



Microdata User Guide

PUBLIC SERVICE EMPLOYEE SURVEY

2005



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1.0 Introduction

The Public Service Employee Survey (PSES) was conducted by Statistics Canada from November to December 2005 with the cooperation and support of the Public Service Human Resources Management Agency of Canada. This manual has been produced to facilitate the manipulation of the microdata file of the survey results.

Any questions about the data set or its use should be directed to:

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2.0 Background

The first Public Service Employee Survey (PSES) was conducted in 1999 and was repeated in 2002. 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 and 2002 PSES.

As a follow-up to the 2002 PSES, the Public Service Human Resources Management Agency of Canada asked Statistics Canada to conduct a third 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 third Public Service Employee Survey took place in November and December of 2005. The 2005 PSES used an identical questionnaire to the 2002 survey.

As in the 2002 PSES, the 2005 survey will 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, 2002 and 2005 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 2005 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 and second surveys could be measured.

The results of the third 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 November 2005.

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 from November to December of 2005 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 November of 2005 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 included in 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
Canada School of Public Service
Canadian Artists & Producers Professional Relations Tribunal
Canadian Border Service Agency
Canadian Dairy Commission
Canadian Environmental Assessment Agency
Canadian Firearms Centre
Canadian Forces Grievance Board
Canadian Grain Commission
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
Commission for Public Complaints against RCMP
Competition Tribunal
Copyright Board of Canada
Correctional Service of Canada
Courts Administration Service
Department of Canadian Heritage
Department of Finance Canada
Department of Indian and Northern Affairs Canada
Department of National Defence

Department of Veterans Affairs Canada
Economic Development Agency of Canada for the Regions of Quebec
Elections Canada
Environment Canada
Fisheries and Oceans Canada
Foreign Affairs and International Trade Canada
Hazardous Materials Information Review Commission
Health Canada
Human Resources and Social Development Canada
Immigration and Refugee Board
Indian Residential Schools Resolution Canada
Industry Canada
Infrastructure Canada
International Joint Commission
Justice Canada
Law Commission of Canada
Library and Archives Canada
Military Police Complaints Commission
NAFTA Secretariat - Canadian Section
National Farm Products Council
National Parole Board
Natural Resources Canada
Office of the Commissioner for Federal Judicial Affairs
Office of the Commissioner of Official Languages
Office of the Secretary to the Governor General
Offices of the Information and Privacy Commissioners of Canada
Passport Canada
Patented Medicine Prices Review Board
Privy Council Office
Public Health Agency of Canada
Public Safety and Emergency Preparedness Canada
Public Service Commission of Canada
Public Service Human Resources Management Agency of Canada
Public Works and Government Services Canada
RCMP External Review Committee
Royal Canadian Mounted Police
Service Canada
Statistics Canada
Status of Women Canada
The Supreme Court of Canada
Transport Canada
Transportation Safety Board of Canada
Treasury Board of Canada Secretariat
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 2005 Public Service Employee Survey (PSES) was a follow-up survey to the 1999 and 2002 PSES. In order to ensure comparability between the 1999, 2002 and 2005 surveys, all questions from the 2002 PSES remained identical in the 2005 PSES.

In 2002, 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 Public Service Human Resources Management Agency of Canada approved the delivery of the third survey.

The final questionnaire was also provided to Canada Revenue Agency (CRA) to assist in CRA'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. Seventy-three departments and agencies participated in the survey of which twenty-one 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 November 2, 2005. 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 November 2 to December 20, 2005. The closing date for acceptance of questionnaires was January 20, 2006. 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 June 23, 2006 data tabulations from the 2005 Public Service Employee Survey (PSES), at the Public Service level were released. Department/agency and organization level tabulations were released also on June 23, 2006. 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 106,000 questionnaires received was done between November 2005 and January 2006. 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. Questionable zones method with 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 Question 100. 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.

Further verification was done to match the occupational group by department/agency from the Treasury Board pay file with the survey data. Where a significant number of occupational group records did not belong to the department/agency, the department/agency was consulted and when applicable, occupational group was recoded.

When data inconsistencies between questions were found, data were analyzed and depending on the answer, some data were eliminated. For example, an edit rule was applied that examined the consistency between Question 106 and Question 107. Where respondents coded their province of work as being Ontario (Q106 = 09) and working in the bilingual regions of Montréal, the Eastern Townships or the Gaspé area (Q107 = 1), their response to this latest question was eliminated (Q107).

7.3 Coding of Open-ended Questions

There were no open-ended questions in the PSES. Due to the large number of respondents (106,495), it would have been too difficult to capture, tabulate or analyze 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 the aggregate occupational group.

Simply put, if 20% of the employees in a department or agency are in a particular aggregate occupational group, then the weight ensures that this aggregate 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 aggregate occupational groups within each federal department/agency. For aggregate occupational groups that were over represented within the department/agency, the weights are smaller than one. For aggregate 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 aggregate 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.

The weights calculated for the PSES were not designed to inflate the respondents so that they represent the population. Non-response weighting adjustments were made to reduce non-response bias, but the weights add up to the number of respondents within each department/agency, not the population size. 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 small number of employees within the occupational groups in these departments and agencies.

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
Q010	Shift worker
Q011	Full-time / Part-time status
Q056	Victim of physical violence

Q057	From whom they experienced physical violence
Q060	Type of discrimination experienced
Q068	Number of promotions in the past three years
Q069	Years at current group and level
Q095	Years in Public Service
Q096	Years in current department/agency
Q097	Employee status
Q098	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

2) Collapsing the answer categories of some variables.

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

D070_M	Occupational group
Q071_M	Salary range
Q106_M	Province or territory of work
Q108_M	Age group
Q110_M	Level of education

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

3) Adding noise to the weights.

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 five 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 2005 Public Service Employee Survey (PSES).

Department/Agency Name	Response Rate
Agriculture and Agri-Food Canada	52.2%
Atlantic Canada Opportunities Agency	66.1%
Canada Industrial Relations Board	74.0%
Canada School of Public Service	60.3%
Canadian Artists & Producers Professional Relations Tribunal	54.5%
Canadian Border Service Agency	67.8%
Canadian Dairy Commission	82.3%
Canadian Environmental Assessment Agency	82.5%
Canadian Firearms Centre	84.0%
Canadian Forces Grievance Board	59.5%
Canadian Grain Commission	52.6%
Canadian Human Rights Commission	73.0%
Canadian Human Rights Tribunal	81.0%
Canadian Intergovernmental Conference Secretariat	52.4%
Canadian International Development Agency	58.6%
Canadian International Trade Tribunal	61.7%
Canadian Radio - Television and Telecommunications Commission	68.3%
Canadian Space Agency	85.4%
Canadian Transportation Agency	67.7%
Citizenship and Immigration Canada	67.2%
Commission for Public Complaints against RCMP	81.6%
Competition Tribunal	110.0%*
Copyright Board of Canada	111.1%*
Correctional Service of Canada	42.1%
Courts Administration Service	47.2%
Department of Canadian Heritage	64.0%
Department of Finance Canada	63.2%
Department of Indian and Northern Affairs Canada	71.8%
Department of National Defence	50.1%
Department of Veterans Affairs Canada	85.9%
Economic Development Agency of Canada for the regions of Quebec	80.1%
Elections Canada	46.4%
Environment Canada	56.2%
Fisheries and Oceans Canada	57.1%
Foreign Affairs and International Trade Canada	53.9%
Hazardous Materials Information Review Commission	79.2%
Health Canada	57.5%
Human Resources and Social Development Canada	64.4%
Immigration and Refugee Board	41.6%

Department/Agency Name	Response Rate
Indian Residential Schools Resolution Canada	55.6%
Industry Canada	67.4%
Infrastructure Canada	75.4%
International Joint Commission	46.7%
Justice Canada	53.6%
Law Commission of Canada	33.3%
Library and Archives Canada	57.5%
Military Police Complaints Commission	85.7%
NAFTA Secretariat - Canadian Section	37.5%
National Farm Products Council	69.2%
National Parole Board	71.4%
Natural Resources Canada	54.2%
Office of the Commissioner for Federal Judicial Affairs	70.7%
Office of the Commissioner of Official Languages	77.3%
Office of the Secretary to the Governor General	51.9%
Offices of the Information and Privacy Commissioners of Canada	58.8%
Passport Canada	70.5%
Patented Medicine Prices Review Board	39.5%
Privy Council Office	63.7%
Public Health Agency of Canada	55.3%
Public Safety and Emergency Preparedness Canada	64.6%
Public Service Commission of Canada	63.3%
Public Service Human Resources Management Agency of Canada	59.6%
Public Works and Government Services Canada	55.2%
RCMP External Review Committee	125.0%*
Royal Canadian Mounted Police	55.7%
Service Canada	61.9%
Statistics Canada	80.2%
Status of Women Canada	76.8%
The Supreme Court of Canada	57.2%
Transport Canada	68.8%
Transportation Safety Board of Canada	81.3%
Treasury Board of Canada Secretariat	56.0%
Western Economic Diversification Canada	89.3%
Overall Public Service Response Rate	58.9%

* The response rate of greater than 100% simply means more people responded to the survey in this department/organization than were listed as working for this department/organization in the population file of employees provided by Treasury Board.

8.2 Response Rates – Demographic Variables

Demographic	Sub-group	Response Rate (%)	% of Total Population	% of those who Responded
Age Group	29 years or less	59	10	10
	30 to 39 years	60	22	23
	40 to 49 years	59	34	35
	50 to 54 years	61	19	19
	55 years and over	52	15	13
	Total			100
First Official Language	English	55	69	67
	French	61	31	33
	Total		100	100
Aggregated Occupational Group	Executive	62	3	3
	Scientific/Professional	59	16	16
	Administration and Foreign services	62	42	46
	Technical	59	10	10
	Administrative support	60	19	19
	Operational	33	11	6
	Total			100
Region	Atlantic	58	11	11
	National Capital Region	59	41	42
	Ontario	58	13	13
	Outside Canada	42	1	1
	Pacific	58	9	9
	Prairies including N.W.T. and Nunavut	59	12	12
	Quebec	59	12	12
	Total			100
Gender	Male	54	46	43
	Female	62	54	57
	Total		100	100
Salary Range	Less than \$30,000	626*	0	1
	\$30,000 to \$39,999	58	8	8
	\$40,000 to \$49,999	55	26	24
	\$50,000 to \$59,999	55	28	27
	\$60,000 to \$69,999	64	12	13
	\$70,000 to \$79,999	58	12	11
	\$80,000 to \$89,999	67	6	7
	\$90,000 or more	58	8	8
	Total		100	100

8.3 Survey Errors

* 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.

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 the nearest hundred units 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 to be rounded themselves to one decimal 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 (\hat{X}) ,
- b) summing the weights of all records having a response (do not include the "Not stated") to obtain the denominator (\hat{Y}) ,
- c) dividing the numerator (\hat{X}) by the denominator (\hat{Y}) ,
- 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 12A. "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.

<u>Favourable Response</u>	<u>Evaluation</u>
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 five 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 0.76% (approximately 820) for each of the nine demographic variables. The percentage increase of the “Not stated” ranged from 0.59% to 0.71%. 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 demographic variable categories with a response count greater than 200, there were only four cases where the relative change between the results before and after local suppression was as high as 20%. Care should be taken when performing analysis on these four cells (as well as those with less than 200 records) as the results could be biased by the local suppression. These cells are:
 - employees of the Operational aggregated occupation group working in the National Capital Region,
 - employees of the Scientific/Professional aggregated occupational group with less than university education,
 - members of Public Service Alliance of Canada, Table 2 with at least university education, and
 - members of an “Other” bargaining unit with a low salary.
- 3) for tables of any three demographics involving the aggregated occupational group and the major bargaining unit, there were no differences of over 20% 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 (\hat{X}) by the weighted number of persons (\hat{Y}). The numerator (\hat{X}) 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 (\hat{Y}) 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 weights add up to the number of respondents within each department/agency, not the population size. 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 59%. That is, the overall non-response rate was 41%. 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.

This assessment showed that there were large differences in the two distributions by occupational group within the department/agency. In 1999 and 2002, the non-response weighting adjustments were calculated separately for the 28 largest departments/agencies within groups defined by aggregated occupational group. Finer groups were used in 2005 in an attempt to further improve the non-response adjustment. The groups were defined at the occupational group level, or collapsed within the aggregate occupation category when there were insufficient respondents.

Since 1999 and 2002, some departments/agencies have been reorganized and department/agency sizes have changed. In 2005, non-response adjustments were applied to the same 28 departments/agencies, plus departments/agencies with more than 1,000 employees on the Treasury Board Secretariat Incumbent System file (32 departments/agencies in 2005). The non-response adjustment weights were calculated for the respondents of these departments/agencies to compensate for those who did not respond.

Departments/Agencies which received non-response adjustments

Service Canada + Human Resources and Social Development Canada
Department Of National Defence
Correctional Service Of Canada
Fisheries And Oceans Canada
Health Canada
Public Works And Government Services Canada
Statistics Canada
Agriculture And Agri-Food Canada
Industry Canada
Environment Canada
Transport Canada
Citizenship And Immigration Canada
Foreign Affairs And International Trade Canada
Natural Resources Canada
Royal Canadian Mounted Police
Department Of Indian And Northern Affairs Canada
Department Of Veterans Affairs Canada
Justice Canada
Department Of Canadian Heritage
Public Service Commission Of Canada
Canadian International Development Agency
Immigration And Refugee Board
Department Of Finance Canada
Canadian Grain Commission
Treasury Board Of Canada Secretariat
Privy Council Office
Public Health Agency Of Canada
Passport Canada
Library And Archives Of Canada
Canada Border Service Agency

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 of these 32 federal departments and agencies.

The weights were calculated as follows for respondents in department/agency *i* and non-response group *j*:

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

$$w_{i,j} = \left(\frac{\sum_t n_{i,t}}{n_{i,j}} \right) \cdot \left(\frac{N_{i,j}}{\sum_t N_{i,t}} \right)$$

where:

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

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

Another way of thinking about the weight is as the inverse of the proportion of the responses for non-response group i multiplied by the proportion of non-response 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 PSES2005_QuestE.pdf contains the English questionnaire.

12.0 Record Layout with Univariate Frequencies

See PSES2005_CdBk.pdf for the record layout with univariate counts.