
Developing Profiles of Nonrespondents in an Employee Opinion Survey

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Employee surveys are one of the strategies that the Federal government uses to improve its effectiveness. Employee surveys aid organizations to determine the current status of the workplace, uncover or explore workplace issues that are detracting from employee performance, and formulate action plans for initiating improvement. In addition, if used correctly, employee surveys help open communication between management and staff and provide opportunities for employees to influence their work environments. Care must be taken, however, to respond in tangible ways to the survey results. If this is not done, negative views of management will be reinforced.

The National Performance Review calls upon agencies to conduct employee surveys, especially surveys of front-line employees. Several such surveys recently have been conducted by agencies within the Federal government, including the U.S. Postal Service, the Internal Revenue Service, the Census Bureau, and the Department of the Interior. This paper reports on an employee survey conducted for the Department of Education in 1993.

■ Overview of Survey

Purpose of Employee Survey

The survey was conducted to gather candid feedback from employees to assist management in assessing the current environment within the agency and to provide a means for monitoring progress in achieving the agency's mission. The results of this survey will provide a baseline from which the agency can measure the effectiveness of future actions. This survey is a follow-up to a previous survey conducted two years ago; however, the response rate to the previous survey was very low and many of the issues specific to the agency were not covered. Therefore, results are not comparable.

The 1993 employee survey for this agency reflects several priorities of the National Performance Review

and of the "Reinventing Government" initiatives, including the following:

- Organizational Support** -- Do employees know that they are led by people with a vision for the future? Does the agency provide the necessary facilities and support organization to enable employees to do their jobs? Are sufficient technical and personnel resources provided? Does management support quality improvement efforts? Are employees given career guidance to help them improve their work?
- Employee Empowerment** -- Do the employees have their expertise acknowledged by their supervisors? Are they given the authority to complete their work? Are employees given a voice in the mission, policies, and goals of their organizational unit?
- Realizing Employee Potential** -- Do employees see that they are rewarded for working to their potential? Are employees encouraged to use all of their skills? Does the employee's manager assist in furthering the employee's career? Is the agency a place where employees are treated equally regardless of race, gender, disabilities, age, or the exercise of employee rights?
- Quality of Output** -- Do employees see that their organization cares about quality and rewards quality work? Do employees believe that resources are well used, including their own skills and abilities? Does the agency provide the tools necessary to provide quality work? Do different parts of the agency work together to improve quality?
- Customer Orientation** -- Are employees encouraged to see that results matter? Are employees familiar with their organization's customers and their customers' needs? Does the employee's organization meet the needs of its customers?

Development of Employee Survey

Seeking to forestall possible employee concerns about the confidentiality of their responses, the agency decided to conduct the survey through a contract with an outside firm, Synectics for Management Decisions, Inc. Price Waterhouse was engaged to do the survey planning and design, develop the survey materials, collect the data, and perform the primary analysis.

A major emphasis in the planning process was placed on soliciting input from staff at all levels to ensure that the survey included issues of importance to all staff. The process included a systematic series of activities designed to ensure that the questionnaire covered the right issues and would be well received by employees at all levels. Survey fielding methodologies were also developed that would maximize response rates, through follow-ups of nonrespondents, while maintaining strict respondent confidentiality. Planning steps included:

- A literature review** to identify issues on past employee surveys and to determine both successful and unsuccessful techniques in administering employee surveys and analyzing the results.
- Planning meetings** with the project team, a survey work group comprised of representatives from each of the agency's organizational units, Senior management, and union representatives.
- Focus groups** with representatives of all staff levels from each office.
- Questionnaire and fielding strategies development** based on results of the above meetings.
- Questionnaire review sessions** with the work group and focus group participants.
- Telephone conversations** and questionnaire review sessions with representatives from regional offices.

The final questionnaire developed for the employee survey through this process contained 107 Likert state-

ments. Employees were asked to rate these statements on a five point scale of Strongly Disagree, Mostly Disagree, Neither Agree nor Disagree, Mostly Agree, and Strongly Agree. They were also asked to rate the quality of several support services and facilities on a scale of Very Poor, Poor, Fair, Good, and Very Good. Finally, there is also space provided for respondents for open-ended comments, if desired. The statements were organized into the following content areas:

- Mission** -- The survey questions on mission measure the extent to which employees feel that they are led by people with a vision and goals that support the vision; leaders communicate their intentions; and employees themselves contribute to the goals and missions of the groups of which they are a part.
- People** -- The questions on people explore the sense that employees have that what they do is important and is seen to be important by the people they work for; performance is recognized and fairly rewarded; career development is supported; and high quality people from varied backgrounds are welcomed without regard for personal characteristics over which they have no control.
- Management** -- Questions on management examine the extent to which employees feel that their input to job decisions is valued; they receive clear instructions and regular feedback on performance; the organization supports them in the timely completion of their tasks; supervisors are competent technically and in people skills; and the organization provides the personnel resources to get the job done.
- Training** -- Questions on training measure the extent to which people feel that their organizations support them in securing training for current and potential future assignments.
- Coordination** -- Questions on coordination explore the perceptions people have that their organizations are characterized by a spirit of teamwork and cooperation; they are adequately informed about issues affecting their work; and

it is easy to secure additional information, as needed.

- **Quality** -- Questions on quality focus on employee perceptions that the needs of customers within and outside the Department are regularly assessed and regularly met; leaders display a commitment to quality and support their commitment through quality standards, removal of barriers, and methods to prevent quality problems; their units are regarded by others as producing at a high level of quality; and they personally are appropriately skilled for the job and their skills are appropriately used on the job.
- **Support services/facilities** -- Where the foregoing sections ask respondents to express agreement or disagreement with a statement, this section lists various support services and facilities and ask respondents to rate them (from "very poor" to "very good"). Twenty-one items are included, ranging from adequacy of clerical support to computer equipment, telephone, payroll services and contracts services.

Survey Methodology

The survey planners recognized that a high response rate would be critical in ensuring that usable results were obtained from the survey. In order to achieve a high response rate, the survey utilized a fielding methodology that protected the respondent's confidentiality and allowed for follow-up of nonrespondents. All employees were sent a twelve page questionnaire booklet, that contained no identifying information or markings. The respondents were to complete the questionnaire and return it in the business reply envelope that was also provided. Each respondent was also given a postcard that was pre-printed with the employee's name. Employees were asked to check one of two boxes on the postcard -- either that the questionnaire was completed and returned or that the employee did not want to participate -- and to separately return the postcard. The use of the separate postcard enabled nonrespondents to receive follow-up mailings, while maintaining the confidentiality of individual answers. Employees who indicated they were unwilling to participate were not sent any follow-up mailings.

The original survey distribution was completed through internal agency channels. Two follow-up mailings were sent to the nonrespondents at their home.

Response Rates

The questionnaire was distributed to 5,042 full- and part-time employees beginning September 13, 1993. Fielding was completed November 17, 1993. During that time, 71 employees were dropped from the survey because of separation from the agency or inability to locate, leaving 4,971 potential respondents. Of the remainder, 3,851 employees responded to the survey, for an overall response rate of 77.5 percent. An additional 3.9 percent indicated on the postcard that they were unwilling to participate.

Table 1 shows response rate by office within the agency. Note that the office response rates were all very high and varied from a low of 53.6 to a high of 95.4 percent.

Office	Number in Agency	Number Returned	Response Rate (Percentage)
Office 1	128	120	93.8
Office 2	187	143	76.5
Office 3	686	505	73.6
Office 4	140	113	80.7
Office 5	381	309	81.1
Office 6	108	103	95.4
Office 7	410	330	80.5
Office 8	23	20	87.0
Office 9	92	78	84.8
Office 10	336	232	69.0
Office 11	331	246	74.3
Office 12	775	596	76.9
Office 13	478	256	53.6
Office 14	446	335	75.1
Office 15	268	206	76.9
Office 16	44	38	86.4
Office 17	104	78	75.0
Office 18	34	24	70.6

Weighting Methodology

Available Data

Since the response rate for this survey is less than 100 percent, there is some possibility for nonrespondent bias in the responses. Nonrespondent bias occurs when the employees who do not respond have different attitudes than those who do respond. Although it is not possible to know the answers that would be given by the nonrespondents, it is possible to conduct a nonresponse analysis, based on the characteristics that are known about the nonrespondents and survey responses given by known respondents, who have similar demographic characteristics.

Because we do not have identifying information on the questionnaires, we cannot match individuals to their responses. There is, however, some demographic information requested on each employee as part of the survey instrument. We can compare the aggregate pro-

file of the survey respondents on certain key characteristics to the profile of the agency as a whole on those same characteristics.

For this analysis, individual characteristics that were examined included office of employment, sex, pay scale/grade, supervisory status, age, and national origin. Although additional demographic information was gathered on the questionnaire, this was the extent of the information that was available to us from the agency's files. In addition, due to some changes in organization structure taking place during the fielding time, we were not able to accurately compare cross-categorizations of the agency's administrative data to our survey results. Table 2 summarizes the data that were available to us.

Nonresponse

Table 3 presents a comparison of the survey respondents with the agency's administrative records on the above characteristics. As may be seen from this chart,

Table 2: Demographic Data Available

Demographic Characteristic	Available on Survey	Available from Administrative Data
Office	Yes	Yes (with some differences due to a reorganization)
Work Location	Yes	Yes (with some differences between actual and assigned work location)
Time with Federal Government	Yes	No
Time with Agency	Yes	No
Pay Scale	Yes	Yes
Grade	Yes	Yes
Years at Current Grade	Yes	No
Job Series	Yes (Although often left blank or unusable)	No
Last Performance Rating	Yes	No
Gender	Yes	Yes
Age	Yes	Yes
Ethnic Origin	Yes	Yes (With collapsed categories)
Supervisor	Yes (Supervise other employees)	Yes (Manager)

Table 3: Response Rates by Selected Demographic Variables

Demographic Characteristic	Number in Agency	Number Returned	Response Rate
AGE			
0 - 20	41	15	36.6
21 - 30	720	493	68.5
31 - 40	1023	802	78.4
41 - 50	1906	1415	74.2
51 - 60	1116	774	69.4
61 +	366	210	57.4
RACE			
American Indian / Alaskan	46	25	54.3
Asian / Pacific Islander	142	100	70.4
Black	1989	1147	57.7
Hispanic	178	124	69.7
White	2783	2103	75.6
Multiracial ¹	*	67	N/A
Other ¹	*	62	N/A
GENDER			
Male	2033	1517	74.6
Female	3139	2205	70.2
SUPERVISORY STATUS			
Supervisor ²	727	903	124.2
Non-Supervisor ²	4411	2820	63.9
PAY SCALE / GRADE			
SES	92	59	64.1
GM 13 and Above	1078	828	76.8
GS 1-6	662	381	57.6
GS 7-10	754	506	67.1
GS 11-12	1489	1149	77.2
GS 13 and Above	751	628	83.6
Other	312	149	47.8

¹The number of employees in the "Multiracial" and "Other" categories is not available from the employee records.

²The apparent disparity between the number of supervisors in the employee records and the survey results is mostly due to definition. For the purposes of the survey, employees were counted as supervisors if they responded affirmatively to the question, "Do you supervise other employees?" The agency has a more specific definition for supervisors.

the greatest differences in response rates, and the greatest potential for nonrespondent bias, may be found in pay scale/grade, age, and national origin. Even if there is some bias due to these variables, we do not believe it is a major problem due to the high response rate on the survey. Note that supervisory status was dropped from further nonresponse analysis, due to definitional differences.

Weighting Procedure

To reduce the potential for nonrespondent bias on the survey, responses were statistically weighted. Weighting adjustments are a common device for reducing the potential for bias by restoring the original proportional balance of respondents by their demographic characteristics. For example, if a population of 100 employees is known to consist of half women and half men, and a sample is drawn that is only 48 percent men, a weighting adjustment may be used so that, in the final results, the responses are split equally between men and women.

As a first step in this procedure, we collapsed categories for selected variables. For national origin, American Indian/Alaskan, Asian/Pacific Islander, Hispanic, Multiracial, and Other categories were all collapsed into the Other category, due to the small number of respondents in each of the original categories. Similarly for age, the 0-20 and 21-30 categories were collapsed to form one category, 30 and under. With this collapsing, there were enough respondents in each category that we could calculate the weights.

Starting with all weights equal to one, we first calculated weights for ethnic origin, then for age, then grade/pay scale, and finally for office. Final weights in each iteration that were less than one were set equal to one. Next, the weights were multiplied by a constant to scale the weighted total number of employees to the correct total for the office. This procedure was repeated with the new set of weights as the initial weights until the final weights converged. At the end of the process, the weighted number of respondents was correct for offices, but was slightly different for the other weighting variables, since office totals served as the final control totals. Table 4 shows response rates for the weighting variables both before and after weighting.

Overall Results Before and After Weighting

In this survey, we applied weights to reduce the bias due to pay scale/grade, age, and national origin. In addition, we also applied the proper weights to ensure that the correct number of employees were included in each office. Although the weights were used to adjust for possible nonrespondent biases, the application of the weights caused only trivial changes in the survey results from the unweighted responses. This implies that, overall, little nonrespondent bias can be attributed to the characteristics of grade, age, national origin, and

Table 4: Response Rates by Selected Demographic Variables Before and After Weighting

Demographic Characteristic	Response Rate (Percentages)	
	Before Weighting	After Weighting
Age		
< 31	67.8	92.4
31 - 40	78.4	92.4
41 - 50	74.2	92.2
51 - 60	69.4	92.2
61 +	57.4	92.1
Race		
Black	57.7	69.1
White	75.6	90.1
Other	103.3	100.0
Gender		
Male	74.6	92.1
Female	70.2	92.9
Pay scale/Grade		
GM 13 and above	76.8	91.9
GS 1-6	57.6	96.5
GS 7-10	67.1	95.6
GS 11-12	77.2	95.6
GS 13 and above	83.6	91.3
Other	51.5	74.0

office. Table 5 shows the average rating for each section before and after weighting.

■ Analysis of Respondents

We had originally planned to look at nonresponse by different combinations of demographic categories in order to determine whether staff with certain characteristics were more likely to not respond. However, because we had difficulties matching our aggregate data to that available from the agency's administrative records, we were not able to complete that part of the analysis. Instead, we used the survey data to determine whether overall job satisfaction differed among respondents with different characteristics and whether these characteristics were tied to response rate.

Variables Used in Analysis

□ Dependent Variables

The questionnaire was designed to cover a range of topics related to the work environment of the employees. Many of the topics covered environmental characteristics that affected the

employee's ability to carryout his job; others covered environmental characteristics that affected the employee's job satisfaction. However, unlike many employee surveys, no question covering overall satisfaction with his or her job was asked of the employee. The following four questions are the closest on the survey to asking about overall satisfaction:

- My job gives me a sense of accomplishment.
- I think the work I do is important.
- I find my work challenging.
- I am, for the most part, satisfied with my career prospects in the department.

Initial attempts at exploring the differences in job satisfaction among the respondents used various combinations of these four questions. However, as may be seen from Table 6, the responses to the fourth question are not highly correlated with responses to the other three

**Table 5:
Average Response by Section of Questionnaire
Before and After Weighting**

Section	Average Response Before Weighting	Average Response Rate After Weighting
Mission	3.39	3.39
People	3.15	3.15
Management	3.15	3.15
Training	2.91	2.92
Coordination	3.09	3.10
Quality	3.19	3.20
Support Services	3.16	3.18

Table 6:
Correlation Coefficients Among Satisfaction-Related Questions

Question	Correlation Coefficient			
	Q1	Q2	Q3	Q4
1. My job gives me a sense of accomplishment.	1.000	0.669	0.709	0.500
2. I think the work I do is important.		1.000	0.680	0.326
3. I find my work challenging.			1.000	0.447
4. I am, for the most part, satisfied with my career prospects in the Department.				1.000

questions. Since question 4 seemed to be the most important question, this paper presents only this analysis.

□ Independent Variables

The independent variables selected for this analysis included the following:

- Age;
- Ethnic Origin;
- Gender;
- Pay Scale / Grade; and
- Office.

These variables were thought a priori to be the most highly correlated with job satisfaction and are the variables that can most likely be used in future analysis.

Methodology

As a first step in comparing responses, frequency tables of the responses were compared by the different demographic characteristics. Chi-square statistics were

computed to determine whether there was a possible relationship between the response and the demographic characteristic. Tables 7 through 11 present these results. As may be seen from these tables, all of the variables except age showed a relationship to satisfaction with job prospects at a .05 level of significance.

As a final step in determining the relationship between satisfaction with job prospects and demographic characteristics, an analysis of variance was conducted. In this analysis, the response scale of 1 to 5 was treated as continuous and the demographic variables were used as class variables. A model with all interaction terms was originally fit to the data. At each succeeding step, a level of interaction terms was removed from the analysis, as appropriate. In the final analysis, the following terms were found to be significantly related to response:

- Office;
- Grade / Pay Scale;
- Race / National Origin;
- Age; and
- Office and Grade / Pay Scale Interaction.

Table 12 presents the results of this model. ■

Table 7:
Table of Satisfaction With Job Prospects by Office

OFFICE	Responses					
Frequency/ Expected/ Row Pct	1	2	3	4	5	Total
100	21 28.071 19.44	18 22.1 16.67	17 19.443 15.74	34 27.977 31.48	18 10.409 16.67	108
120	46 32.749 36.51	33 25.784 26.19	18 22.684 14.29	22 32.64 17.46	7 12.144 5.56	126
128	146 115.92 32.74	106 91.265 23.77	77 80.293 17.26	97 115.53 21.75	20 42.986 4.48	446
130	9 25.991 9.00	19 20.463 19.00	18 18.003 18.00	35 25.904 35.00	19 9.6382 19.00	100
140	41 71.736 14.86	60 56.478 21.74	51 49.688 18.48	94 71.496 34.06	30 26.601 10.87	276
150	16 21.573 19.28	17 16.984 20.48	24 14.942 28.92	19 21.501 22.89	7 7.9997 8.43	83
160	103 77.714 34.45	67 61.185 22.41	47 53.829 15.72	62 77.454 20.74	20 28.818 6.69	299
170	5 4.4185 29.41	2 3.4787 11.76	4 3.0605 23.53	2 4.4038 11.76	4 1.6385 23.53	17
180	19 17.934 27.54	12 14.12 17.39	11 12.422 15.94	22 17.874 31.88	5 6.6504 7.25	69
190	16 18.454 22.54	16 14.529 22.54	8 12.782 11.27	24 18.392 33.80	7 6.8431 9.86	71
200	55 56.141 25.46	41 44.2 18.98	43 38.886 19.91	58 55.954 26.85	19 20.819 8.80	216
210	56 59.52 24.45	56 46.86 24.45	41 41.227 17.90	59 59.321 25.76	17 22.071 7.42	229
220	132 141.65 24.22	107 111.52 19.63	105 98.116 19.27	147 141.18 26.97	54 52.528 9.91	545
228	61 61.599 25.74	37 48.498 15.61	46 42.667 19.41	67 61.394 28.27	26 22.843 10.97	237
230	76 79.533 24.84	58 62.617 18.95	57 55.089 18.63	83 79.268 27.12	32 29.493 10.46	306
240	60 49.384 31.58	32 38.88 16.84	31 34.205 16.32	41 49.219 21.58	26 18.313 13.68	190
250	11 9.097 31.43	8 7.1621 22.86	4 6.301 11.43	10 9.0666 28.57	2 3.3734 5.71	35
260	5 5.4582 23.81	3 4.2973 14.29	7 3.7806 33.33	3 5.4399 14.29	3 2.024 14.29	21
999	20 21.053 24.69	15 16.575 18.52	13 14.582 16.05	16 20.983 19.75	17 7.8069 20.99	81
Total	898	707	622	895	333	3455

Statistic	DF	Value	Prob
Chi-Square	72	166.159	0.000

**Table 8:
Table of Satisfaction With Job Prospects by Gender**

GENDER	Responses					Total
	1	2	3	4	5	
Frequency						
Expected						
Row Pct						
Male	334	304	275	359	140	1412
	367	288.94	254.2	365.77	136.09	
	23.65	21.53	19.48	25.42	9.92	
Female	564	403	347	536	193	2043
	531	418.06	367.8	529.23	196.91	
	27.61	19.73	16.98	26.24	9.45	
Total	898	707	622	895	333	3455
Statistic			DF	Value		Prob
Chi-Square			4	9.625		0.047

**Table 9:
Table of Satisfaction With Job Prospects by Race/National Origin**

Race / Ethnic Origin	Responses					Total
	1	2	3	4	5	
Frequency						
Expected						
Row Pct						
Black	371	210	169	248	105	1103
	286.68	225.71	198.57	285.73	106.31	
	33.64	19.04	15.32	22.48	9.52	
White	433	428	380	569	195	2005
	521.13	410.29	360.96	519.38	193.25	
	21.60	21.35	18.95	28.38	9.73	
Other	94	69	73	78	33	347
	90.19	71.007	62.47	89.889	33.445	
	27.09	19.88	21.04	22.48	9.51	
Total	898	707	622	895	333	3455
Statistic			DF	Value		Prob
Chi-Square			8	60.291		0.000

Table 10:
Table of Satisfaction With Job Prospects by Age

AGE	Responses					Total
	1	2	3	4	5	
Frequency						
Expected						
Row Pct						
31-40	286	265	233	325	115	1224
	318.13	250.47	220.36	317.07	117.97	
	23.37	21.65	19.04	26.55	9.40	
41-50	354	275	220	341	121	1311
	340.75	268.27	236.02	339.61	126.36	
	27.00	20.98	16.78	26.01	9.23	
51-60	212	122	138	174	76	722
	187.66	147.74	129.98	187.03	69.588	
	29.36	16.90	19.11	24.10	10.53	
61+	46	45	31	55	21	198
	51.463	40.517	35.646	51.291	19.084	
	23.23	22.73	15.66	27.78	10.61	
Total	898	707	622	895	333	3455
Statistic			DF	Value	Prob	
Chi-Square			12	18.871	0.092	

Table 11:
Table of Satisfaction With Job Prospects by Grade/Pay Scale

Grade / Pay Scale	Responses					Total
	1	2	3	4	5	
Frequency						
Expected						
Row Pct						
GS 1-6	129	61	64	71	38	363
	94.348	74.281	65.351	94.033	34.987	
	35.54	16.80	17.63	19.56	10.47	
GS 7-10	142	90	76	134	50	492
	127.88	100.68	88.574	127.45	47.42	
	28.86	18.29	15.45	27.24	10.16	
GS 11-12	317	240	207	255	81	1100
	285.9	225.09	198.03	284.95	106.02	
	28.82	21.82	18.82	23.18	7.36	
GS 13 and Above	149	129	97	162	40	577
	149.97	118.07	103.88	149.47	55.612	
	25.82	22.36	16.81	28.08	6.93	
GM 13 and Above	137	170	153	231	86	777
	201.95	159	139.88	201.28	74.889	
	17.63	21.88	19.69	29.73	11.07	
SES	14	12	15	34	25	100
	25.991	20.463	18.003	25.904	9.6382	
	14.00	12.00	15.00	34.00	25.00	
Other	10	5	10	8	13	46
	11.956	9.413	8.2813	11.916	4.4336	
	21.74	10.87	21.74	17.39	28.26	
Total	898	707	622	895	333	3455
Statistic			DF	Value	Prob	
Chi-Square			24	132.770	0.000	

**Table 12:
Analysis of Variance Results**

Dependent Variable: III13					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	130	615.05206711	4.73116975	2.78	0.0001
Error	3333	5667.76288670	1.70049892		
Corrected Total	3463	6282.81495381			
	R-Square	C.V.	Root MSE	III13 Mean	
	0.097894	47.85641	1.3040318	2.7248845	
Source	DF	Type I SS	Mean Square	F Value	Pr > F
OFFICE	18	190.01829667	10.55657204	6.21	0.0001
RACE/National Origin	4	74.60699865	18.65174966	10.97	0.0001
AGE	5	10.03137617	2.00627523	1.18	0.3164
GSCALE	6	119.35625035	19.89270839	11.70	0.0001
GSCALE*OFFICE	97	221.03914527	2.27875407	1.34	0.0158
Source	DF	Type III SS	Mean Square	F Value	Pr > F
OFFICE	18	84.64206260	4.70233681	2.77	0.0001
RACE/National Origin	4	40.27459312	10.06864828	5.92	0.0001
AGE	5	21.60251193	4.32050239	2.54	0.0265
GSCALE	6	58.98642024	9.83107004	5.78	0.0001
GSCALE*OFFICE	97	221.03914527	2.27875407	1.34	0.0158