.600)	1.134 (0.628)	-1.458 (0.676)
-2 log L	2398	2287	1880
N	1948	1820	1484

for job and personal characteristics, than are workers residing in other parts of the nation. These findings on the influence of race and southern residence on pro-union sentiment are consistent with those obtained by Farber (1983) and Leigh (1985).

Table 3 presents analogous parameter estimates for the union and nonunion NLS samples and also includes the nonunion QES sample. Although hazard exposure is positively related to worker willingness to vote for union representation in all samples, the strength of the relationship varies considerably.

Nonunion workers in both NLS samples and in the QES are more likely to report pro-union sentiment if they perceive their jobs as hazardous than if they do not, as indicated in the first three columns of Table 3. The strength of the relationship, however, is more than twice as strong among young women than among young men. The QES sample, which is broadly representative of the universe of nonunion workers, produces the strongest association between hazard perceptions and pro-union sentiment. The association between hazard exposure and pro-union sentiment among young men is substantially stronger than that reported by Hills (1985). Among workers already covered by collective bargaining, hazard exerts a substantially larger influence on pro-union sentiment for young men than for young women, as indicated in the fourth and fifth columns of Table 3. Unionized women workers in hazardous jobs are only two percentage points more likely to express pro-union sentiment than are comparable unionized women in safe jobs, a difference that is not statistically significant at conventional confidence levels. The exceptionally large hazard/pro-union relationship observed among unionized NLS men is particularly interesting in light of the high percentage of that group reporting pro-union sentiment (80 percent). In general, one would expect ceiling effects to reduce the within-sample variance in attitudes for this group compared to the nonunion NLS male sample, where only 30 percent express a willingness to vote for union representation.

Perceptions that wage rates are low exert a substantial positive influence on the desires for union representation among nonunion workers in all three samples. No analogous effect is observed among already unionized workers, presumably because they are skeptical of the union's desire or ability to further improve relative earnings. It is interesting that the positive association between pro-union sentiment on the one hand and job insecurity, lack of training possibilities, and lack of promotion possibilities on the other for NLS men reported in Table 2 is largely due to the sentiments of the nonunion subsample. Similarly for NLS women, the positive association between pro-union sentiment and dissatisfaction with the quality of supervision is limited to nonunion respondents. Lack of promotion opportunities and employment insecurity are significantly associated with pro-union sentiment among nonunion QES workers. No statistically significant relationships exist between working conditions and pro-union sentiment on the part of already unionized workers in either NLS sample, with the salient exception of hazardous conditions for young men.

Table 3
*Logistic Parameter Estimates for the Determinants of Worker Attitudes
 Toward Unionization: The Nonunion and Union Samples*

	Nonunion NLS Men	Nonunion NLS Women	Nonunion QES	Union NLS Men	Union NLS Women
Worker Reports Hazard	0.266 (0.154)	0.580 (0.169)	0.751 (0.191)	0.898 (0.197)	0.093 (0.219)
Worker Reports Low Wages	0.410 (0.161)	0.715 (0.161)	0.559 (0.187)	-0.141 (0.246)	0.326 (0.234)
Unpleasant Surroundings	0.051 (0.165)	-0.035 (0.183)	0.213 (0.206)	0.071 (0.206)	-0.308 (0.237)
Incompetent Supervisor	-0.007 (0.196)	0.515 (0.198)	0.195 (0.234)	-0.037 (0.227)	0.078 (0.263)
No Promotion Possibilities	0.384 (0.157)	-0.013 (0.168)	0.502 (0.191)	-0.032 (0.211)	-0.280 (0.228)
No Training Possibilities	0.058 (0.177)	0.284 (0.170)	0.388 (0.236)	0.170 (0.211)	0.044 (0.233)
No Job Security	0.460 (0.173)	-0.283 (0.194)	0.398 (0.207)	0.344 (0.284)	-0.229 (0.269)
Age	-0.049 (0.024)	-0.013 (0.024)	0.0010 (0.0075)	0.0012 (0.0320)	0.015 (0.035)
Job Tenure	0.018 (0.017)	-0.042 (0.020)	-0.049 (0.016)	0.056 (0.025)	0.051 (0.025)
Education	-0.032 (0.028)	-0.029 (0.033)	0.041 (0.037)	0.012 (0.042)	0.105 (0.042)
Worker Is Black	1.259 (0.181)	1.270 (0.173)	1.484 (0.333)	0.435 (0.242)	0.650 (0.243)
SMSA	0.127 (0.154)	-0.080 (0.164)	0.611 (0.198)	-0.146 (0.219)	0.487 (0.235)
South	0.404 (0.152)	-0.026 (0.159)	0.232 (0.183)	-0.523 (0.224)	-0.529 (0.237)
Intercept	-0.039 (0.851)	-0.486 (0.889)	-2.887 (0.644)	0.445 (1.137)	-1.570 (1.272)
-2 log L	1280	1127	804	721	567
N	1182	986	742	762	489

Black nonunion workers are 26 to 33 percentage points more likely to desire union representation than are white nonunion workers. The association between race and pro-union sentiment, however, is much weaker among already unionized workers. Among young men, nonunion southerners are more likely to vote pro-union than are nonunion non-southerners, other things equal. Unionized

southerners, however, are less pro-union than are unionized non-southerners in that survey. Nonunion workers with greater seniority are less likely to desire union representation among NLS women and QES respondents; no significant association is observed for NLS men. Among unionized workers, however, the opposite relationship holds, with years of job tenure being positively associated with pro-union sentiment among both male and female NLS workers.

To test the hypothesis that the observed positive association between worker-reported hazard exposures and worker-reported willingness to vote for union representation was caused by an underlying general dissatisfaction with the job, the regressions reported in Tables 2 and 3 were re-estimated for all three data sets, with the addition of a dichotomous variable that took the value one if the worker said he or she was dissatisfied with the job and zero otherwise. In no case did the inclusion of this variable materially influence the estimated coefficient on the hazard exposure variable. (These regressions are available from the author.)

VI. *Conclusion*

The findings reported in this study lend considerable support to the hypothesis that working conditions exert a strong influence on workers' desires for a collective means of expressing voice on the job. In particular, hazardous working conditions are strongly associated with pro-union sentiment. The juxtaposition of results obtained using objective as well as subjective measures of hazard and the robustness of the association when an explicit measure of worker dissatisfaction is added indicate that the association between reported hazards and expressed willingness to vote for union representation is not due simply to a "halo" effect but rather reflects the process by which workers make up their minds about unionism.

Significant differences are observed between the union and nonunion samples in both NLS data sets. Working conditions, wages, and worker ethnicity, the prime determinants of attitudes toward union representation among non-union workers, have substantially less predictive power among those already organized. Among organized workers, years of job tenure is the most important among the measured worker characteristics. What is lacking from these data sets is information on the characteristics of the unions that already represent the unionized survey respondents. The relatively weak predictive power among unionized workers exerted by the reasonably complete set of measures of job and worker characteristics suggests that the attitudes of unionized workers toward collective bargaining are heavily influenced by the (unobserved) performance of their particular collective bargaining representatives.

Perhaps the most immediately relevant findings of the study, for purposes of public policy, concern the attitudes toward union representation held by non-union workers. Here, working conditions and wages appear to play a strong role in determining preferences. It is interesting to compare the combined influence of the job characteristic variables on willingness to vote for union representation

with that of an often-cited worker characteristic, race. Black nonunion workers are 26 to 33 percentage points more likely to vote for union representation than are nonunion white workers, controlling for other worker and job characteristics. Employment in simultaneously hazardous, low paying, and otherwise disagreeable jobs raises the probability of desiring union representation by 26 percentage points among nonunion NLS men, by 40 percentage points among nonunion NLS women, and by 34 percentage points among nonunion QES respondents.⁴ Both race and job characteristics strongly dominate the independent influence of residence in the Southeast.

While this study offers many insights into the factors influencing worker attitudes toward union representation, its findings must be interpreted cautiously by those seeking to explain the existing distribution of unionism in the economy and the decline in the percentage of private-sector workers covered by collective bargaining. We have no direct information on the supply side of the market for unionized jobs, that is, the willingness of current nonunion employers to sign collective bargaining agreements with unions. Farber (1983) and Freeman (1986) suggest that the market for union jobs is not in equilibrium but rather is constrained by management resistance to organizing campaigns. In this context, it is interesting that 34 percent of the QES workers employed in nonunion firms, 30 percent of the nonunion NLS men, and 35 percent of the nonunion NLS women expressed a desire for union representation. Management resistance to union organizing appears to be especially strong in hazardous jobs. The percentage of nonunion workers employed in hazardous jobs that would vote for union representation range from 41 percent in the QES to 47 percent among male NLS workers and up to 48 percent among female NLS workers.

⁴These figures are calculated by summing the partial derivatives of the pro-union attitude functions with respect to the self-reported wage and working condition variables (Table 2 for the full NLS samples, Table 3 for the nonunion NLS and QES samples).

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