Microdata User Guide

PUBLIC SERVICE EMPLOYEE SURVEY

2002

Statistics Canada Statistique Canada

Canada

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1.0 Introduction

The Public Service Employee Survey (PSES) was conducted by Statistics Canada in May and June of 2002 with the cooperation and support of the Treasury Board Secretariat. This manual has been produced to facilitate the manipulation of the microdata file of the survey results.

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2.0 Background

The first Public Service Employee Survey (PSES) was conducted in 1999. Almost 55% of the workforce participated, providing important information about how employees viewed their work and workplace. Departments and agencies launched a number of initiatives to address the workplace issues identified by Public Service employees in the 1999 PSES.

As a follow-up to the 1999 PSES, the Privy Council Office asked the Treasury Board Secretariat to conduct a second voluntary survey of all Federal Public Service employees (those identified in Schedule 1, Part 1 of the Public Service Staff Relations Act and for whom Treasury Board Secretariat is the employer). The second Public Service Employee Survey took place in May and June of 2002. The 2002 PSES represents the efforts of many people from a number of departments, agencies and, for the first time, bargaining agents. As with the 1999 PSES, Statistics Canada was asked to participate in the survey development and to collect and process the data.

The 2002 PSES was designed to enable departments and agencies to identify areas where the Public Service is doing well and point to other areas where improvement is still needed. In addition to making it possible for new employees to provide their perspectives on the workplace, the survey ensures a measurement capacity between the 1999 and 2002 questionnaires.

The survey solicited views of Public Service employees on their work environment and overall job satisfaction. Employees expressed their opinions on their work unit, their communication with their supervisor, skills and career aspirations, client services and labour management relations. General information such as age, gender, years of service and province of work were collected and questions were asked on specific themes such as staffing fairness, official languages, health and safety, harassment and discrimination, and retention issues.

3.0 Objectives

A fundamental objective of the 2002 Public Service Employee Survey (PSES) was to seek employee opinion on a variety of issues related to organizational effectiveness, workplace well-being and service delivery. It was also essential to ensure that progress made since the first survey could be measured.

The results of the second PSES will enable managers and employees to take concrete steps to improve their workplace, both within their own department and, where needed, across the Public Service. The survey results will be used to initiate actions at the department, sector or branch level, and work unit level. Ultimately, improvements to the Public Service workplace will improve service to Canadians.

4.0 Concepts and Definitions

This chapter outlines concepts and definitions of interest to users.

The population for the survey includes all employees for whom the Treasury Board Secretariat is the employer as defined in Schedule 1, Part 1 of the Public Service Staff Relations Act as of May 2002.

Some definitions are included on the questionnaire to ensure that all respondents had the same understanding of the terms.

These include:

Supervisor: Your immediate supervisor is the person who evaluates your work performance.

Work Unit: Your work unit includes you, your immediate supervisor and your colleagues.

Client: Every Public Service employee delivers goods or provides services to a client. A client could be another public service employee, a member of the Canadian public or other clients outside Canada.

Harassment: Harassment is any improper conduct by an individual, that is directed at and offensive to another person or persons in the workplace, and that the individual knew or ought reasonably to have known would cause offence or harm. It comprises any objectionable act, comment or display that demeans, belittles, or causes personal humiliation or embarrassment, and any act of intimidation or threat. It includes harassment within the meaning of the *Canadian Human Rights Act*.

Discrimination: Discrimination means to treat someone differently or unfairly because of a personal characteristic or distinction which, whether intentional or not, has an effect which imposes disadvantages not imposed upon others or which withholds or limits access to other members of society. There are eleven prohibited grounds under the *Canadian Human Rights Act*: race, national or ethnic origin, colour, religion, age, sex, sexual orientation, marital status, family status, mental or physical disability and pardoned conviction.

5.0 Survey Methodology

The Public Service Employee Survey (PSES) was administered in May and June of 2002 to all employees in the Public Service for which Treasury Board is the employer. The survey was a census. Each member of the target audience received a paper questionnaire to complete. The survey was anonymous; that is, the respondent's name or other identification was not required on the questionnaire.

5.1 Population Coverage

The target population for the PSES was all employees of the Federal Public Service in May and June of 2002 with the following exceptions:

1. Students;
2. Governor-in-council appointments; and
3. Minister's exempt staff.

Because the survey was conducted as a paper questionnaire and because there was no way to control whether the above exclusions would receive a questionnaire, a category was added to Question 97 to identify these respondents (category 5). These questionnaires were excluded at the time of processing.

5.2 Participating Departments and Agencies

Agriculture and Agri-Food Canada
Atlantic Canada Opportunities Agency
Canada Industrial Relations Board
Canadian Artists and Producers Professional Relations Tribunal
Canadian Centre for Management Development
Canadian Dairy Commission
Canadian Environmental Assessment Agency
Canadian Forces Grievance Board
Canadian Grain Commission
Canadian Heritage
Canadian Human Rights Commission
Canadian Human Rights Tribunal
Canadian Intergovernmental Conference Secretariat
Canadian International Development Agency
Canadian International Trade Tribunal
Canadian Radio-television and Telecommunications Commission
Canadian Space Agency
Canadian Transportation Agency
Citizenship and Immigration Canada
Civil Aviation Tribunal
Commission for Public Complaints against RCMP
Commissioner of Official Languages
Communication Canada
Competition Tribunal
Copyright Board Canada
Correctional Service Canada
Economic Development Agency of Canada for the Regions of Quebec
Elections Canada
Environment Canada

Finance Canada
Fisheries and Oceans Canada
Foreign Affairs and International Trade
Hazardous Materials Information Review Commission
Health Canada
Human Resources Development Canada
Immigration and Refugee Board
Indian and Northern Affairs Canada
Industry Canada
International Joint Commission
Justice Canada
Law Commission of Canada
Military Police Complaints Commission
NAFTA Secretariat
National Archives of Canada
National Defence
National Farm Products Council
National Library of Canada
National Parole Board
Natural Resources Canada
Office of the Commissioner for Federal Judicial Affairs
Office of Infrastructure of Canada
Office of the Secretary to the Governor General
Offices of the Information and Privacy Commissioners
Patented Medicine Prices Review Board
Privy Council Office
Public Service Commission of Canada
Public Works and Government Services Canada
Registry of the Federal Court of Canada
Royal Canadian Mounted Police (Public Service Employees)
Solicitor General of Canada
Statistics Canada
Status of Women Canada
Supreme Court of Canada
Tax Court of Canada
Transport Canada
Transportation Safety Board of Canada
Treasury Board of Canada Secretariat
Veterans Affairs Canada
Western Economic Diversification Canada

5.3 Organizational Units

An important objective of the survey was to provide all departments and agencies with information that would allow them to react to the feedback provided by their employees. To do so, all departments and agencies were asked to provide Statistics Canada with a list of units for which the data would be broken down. Guidelines were provided to the departments and agencies and individual discussions took place to develop a list that would satisfy the department's/agency's needs and still ensure the confidentiality of the data. A code list was prepared for each department and agency, which was included in the envelope with the questionnaire. Employees were asked to indicate, in Question 98 of the questionnaire, the unit where they worked. If there were at least 10 respondents for a unit, data could be published. Where there were less than 10 respondents, the department or the agency was asked to group the unit with another unit.

6.0 Data Collection

6.1 Questionnaire Design

The questionnaire content was developed by an Interdepartmental Committee comprising representatives from small, medium and large departments/agencies, as well as representation from the Small Agencies Group, Statistics Canada, central agencies, bargaining agents and an external advisor. The questions for this survey were chosen based on their usefulness to employees, managers and bargaining agents in helping to identify problems and provide concrete solutions to improve the work environment. The 2002 Public Service Employee Survey (PSES) was a follow-up survey to the 1999 PSES. In order to ensure comparability between the 1999 and 2002 surveys, key questions from the 1999 PSES remained identical in the 2002 PSES, while minor changes were made to some other questions. New questions were added in place of certain questions from the 1999 PSES in order to explore new themes and provide additional information on issues identified in the first survey.

Focus groups were held across the country and included employees at various groups and levels as well as English and French focus groups. Comments from the focus groups were integrated into the questionnaire and a final layout was decided. Participating departments and agencies were also invited to provide comments on the draft questionnaire. All Survey Champions (departments and agencies) were invited to briefings on the questionnaire and project plan. The Minister responsible for the Treasury Board of Canada Secretariat approved the delivery of the second survey.

The final questionnaire was also provided to Canada Customs and Revenue Agency (CCRA) to assist in CCRA's efforts to deliver a comparable instrument.

As the department code was essential for the analysis of the data, it was decided that each department and agency would receive their own questionnaire with their department code on the front page. Twenty-three small organizations were regrouped as one single department. Having the organizational unit lists coded with the same department number made it easier to ensure that the proper list of organizational units would accompany the right questionnaire. The list of organizational units and a postage-paid return envelope were included with the questionnaire in the envelope.

6.2 Data Collection

Each department and agency was responsible for distributing the questionnaires to their employees. Each department and agency was given the choice to have their questionnaires delivered to one location or to give Statistics Canada a list of addresses and contacts for local distribution. The recommended target date for distribution of the questionnaires to all employees was May 22, 2002. However, the actual process was left to the discretion of the department or agency.

Once completed, the questionnaire was returned directly to Statistics Canada in a postage-paid return envelope. Statistics Canada accepted completed questionnaires for several weeks following the established survey period of May 22 to June 21, 2002. The closing date for acceptance of questionnaires was August 7, 2002. Departments and agencies were asked to remind their employees to complete the survey and to return their questionnaires as soon as possible. Each department and agency used a different approach to promote participation in the survey. Most used a letter from their Deputy Minister and had information on their intranet site, as well as other communications with their employees.

7.0 Data Processing

On December 2, 2002 data tabulations from the 2002 Public Service Employee Survey (PSES), at the Public Service level were released. Department/agency and organization level tabulations were released on December 9, 2002 . The public use microdata file (PUMF) contains data at the Public Service level only. This chapter presents a brief summary of the processing steps involved in producing this file.

7.1 Data Capture

The data capture of the more than 95,000 questionnaires received was done between June and August 2002. The data were captured using imaging and automated data entry technology. A small proportion of questionnaires, those that could not be read by the optical scanners, were captured using heads-down keying by experienced operators. Standard quality control measures were used to verify the error rate of the capture operations. For the Public Service Employee Survey, based on the quality control sample that was selected, it was determined that the overall data capture error rate did not exceed 0.5%.

7.2 Editing

The data were processed by applying edit rules to identify missing, invalid or inconsistent data. Each question was examined to verify the presence of a valid code. If none was present then a “Not stated” response code of “9” was assigned. For example, an edit rule was applied that examined the flow of data from Question 99 to Question100. Depending on the response to Question 99, superfluous data that did not respect the flow of data were eliminated.

As well, data inconsistencies were corrected. Some verification was done to match the province of work and the work unit. An edit was applied in the National Capital Region (NCR) where respondents coded their province of work as being Ontario or Quebec instead of the separate NCR code. In other cases, when regions were identified separately, the department or agency was consulted and when applicable, personnel in the Regions were recoded to a regional unit.

7.3 Coding of Open-ended Questions

There were no open-ended questions in the PSES. Due to the large number of respondents (over 95,000), it would have been too difficult to capture, tabulate or analyse open-ended questions.

7.4 Imputation

There was no imputation in the PSES. Item and partial non-responses were coded as “Not stated” during editing.

7.5 Weighting (Non-response Adjustment)

The weight calculated for the Public Service Employee Survey can be thought of as re-weighting the respondents so that the respondent and population distributions have the same overall distribution with respect to the department/agency and occupational group. Simply put, if 20% of the employees in a department or agency are in a particular occupational group, then the weight ensures that this occupational group represents 20% of the number of respondents when tabulating the data. In other words, the weight compensates for the over and under representation of occupational groups within each federal department/agency. For occupational groups that were over represented within the department/agency, the weights are smaller than one. For occupational groups that were under represented within the department/agency, the weights are greater than one.

That is, if the weight is larger than one then each person represents, besides himself or herself, other persons who did not respond. This weight indicates that the occupational group was under represented within the department/agency. For example, if the weight is 2, each person represents 2 persons in the population.

The weighting step calculates this number for each record. This weight must be used to derive estimates from the microdata file.

For example, if the number of respondents who “Strongly agree” with the statement “I am proud of the work carried out in my work unit” is to be calculated, it is done by selecting the records for those respondents (Q33 = 1) and summing the weights.

Note that the sum of the weights is equal to the total number of responses. That is, the weights do not sum to the population counts. Therefore when releasing demographic estimates, no statements to that effect can be made.

Note that no adjustment for non-response in small departments and agencies was done due to the number of small cells.

See Chapter 9.0 for the guidelines for tabulation, analysis and release.

7.6 Suppression of Confidential Information

It should be noted that the “Public Use” microdata files described above differ in a number of important respects from the survey “master” files held by Statistics Canada. These differences are the result of actions taken to protect the anonymity of individual survey respondents. Users requiring access to information excluded from the microdata files may purchase custom tabulations. Estimates generated will be released to the user, subject to meeting the guidelines for analysis and release outlined in Chapter 9.0 of this document.

In order to protect the confidentiality of respondents, the following actions were taken:

1) Suppression of some demographic and questionnaire variables.

   The following variables were not included in the public use microdata file:

DEPT	Department code
Q10	Shift worker
Q11	Full-time / Part-time status
Q68	Number of promotions in the past three years
Q69	Years at current group and level
Q95	Years in Public Service
Q96	Years in current department/agency
Q97	Employee status
Q98	Organizational unit code
Q102	First official language
Q103	Language requirements of the position
Q104	Service to the public
Q105	Language(s) of services to the public
Q107	Designated bilingual area
Q111	Professional designation
Q112	Aboriginal status
Q113	Disability status
Q114	Accessibility tools and/or alternate media resources
Q115	Visible minority status
Q116	1999 PSES respondent

2) Collapsing the answer categories of some variables.

   For the following variables, the answer categories were grouped in order to minimize sensitivity:

Q70M	Occupational group
Q71M	Salary range
Q106M	Province or territory of work
Q108M	Age group
Q110M	Level of education

   Please refer to the questionnaire for the actual categories before the collapsing.

3) Adding noise to the weights.

   The non-response adjustment was performed by occupational group, by department/agency. It would be possible to identify specific departments/agencies if the original weights were used. In order to eliminate this possibility, some random noise was applied to the weights while preserving the weight distribution.

4) Local suppression to eliminate cells with less than five respondents.

   Approximately 3% of the records were treated by local suppression, when there were fewer than 5 responses in any cell of a table when all possible combinations of all the demographic variables were cross tabulated. One or more of the demographic variables were treated by randomly assigning a “Not stated” code.

8.0 Data Quality

8.1 Response Rates – Departments and Agencies

The following table summarizes the response rates for all departments and agencies involved in the Public Service Employee Survey (PSES).

Department/Agency Name	Response Rate (%)
Agriculture and Agri-Food Canada	59
Atlantic Canada Opportunities Agency	81
Canada Industrial Relations Board	66
Canadian Artists and Producers Professional Relations Tribunal	60
Canadian Centre for Management Development	84
Canadian Dairy Commission	62
Canadian Environmental Assessment Agency	86
Canadian Forces Grievance Board	75
Canadian Grain Commission	58
Canadian Heritage	54
Canadian Human Rights Commission	68
Canadian Human Rights Tribunal	78
Canadian Intergovernmental Conference Secretariat	64
Canadian International Development Agency	58
Canadian International Trade Tribunal	38
Canadian Radio-television and Telecommunications Commission	55
Canadian Space Agency	53
Canadian Transportation Agency	75
Citizenship and Immigration Canada	51
Civil Aviation Tribunal	33
Commission for Public Complaints against RCMP	68
Commissioner of Official Languages	67
Communication Canada	65
Competition Tribunal	75
Copyright Board Canada	100
Correctional Service Canada	47
Economic Development Agency of Canada for the Regions of Quebec	68
Elections Canada	57
Environment Canada	57
Finance Canada	55
Fisheries and Oceans Canada	55
Foreign Affairs and International Trade	49
Hazardous Materials Information Review Commission	91
Health Canada	47
Human Resources Development Canada	61
Immigration and Refugee Board	67
Indian and Northern Affairs Canada	71
Industry Canada	63
International Joint Commission	42

Department/Agency Name	**Response Rate (%)**
Justice Canada	56
Law Commission of Canada	36
Military Police Complaints Commission	82
NAFTA Secretariat	63
National Archives of Canada	60
National Defence	46
National Farm Products Council	100
National Library of Canada	48
National Parole Board	84
Natural Resources Canada	56
Office of Infrastructure Canada	84
Office of the Commissioner for Federal Judicial Affairs	64
Office of the Secretary to the Governor General	35
Offices of the Information and Privacy Commissioners	58
Patented Medicine Prices Review Board	67
Privy Council Office	69
Public Service Commission of Canada	67
Public Works and Government Services Canada	66
Registry of the Federal Court of Canada	54
Royal Canadian Mounted Police (Public Service Employees)	57
Solicitor General of Canada	75
Statistics Canada	74
Status of Women Canada	74
Supreme Court of Canada	64
Tax Court of Canada	50
Transport Canada	66
Transportation Safety Board of Canada	79
Treasury Board of Canada Secretariat	70
Veterans Affairs Canada	84
Western Economic Diversification Canada	87
Overall Public Service Response Rate	**58**

8.2 Response Rates – Demographic Variables

Demographic	Sub-group	Response Rate (%)	% of Total Population	% of those who Responded
Age Group	Up to 29 years	59	11	11
	30 to 39 years	58	23	23
	40 to 49 years	58	37	38
	50 to 54 years	58	18	18
	55 years and over	50	11	10
	Total		**100**	**100**
First Official Language	English	55	69	66
	French	63	31	34
	Total		**100**	**100**
Occupational Group	Executive	69	2	3
	Scientific/Professional	55	15	15
	Administration and Foreign services	64	36	42
	Technical	56	10	10
	Administrative support	56	24	24
	Operational	28	13	6
	Total		**100**	**100**
Region	Atlantic	58	12	12
	National Capital Region	54	41	39
	Ontario	60	13	13
	Outside Canada	48	1	1
	Pacific	56	9	9
	Prairies including NWT and Nunavut	60	12	13
	Quebec	60	12	13
	Total		**100**	**100**
Gender	Male	52	47	43
	Female	62	53	57
	Total		**100**	**100**
Salary Range	Less than $30,000	109*	1	3
	$30,000 to $39,999	53	25	24
	$40,000 to $49,999	55	29	27
	$50,000 to $59,999	59	17	17
	$60,000 to $69,999	61	12	13
	$70,000 to $79,999	59	8	8
	$80,000 to $89,999	61	4	4
	$90,000 or more	59	4	4
	Total		**100**	**100**

* *The response rate of greater than 100% simply means more people reported having a salary of less than $30,000 than were listed as having this salary in the population file of employees provided by Treasury Board.*

8.3 Survey Errors

The Public Service Employee Survey is a census and therefore, there is no error due to sampling. However, the survey is subject to non-sampling errors such as non-response or other non-sampling errors that may occur at almost every phase of a survey operation. Respondents may make errors in answering questions, the answers may be incorrectly captured and errors may be introduced in the processing and tabulation of the data.

Quality assurance and control methods were implemented according to Statistics Canada's standard practices at each step of the data collection and processing cycle to monitor the quality of the data. These measures included focus group testing to detect problems of questionnaire design or misunderstanding of instructions, and using edit rules designed to detect missing, invalid or inconsistent data. Detailed specifics are described in Chapter 7.0, Data Processing.

9.0 Guidelines for Tabulation, Analysis and Release

This chapter of the documentation outlines the guidelines to be adhered to by users tabulating, analysing, publishing or otherwise releasing any data derived from the survey microdata files. With the aid of these guidelines, users of microdata should be able to produce the same figures as those produced by Statistics Canada and, at the same time, will be able to develop currently unpublished figures in a manner consistent with these established guidelines.

9.1 Rounding Guidelines

In order that estimates for publication or other release derived from these microdata files correspond to those produced by Statistics Canada, users are urged to adhere to the following guidelines regarding the rounding of such estimates:

a) Estimates in the main body of a statistical table are to be rounded to <u>the nearest hundred units</u> using the normal rounding technique. In normal rounding, if the first or only digit to be dropped is 0 to 4, the last digit to be retained is not changed. If the first or only digit to be dropped is 5 to 9, the last digit to be retained is raised by one. For example, in normal rounding to the nearest 100, if the last two digits are between 00 and 49, they are changed to 00 and the preceding digit (the hundreds digit) is left unchanged. If the last digits are between 50 and 99 they are changed to 00 and the preceding digit is incremented by 1.

b) Marginal sub-totals and totals in statistical tables are to be derived from their corresponding unrounded components and then are to be rounded themselves to the nearest 100 units using normal rounding.

c) Averages, proportions, rates and percentages are to be computed from unrounded components (i.e. numerators and/or denominators) and then are <u>to be rounded themselves to one decimal</u> using normal rounding. In normal rounding to a single digit, if the final or only digit to be dropped is 0 to 4, the last digit to be retained is not changed. If the first or only digit to be dropped is 5 to 9, the last digit to be retained is increased by 1.

d) Sums and differences of aggregates (or ratios) are to be derived from their corresponding unrounded components and then are to be rounded themselves to the nearest 100 units (or the nearest one decimal) using normal rounding.

e) In instances where, due to technical or other limitations, a rounding technique other than normal rounding is used resulting in estimates to be published or otherwise released which differ from corresponding estimates published by Statistics Canada, users are urged to note the reason for such differences in the publication or release document(s).

f) Under no circumstances are unrounded estimates to be published or otherwise released by users. Unrounded estimates imply greater precision than actually exists.

9.2 Weighting Guidelines for Tabulation

The Public Service Employee Survey (PSES) is a census; it is not a sample survey. Users producing simple estimates, including the production of ordinary statistical tables, must apply the proper weight.

If the weights are not used, the counts and percentages tabulated from the microdata file will not correspond to those produced by Statistics Canada.

Users should also note that some software packages may not allow the generation of estimates that exactly match those available from Statistics Canada, because of their treatment of the weight field.

9.2.1 Results from Scale-type Questions: Percentage of Favourable Response

The Public Service Employee Survey contains scale-type questions where the respondents are asked to rate their agreement or disagreement. The total number of responses is composed of "favourable" and "unfavourable" responses. Reporting the results in terms of the percentage of favourable responses is a standard practice that is widely used for scale-type surveys. This is because evaluating the results is easier when all of the favourable ratings on a question are combined into a single rating. In addition, the results from question to question are consistent.

The percentage of favourable responses is obtained by:

a) summing the weights of records having a favourable response to obtain the numerator $\left(\hat{X}\right)$,

b) summing the weights of all records having a response (do not include the “Not stated”) to obtain the denominator $\left(\hat{Y}\right)$,

c) dividing the numerator $\left(\hat{X}\right)$ by the denominator $\left(\hat{Y}\right)$,

d) multiply by 100, then

e) round to units.

For scale questions with more than three points on the scale, the favourable groups “Strongly agree” and “Mostly agree” may be grouped to obtain the percentage of favourable responses.

For example, for Question 19, “I receive useful feedback from my immediate supervisor on my job performance” the responses "Strongly agree" and "Mostly agree" should be grouped to obtain the percentage of favourable responses.

Caution should be taken when interpreting the favourable responses to a question that has a negative context. Analysis of the opposite end of the scale should be done for these questions.

For example, the percentage of favourable responses for Question 12 “I feel that the quality of my work suffers because of constantly changing priorities” are the percentage of responses to “Rarely or never”.

Results should be reported in terms of the percentage of favourable responses.

9.2.2 Tabulation of Scale-type Results

Estimates of the number of people with a certain characteristic can be obtained from the microdata file by summing the final weights of all records possessing the characteristic(s) of interest. Proportions and ratios of the form $\hat{X} / \hat{Y}$ are obtained by:

a) summing the final weights of records in the subgroup having the characteristic of interest to obtain the numerator $(\hat{X})$,

b) summing the final weights of all records having the characteristic of interest to obtain the denominator $(\hat{Y})$, then

c) dividing estimate a) by estimate b) $(\hat{X} / \hat{Y})$.

9.2.3 Percentage of Favourable Response: Evaluation Guidelines

Before releasing and/or publishing any estimate from the PSES users should first determine the data quality of the estimate. Data quality is affected by non-sampling errors as discussed in Chapter 8.0. Users should be sure to read this chapter to be more fully aware of the quality characteristics of these data.

The following table, extracted from William Davidson's (1979) *How to Develop and Conduct Successful Employee Attitude Surveys*, may be used as a guide to evaluate the percentage of favourable responses.

Favourable Response	Evaluation
90% or more	Highly meaningful favourable response
75% - 89%	Quite meaningful favourable response
65% - 74%	Suggestive of favourable response
35% - 64%	Requires further study
25% - 34%	Suggestive of unfavourable response
11% - 24%	Quite meaningful unfavourable response
10% or less	Highly meaningful unfavourable response

Davidson explained that the above table is based on the fact that favourable responses in the range of 35% to 64% do not show either favourable or unfavourable responses. It is clear that a 50% favourable response on an item indicates no trend whatsoever, as equal numbers of employees reacted both favourably and unfavourably. Questions that receive favourable responses in the 35% to 64% range should be further explored through, perhaps, follow-up discussions. Favourable response reactions below 34% indicate problem areas and may warrant immediate attention.

In addition, the number of respondents who contribute to the calculation of the percentage of favourable response should be determined. When comparing percentages, users should be cautious if the percentages are of different total quantities.

9.2.4 Impact of Local Suppression and Guidelines for Tabulation

Approximately 3% of the records were treated by local suppression when there were fewer than 5 responses in any cell of a table when all possible combinations of all demographic variables were cross tabulated. One or more of the demographic variables were treated by randomly assigning a "Not stated" code.

The impact of local suppression was that:

1) the percentage of "Not stated" increased by about 0.67% (approximately 630) for each of the 9 demographic variables. The percentage increase of the "Not stated" ranged from 0.60% to 0.75%, with 0.68% being the most frequent increase. The specific increase depends on the demographic variable. Note that local suppression was not always applied to the same records.

2) for tables of any two demographics with a response count greater than 200, there were no significant changes between the results before and after local suppression.

3) for tables of any three demographics involving the occupational demographic variable, there were no significant changes between the results before and after local suppression when the number of responses in the tables was greater than 200.

Users should be cautioned against analyzing tables when the number of responses is smaller than 200. This usually occurs for tables of subgroups formed of three or more demographic variables that include the occupational demographic variable.

It is strongly recommended that tables which involve three or more demographic variables be requested from Statistics Canada. These tables would be based on unsuppressed data, which would then be vetted for confidentiality prior to release.

9.2.5 Quantitative Results

Quantitative estimates are estimates of totals or of means, medians and other measures of central tendency of quantities based upon some or all of the members of the surveyed population. They also specifically involve estimates of the form $\hat{X} / \hat{Y}$ where $\hat{X}$ is an estimate of surveyed population quantity total and $\hat{Y}$ is an estimate of the number of persons in the surveyed population contributing to that total quantity.

The only question in the Public Service Employee Survey that provides quantitative results is Question 31 "In your current job, how many supervisors have you had in the last three years?". The responses to Q31 are one, two and three or more.

Estimates of the average number of supervisors per person are obtained by dividing the total weighted number of supervisors $\left(\hat{X}\right)$ by the weighted number of persons $\left(\hat{Y}\right)$. The numerator $\left(\hat{X}\right)$ is obtained by multiplying the value reported in Q31 by the final weight for the record, then summing this quantity over all the records of interest. The denominator $\left(\hat{Y}\right)$ is obtained by summing the weights of all records of interest.

For example, the average number of supervisors per person in the operational group is obtained by dividing the total weighted number of supervisors $(\hat{X})$ reported by persons in the occupational group, by the sum of the weights for the persons $(\hat{Y})$ in the operational group. Note that the “Not stated” responses are not included in either the numerator or denominator.

9.3 Other Types of Analysis

The opportunities for other types of statistical analysis (e.g., hypothesis testing, ANOVA, factor analysis) are numerous, particularly if a specialist is involved. It is beyond the scope of this paper to describe all the various possibilities. In order for results to be free from bias, the weights must be used.

The sequence in which survey findings are analysed usually follows some predetermined pattern. Typically general level results are produced first, followed by analysis at finer levels. For example, it may be useful to compare results across different occupational groups of employees. Further insight into the results can be gained by examining different tenure groups, by gender, by language, etc.

10.0 Weighting

The weight placed on each record of the microdata file for the Public Service Employee Survey (PSES) adjusts for the disproportionate response rates by occupational group within each federal department and agency. The calculation of the weight is described in Section 10.2.

10.1 Non-response Assessment

Total non-response can be a major source of non-sampling error in many surveys, depending on the degree to which respondents and non-respondents differ with respect to the characteristics of interest. Total non-response occurred when the employee did not participate in the survey or returned a completely blank questionnaire. The overall response rate was 58%. That is, the overall non-response rate was 42%. Total non-response was assessed by examining the representativeness of 11 primary demographic characteristics that were available in a separate file for all Federal Public Service employees from the Treasury Board Secretariat Incumbent System file.

Representativeness was assessed for occupation group, region, first official language, gender, age group, salary, disabled status, aboriginal status, visible minority status, province of employment and employment type. The distributions of the subgroups for the respondents and non-respondents of each of the characteristics were compared. Determining what difference between the two distributions is "large" and what is "small" is arbitrary. It was eventually decided that a relative difference of at least 20% would constitute a large difference.

This assessment showed that there were large differences in the two distributions by occupational group within the department/agency. These results in combination with the requirement that the 2002 PSES be comparable with the 1999 PSES, led to the decision to use the same non-response adjustment strategy in 2002 that was used in 1999. Therefore non-response adjustment weights were calculated for each respondent to compensate for those who did not respond. A random non-response mechanism was assumed.

10.2 Weighting Procedures

The weight placed on each record of the PSES microdata file adjusts for the disproportionate response rates by occupational group within each federal department and agency.

For each response in department/agency i and occupational group j, the weight $w_{i,j}$, is equal to:

$$w_{i,j} = \left(\frac{\sum_{t=1}^{6} n_{i,t}}{n_{i,j}} \right) \cdot \left(\frac{N_{i,j}}{\sum_{t=1}^{6} N_{i,t}} \right)$$

where:

$N_{i,j}$ is the number of people in department/agency i and occupational group j, and

$n_{i,j}$ is the number of respondents in department/agency i and occupational group j.

Another way of thinking about the weight is as the inverse of the proportion of the responses for occupational group i multiplied by the proportion of occupational group i in the population, in the department or agency j.

The following example illustrates the non-response weighting adjustment. The example shows that the weight adjusts the contribution of each sub-group to the total according to its population proportion. That is, the weight adjusts for the under or over representation of the sub-group responses, while preserving the response pattern proportion of the sub-group.

EXAMPLE: Non-response Adjustment Weight

Not Adjusted: Unweighted Survey Counts			
	Yes	**No**	**Total**
Subgroup A	20	180	200
Subgroup B	720	80	800
Total	**740**	**260**	**1,000**

Not Adjusted: Unweighted Survey Percentage Distributions			
	Yes	**No**	**Total**
Subgroup A	10.0%	90.0%	100.0%
Subgroup B	90.0%	10.0%	100.0%
Total	**74.0%**	**26.0%**	**100.0%**

	Population		**Respondents**	
	Count	**%**	**Rate**	**% Distribution**
Subgroup A	1,500	50.0%	13.3%	20.0%
Subgroup B	1,500	50.0%	53.3%	80.0%
Total	**3,000**	**100.0%**	**33.3%**	**100.0%**

Weight Adjustment		
Subgroup A	2.50	= (1,000 / 200) * (1,500 / 3,000)
Subgroup B	0.63	= (1,000 / 800) * (1,500 / 3,000)

Adjusted: Weighted Survey Counts			
	Yes	**No**	**Total**
Subgroup A	50	450	500
Subgroup B	450	50	500
Total	**500**	**500**	**1,000**

Adjusted: Weighted Survey Percentage Distributions			
	Yes	**No**	**Total**
Subgroup A	10.0%	90.0%	100.0%
Subgroup B	90.0%	10.0%	100.0%
Total	**50.0%**	**50.0%**	**100.0%**

11.0 Questionnaire

The file PSES2002_QuestE.pdf contains the English questionnaire.

12.0 Record Layout with Univariate Frequencies

See PSES2002_CdBk.pdf for the record layout with univariate counts.