PUBLIC SERVICE EMPLOYEE SURVEY - 1999

USER GUIDE

Statistics Canada Statistique Canada

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1.0 Introduction

The Public Service Employee Survey (PSES) was conducted by Statistics Canada in May-June 1999 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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IT IS IMPORTANT FOR USERS TO BECOME FAMILIAR WITH THE CONTENTS OF THIS DOCUMENT BEFORE PUBLISHING OR OTHERWISE RELEASING ANY ESTIMATES DERIVED FROM THE MICRODATA FILE OF THE PUBLIC SERVICE EMPLOYEE SURVEY. **PLEASE PAY PARTICULAR ATTENTION TO THE CHAPTERS ON DATA QUALITY AND GUIDELINES FOR TABULATION, ANALYSIS AND RELEASE.**

2.0 Background

The effects of Program Review, government restructuring, increased workload and rapid technological advances have greatly affected federal Public Service employees. Recent studies and reports on specific segments of the federal Public Service had shown that low morale was prevalent among executives and knowledge workers and that many employees felt that workplace conditions were not conducive to confidence in management, job satisfaction and career advancement. Much additional information was required in order to further evaluate these findings and determine how the present workplace structure could be improved to meet the challenges facing it at the turn of the new millennium.

In 1997, the Clerk of the Privy Council introduced the idea of a voluntary survey of all federal Public Service employees (those identified in Schedule I, Part I of the *Public Service Staff Relations Act* and for whom Treasury Board is the employer). The Treasury Board Secretariat (TBS) was asked to implement the project. TBS worked in consultation with other key federal departments to develop a national survey that would gather information from all employees through a common questionnaire. As part of the project, Statistics Canada was asked to participate in the development and to collect and process the data.

3.0 Objectives

The primary objective of the survey is to obtain the views of all employees about their workplaces. The survey will provide a baseline against which future progress in renewing the workplace can be measured.

The information would allow managers and employees to initiate concrete actions in their own department, and where warranted, across the Public Service. The survey results will be used to develop actions at the level of the department, sector or branch and ultimately at the work unit level. The results would also serve as input to the future corporate management agenda.

4.0
Concepts and Definitions

The population for the survey included all employees for whom the Treasury Board Secretariat is the employer as defined in Schedule I, Part I of the *Public Service Staff Relations Act* as of May 1999. Some definitions were included on the questionnaire to ensure that all employees had the same understanding of the terms.

These were:

Work Unit: Your work unit includes yourself, your immediate supervisor, and your colleagues. (N.B. if you are a supervisor, do not include the employees you supervise).

Supervisor: Your immediate supervisor is the person who assigns you your work and/or evaluates your work performance.

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

5.0 Survey Methodology

The survey was a Census. That is, all employees in the Public Service, for which Treasury Board is the employer, were included as part of the target population and received a paper questionnaire to complete.

5.1 Population Coverage

The target population for the Public Service Employee Survey was all employees of the federal Public Service in May-June 1999 with the following exceptions:

1. Students,
2. Governor in council appointment
3. Minister's exempt staff

Because the survey was conducted as a paper questionnaire and because we could not control whether the above exclusions would receive a questionnaire, a category was added to the questionnaire to identify these people. These questionnaires were excluded at the time of processing.

5.2 List of Departments and Agencies

The following list indicates the participating departments and agencies:

Revenue Canada
Human Resources Development Canada
National Defence
Correctional Service of Canada
Fisheries and Oceans
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
Natural Resources Canada

Royal Canadian Mounted Police (Public Service Employees)
Indian Affairs and Northern Development
Veterans Affairs
Justice
Canadian Heritage
Public Service Commission
Canadian International Development Agency
Immigration and Refugee Board
Finance
Canadian Grain Commission
Treasury Board Secretariat
National Archives of Canada
Privy Council Office
National Library of Canada
Registry of the Federal Court of Canada
Canadian Radio-television and Telecommunications Commission
Atlantic Canada Opportunities Agency
Canadian Space Agency
Canada Economic Development Agency for the Regions of Québec
National Parole Board
Canadian Transportation Agency
Solicitor General
Transportation Safety Board of Canada
Elections Canada
Canadian Human Rights Commission
Office of the Commissioner of Official Languages
Office of the Coordinator Status of Women
Canadian Environmental Assessment Agency
Canadian Centre for Management Development
Western Economic Diversification
Office of The Governor General's Secretary
Offices of The Information And Privacy Commissioners
Canadian International Trade Tribunal
Canadian Dairy Commission
Canada Industrial Relations Board
Office of the Registrar of the Supreme Court of Canada
Registry of the Tax Court of Canada
Canada Information Office
Canadian Artists & Producers Professional Relations Tribunal
Canadian Intergovernmental Conference Secretariat
Civil Aviation Tribunal
Copyright Board
Hazardous Materials Information Review Commission
International Joint Commission
Nafta Secretariat - Canadian Section
National Farm Products Council
Office of The Commissioner For Federal Judicial Affairs
Patented Medicine Prices Review Board
Registry of The Competition Tribunal
The Leadership Network
Millenium Bureau of Canada

5.3 Organizational Units

An important objective of the survey was to provide all departments with information that would allow them to react to the feedback provided by their employees. To do so, all departments were asked to provide Statistics Canada with a list of units for which the data would be broken down. Some guidelines were provided to the departments and individual discussion took place to come up with a list that would satisfy the department needs and still ensure confidentiality of the data. A code list was prepared for each department and included in the envelope with the questionnaire. Employees were asked to indicate the unit where they worked at Q100 on the questionnaire. If there were at least 10 respondents for a unit, data could be published. Where there were less than 10 respondents, the department was asked to group the unit with another unit.

6.0 Data Collection

6.1 Questionnaire Design

The questionnaire content was determined by a committee including representatives of a number of departments. Questionnaires from employee surveys done by Statistics Canada, other federal departments and in other countries were used as input to the content. The draft questionnaire was submitted to the Committee of Senior Officers (COSO) for approval.

Focus groups were done across the country and included employees at various groups and levels as well as English and French groups. Comments from the focus groups were integrated in the questionnaire and a final layout was decided. The final draft was presented to COSO and approved. All Deputy Ministers were briefed on the content of the survey and asked to approve the project. The final questionnaire and project plan were presented to the Ministers responsible for approval.

As the department code was essential for the analysis of the data, it was decided that each department would receive their own questionnaire with their department code on the front page. Twenty-two small organizations were regrouped as one single department. Each organization was identified as an organizational unit. In addition, two organizations were coded under the small organization for collection, but later were separated. The Passport Office was treated as a small organization but was regrouped with Foreign Affairs and International Trade during processing. As well, the Offices of the Information and Privacy Commissioners were coded as a separate department during processing.

As the organizational unit lists were coded with the same department number, it was easier to ensure that the proper list of organizational units would accompany the right questionnaire. The list of organizational units and the questionnaire were included in the return envelope by the printer.

6.2 Data Collection

Each department was responsible to get the questionnaire to their employees. Each department was given the choice to get their questionnaires sent to one location or to give Statistics Canada a list of addresses and contacts for local distribution. It was suggested to the

departments to distribute the questionnaires at the same time as the pay stubs for the week of May 24th. However, the actual process was left to their own discretion. Once completed, the questionnaire was returned directly to Statistics Canada in a postage-paid return envelope.

All questionnaires received were divided by department and counted. The number of questionnaires received were captured and regular reports were given to TBS and departments. Questionnaires were checked to ensure that answers were present, identified by a sequence id on the cover page and batched in groups of 25 in preparation for data capture.

Only one manual edit was performed at the receiving phase. As the Organizational Unit code was critical to provide managers information for their unit, Q100 was browsed. In some cases, instead of writing the unit number, employees wrote the abbreviation letters of the unit. These questionnaires were put aside for further verification. The abbreviation was compared to the unit names of the department and when possible the proper unit number was written in Q100. When it was not possible to determine the proper unit number, a 'Not Stated' code was written.

The collection was extended until the end of July while the majority of questionnaires were received by the end of June. Departments were asked to remind their employees of the survey and asked them to return their questionnaires as soon as possible. Each department used a different approach to promote participation to the survey. Most used a letter from the Deputy Ministers and had information on their intranet site and other communications with their employees.

7.0 Data Processing

In November 1999, data tabulations were released at the Public Service level, department level and organizational units identified by the department. The microdata file being released contains data only at the Public Service level. This section presents a brief summary of the processing steps involved in producing this file.

7.1 Data Capture

The data capture of the 104,500 questionnaires received was done between June and August 1999. The capture was done using heads-down keying by a group of experienced operators. Standard quality control procedures were used to verify the error rate of the keying operations. Statistics Canada's minimum level of quality is an error rate of 3% when keying-in survey data. For the Public Service Employee Survey, it was determined that the error rate was less than one half of 1%.

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. An edit rule was applied that examined the flow of data from question 103 to 104. Any superfluous data was eliminated in the flow of data implied by the answer to question 103.

As well, two types of data inconsistencies were corrected. Approximately 2% (about 2000) inconsistent salary range and occupation group responses were treated by assigning a not stated value to the occupational group. 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 people coded their province of work as being Ontario or Québec while the NCR had a separate code. In other cases, when regions were identified separately, the department was consulted and when applicable, personnel in the Regions were recoded to a regional unit.

For Q58 "*In your current job, how many supervisors have you had over the last three years?* ", all responses with either 0, or 1 supervisor were grouped, and responses with greater than 5 were grouped with 5. That is, for Q58, the response group of "1" indicates 0 or 1 supervisors, and "5" for Q58 indicates 5 or more supervisors.

7.3 Weighting (Non-Response Adjustment)

The weight calculated for the Public Service Employee Survey adjusts for the disproportionate response rates by occupational group within each federal department. That is, the weight compensates for the over and under representation of occupational groups within each federal department. For occupational groups that were over represented within the department, the weights are smaller than one. For occupational groups that were under represented within the department, 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. 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 that strongly agreed with the statement *"I believe the work I do is important"* is to be calculated, it is done by selecting the records for those people (Q1 = 1) and summing the weights of those people.

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 that to that effect can be made.

Note further, that no adjustment for non-response for responses in small departments was done, due to the proportion of small cells in small departments. See Section 10.1 for further information.

See Section 7.4 for additional information regarding the weights.

See Section 9.1 for the guidelines for tabulation, analysis and release.

7.4 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' file 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 Section 9 of this document.

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

Suppression of some demographic variables

The following variables were completely suppressed from the microdata file:

- Department code (DEPT)
- Full-time / Part-time status (Q9)
- Years at current group and level (Q84)
- Years in current department (Q98)
- Employee status (Q99)
- Organizational unit code (Q100)
- Language requirement of the position (Q102)
- Language of service to the public (Q104)
- Aboriginal status (Q110)
- Disability status (Q111)
- Visible minority status (Q112)

Collapsing answer categories of some other variable

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

- Salary ranges (Q83M)
- Number of promotions (Q85M)
- Tenure in the Public Service (Q97M)
- Province of work (Q105M)
- Age groups (Q106M)
- Education (Q108M)

Please refer to the record layout for the actual categories before and after the collapsing.

Special suppression for the Executive Group:

Because of the small size of the Executive group, only a few demographic variables were kept for this group (the other variables were put to "not stated" for all executives). The variables available for this group are:

- Salary range (Q83M)
- Province of work (Q105M)
- Age groups (Q106M)
- Gender (Q107)

See Section 9.2.4 for summary of information for Executive Group.

Adding noise to the Weights:

The non response adjustment was performed by occupational groups by department. Therefore, the original weights could be used to identify specific departments. In order to eliminate this possibility, we applied some random noise to the weights while preserving the weight distribution.

Local suppression to eliminate the cells with less than 5 respondents:

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

8.0 Data Quality

A number of sources had to be used to determine the response rates for the Public Service Employee Survey. While the Treasury Board Secretariat (TBS) provided the Incumbent System file containing information on the Public Service employees such as department, age, gender, occupational groups, first official language, region and salary, these population counts were sometimes inconsistent with those provided by individual departments. The data on the overall response rates by department were therefore based on information provided by the department.

The response rates for each demographic mentioned above were based on the population counts provided by the department, while using the TBS distributions of the subgroups for each demographic. That is, the percentage breakdown of the total population is based on the counts for the file obtained from the Treasury Board Secretariat Incumbent System.

8.1 Response Rates - Departments and Agencies

The following table indicates the responses rates for all departments and agencies involved in the survey.

Department Name	*Response rate (%)*
REVENUE CANADA	57%
DEPARTMENT OF HUMAN RESOURCES DEVELOPMENT	54%
DEPARTMENT OF NATIONAL DEFENCE	43%
CORRECTIONAL SERVICE OF CANADA	43%
DEPARTMENT OF FISHERIES AND OCEANS	60%
HEALTH CANADA	48%
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	66%
STATISTICS CANADA	68%
AGRICULTURE AND AGRI-FOOD CANADA	54%
DEPARTMENT OF INDUSTRY	52%
ENVIRONMENT CANADA	60%
TRANSPORT CANADA	49%
CITIZENSHIP AND IMMIGRATION CANADA	60%
DEPARTMENT OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE	47%
DEPARTMENT OF NATURAL RESOURCES	55%
ROYAL CANADIAN MOUNTED POLICE (CIVILIAN STAFF)	53%
DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT	67%
DEPARTMENT OF VETERANS AFFAIRS	49%
DEPARTMENT OF JUSTICE	50%
DEPARTMENT OF CANADIAN HERITAGE	66%
PUBLIC SERVICE COMMISSION	66%
CANADIAN INTERNATIONAL DEVELOPMENT AGENCY	63%
IMMIGRATION AND REFUGEE BOARD	52%
DEPARTMENT OF FINANCE	59%
CANADIAN GRAIN COMMISSION	50%
TREASURY BOARD (SECRETARIAT)	77%
NATIONAL ARCHIVES OF CANADA	62%
PRIVY COUNCIL OFFICE	66%
NATIONAL LIBRARY OF CANADA	55%
REGISTRY OF THE FEDERAL COURT OF CANADA	57%
CANADIAN RADIO-TELEVISION AND TELECOMMUNICATIONS COMMISSION	59%
ATLANTIC CANADA OPPORTUNITIES AGENCY	61%
CANADIAN SPACE AGENCY	57%
CANADA ECONOMIC DEVELOPMENT AGENCY FOR QUEBEC REGION	60%
NATIONAL PAROLE BOARD	70%
CANADIAN TRANSPORTATION AGENCY	57%
DEPARTMENT OF THE SOLICITOR GENERAL	58%
TRANSPORTATION SAFETY BOARD OF CANADA	64%
ELECTIONS CANADA	63%
CANADIAN HUMAN RIGHTS COMMISSION	67%
OFFICE OF THE COMMISSIONER OF OFFICIAL LANGUAGES	75%
OFFICE OF THE COORDINATOR STATUS OF WOMEN	59%
OFFICE OF THE INFORMATION AND PRIVACY COMMISSIONERS	58%
CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY	73%

Department Name	*Response rate (%)*
CANADIAN CENTRE FOR MANAGEMENT DEVELOPMENT	90%
CANADIAN INTERNATIONAL TRADE TRIBUNAL	57%
CANADIAN DAIRY COMMISSION	43%
CANADIAN INTERGOVERNMENTAL CONFERENCE SECRETARIAT	70%
CANADA INFORMATION OFFICE	77%
CANADA LABOUR RELATIONS BOARD	48%
OFFICE OF THE COMMISSIONER FOR FEDERAL JUDICIAL AFFAIRS	60%
OFFICE OF THE GOVERNOR GENERAL'S SECRETARY	52%
INTERNATIONAL JOINT COMMISSION	47%
PATENTED MEDICINE PRICES REVIEW BOARD	77%
OFFICE OF THE REGISTRAR OF THE SUPREME COURT	48%
REGISTRY OF THE TAX COURT OF CANADA	61%
DEPARTMENT OF WESTERN ECONOMIC DIVERSIFICATION	55%
MILLENIUM BUREAU	35%
Overall Public Service Response Rate	55%

8.2 Response Rate - Demographic Variables

Demographic	Sub-group	Response Rate	% of Total Population	% Responded
Age Group	Up to 29 years	50%	9%	8%
	30 - 39 years	54%	28%	27%
	40 - 49 years	57%	41%	42%
	50 - 54 years	56%	14%	15%
	55 years and over	46%	8%	7%
	Not Stated			1%
	Total	**55%**	**100%**	**100%**
First Official Language	English	53%	70%	68%
	French	59%	30%	32%
	Not Stated		0%	0%
	Total	**55%**	**100%**	**100%**
Occupational Group	Executive	66%	2%	2%
	Scientific/Professional	57%	14%	14%
	Admin. & Foreign services	57%	39%	41%
	Technical	55%	8%	8%
	Administrative support	51%	27%	25%
	Operational	26%	11%	5%
	Not Stated		0%	5%
	Total	**55%**	**100%**	**100%**

Demographic	Sub-group	Response Rate	% of Total Population	% Responded
Region	Atlantic Canada	52%	12%	11%
	National Capital Region	56%	35%	35%
	Ontario	54%	16%	16%
	Outside Canada	43%	1%	1%
	Pacific Canada	50%	10%	9%
	Prairies including NWT and Nunavut	55%	13%	13%
	Quebec	55%	13%	13%
	Not Stated			1%
	Total	**55%**	**100%**	**100%**
Gender	Male	52%	47%	44%
	Female	57%	53%	55%
	Not Stated		0%	1%
	Total	**55%**	**100%**	**100%**
Salary	Up to $30,000	53%	13%	12%
	$30,000 to $39,999	51%	34%	32%
	$40,000 to $49,998	55%	25%	25%
	$50,000 to $59,999	58%	13%	14%
	$60,000 and over	61%	15%	16%
	Not Stated			1%
	Total	**55%**	**100%**	**100%**

8.3 Survey Errors

The Public Service Employee Survey is a census. There is therefore no error due to sampling variability. However, the survey is subject to non-sampling errors due to non-response, or those may occur at almost every phase of a survey operation. Respondents may make errors in answering questions, the answers may be incorrectly data 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 data or inconsistent data. Detailed specifics are described in Chapter 7, Data Processing.

8.4 Total Non-response

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. There were approximately 2,000 completely blank questionnaires.

Total non-response was assessed by examining the representativity of six characteristics: occupation group, region, first official language, gender, age group and salary. Table 2 (section 8.1) shows these characteristics of the respondents and the population of Public Service indeterminate and term employees. The percentage breakdown of the total population is based on the counts for the end of May 1999 obtained from the Treasury Board Secretariat Incumbent System.

Generally, as may be seen from Table 2, the profile of the respondents is quite close to the population. Details of the methods used to examine the non-response may be found in (Chapter 11). The assessment showed that there was substantial under and over representation by occupational group within department. Therefore non-response adjustment weights were calculated for each respondent to compensate for those that did not respond.

8.5 Partial Non-response

Partial non-response to the survey occurred when the respondent did not answer a question, or the information was not consistent with other questions on the questionnaire. Partial non-response is indicated by 'Not Stated' codes on the microdata file.

9.0 Guidelines for Tabulation, Analysis and Release

This section 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 tens 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 10, if the last two digits are between 0.0 and 4.9, they are changed to 0 and the preceding digit (the hundreds digit) is left unchanged. If the last digits are between 5.0 and 9.9 they are changed to 0 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 tens 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 units using normal rounding.

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 tens (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 is a census, it is not a sample survey. When producing simple estimates, including the production of ordinary statistical tables, users must apply the proper weight.

If the weights are not used, the counts and percentages tabulated from the micro-data file cannot be considered to be representative of the survey population, and 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: Per cent 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 are composed of "favourable" and "unfavourable" responses. Reporting the results in terms of the per cent of favourable response 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 per cent of favorable responses is obtained by:

a) summing the weights of records having the favourable response for the numerator (X),

b) summing the weights of all records having a response (do not include the "not stated" for the numerator (Y),

c) dividing the numerator (X) by the denominator (Y),

d) multiply by 100,

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 per cent of favorable responses.

For example, for Q24 *"I know what my immediate supervisor expects of me in my job."* the responses to *"strongly agree"* and *"mostly agree"* should be grouped to obtain the per cent of favourable response.

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 per cent favourable response for Q11 *"I feel that the quality of my work suffers because of constantly changing priorities."* are the per cent of responses to "rarely or never".

Results should be reported in terms of the per cent of favorable response.

9.2.2 Tabulation of Scale Type Results

The Public Service Employee survey is a census, it is not a sample survey. When producing simple estimates, including the production of ordinary statistical tables, users must apply the proper weight.

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 X/Y are obtained by:

(a) summing the final weights of records in the subgroup having the characteristic of interest for the numerator (X),

(b) summing the final weights of all records having the characteristic of interest for the denominator (Y), then

(c) dividing the numerator estimate by the denominator estimate.

9.2.3 Impact of Local Suppression and Guidelines for Tabulation

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

The impact of local suppression was that:

- the percentage of 'Not Stated' increased by about 1% (approximately 1000) for each of the eleven demographic variables. The percentage increase of the 'Not Stated' ranged from 1.2% to 1.8%, with 1.2% being the most frequent increase. The specific increase depends on the demographic variable. Note that the local suppression was not applied to always the same records.

- for tables of any two demographics with a response count greater than 500, there were no changes greater than 5% between the results before and after local suppression. That is, there were changes between 3 and 5% for 0.18% of the time, and less than or equal to 3% change for 99.82% of the time.

- for tables of any three demographics involving the occupational demographic variable, there were no changes between the results before and after local suppression greater than 5% for tables with a response count greater than 500. That is, there were changes between 3 and 5% for 0.14% of the time, and less than 3% change for 99.86% of the time.

The following example illustrates the impact of local suppression for response counts greater than 500:

Subgroup: Administrative and Foreign Services, Age less than 39, Salary less than $40,000

Question 10: I am satisfied with my current work arrangements (i.e., regular hours, telework, compressed work week, etc.).

		Percentage		
	Number of Responses	Yes	No	Not Stated
Before	5440	85	14	1
After	5330	85	14	1

Users should **not** analyse tables when the number of responses is smaller than 500. This usually occurs for tables of subgroups formed of three or more demographic variables that include the occupational demographic variable.

Note that 500 respondents is approximately one-half of one percent of the total number of respondents. It is felt that any result based on a group smaller than this implies an accuracy that is not warranted, given that the survey is subjective in nature (an opinion survey).

Thus, in order to get meaningful and accurate information for a subgroup involving two or more demographics there should be at least 500 respondents for that table. This is especially so for tables involving all occupational subgroup except the Administrative and Foreign Services.

The following example illustrates why.

EXAMPLE: Impact of Local Suppression for Response Counts smaller than 500

Occupation = Operational, Region = National Capital Region, and Number of promotions >1.

Question 94: In my department, I feel that management does a good job of sharing information.

		Percentage						
	Number of Responses	Strongly Agree	Mostly Agree	Mostly Disagree	Strongly Disagree	Don't Know	Not Applicable	Not Stated
Before	150	15	30	35	15	5	0	0
After	15	0	75	25	0	0	0	0

It is strongly recommended that users request tables involving three or more demographic variables from STC. These tables will be based on unsuppressed data, which would then be vetted for confidentiality protection prior to release.

9.2.4 Demographic Variables - Executive Group

For the executive subgroup of the Occupational demographic variable, gender, age, region and salary are not suppressed. Number of promotions, PSC Tenure, Supervisor, Provide Services to Public, Education, and First official language demographic variables have been suppressed to prevent complementary disclosure. Summary information for these variables follows:

Number of promotions in past 3 years	
None	55%
At least one	44%
Not stated	1%
PSC Tenure	
Less than 10 years	7%
10 or more years	93%
Not stated	<1%
Supervisor	
Yes	95%
No	5%
Not stated	<1%
Provide Services to Public	
Yes	58%
No	41%
Not stated	1%
Education	
High School, College or less	5%
University or more	95%
Not stated	<1%
First official language	
English	72%
French	27%
Not stated	1%

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 Survey that provides quantitative results is Q58 "*In your current job, how many supervisors have you had over the last three years?*"

Estimates of the average number of supervisors per person are obtained by dividing the total weighted number of supervisors (X) by the weighted number of persons (Y). The numerator (X) is obtained by multiplying the value from 1 to 5 by the weight of each record of interest, then summing this quantity over all the records of interest. The denominator (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 weighted total number of supervisors (X) reported by persons in the occupational group, by the sum of the weights for the persons (Y) in the operational group. Note that the "not stated" 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 analyzed 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 sex, by language, and so on.

9.4 Per Cent of Favourable Response: Evaluation Guidelines

Before releasing and/or publishing any estimate from the Public Service Employee Survey users should first determine the data quality of the estimate. Data quality is affected by non-sampling errors as discussed in section 8. Users should be sure to read this section 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 evaluating the percentage of favorable response.

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

Davidson explained that the above table is based on the fact that favorable responses in the range of 35-64 per cent do not show either favourable or unfavourable responses. It is clear that a 50 per cent favorable response on an item indicates no trend whatsoever, as equal numbers of employees reacted both favorably and unfavorably. Questions that receive favorable response in the 35-64 per cent range should be further explored through perhaps, follow-up discussions. Favorable response reactions below 34 per cent 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.

10.0 Weighting

The weight placed on each record of the micro-data file adjusts for the disproportionate response rates by occupational group within each federal department. 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 55%. That is, the overall non-response rate was 45%. Total non-response was assessed by examining the representativity of six primary demographic characteristics that were available in a separate file for all federal public service employees from the Treasury Board Secretariat Incumbent System file.

Representativity was assessed for occupation group, region, first official language, gender, age group and salary, by using the χ^2 (chi–square) test. The distributions of the subgroups for the respondents and non-respondents of each of the characteristics were compared. The hypothesis being tested was whether the two distributions of respondents and non-respondents are the same. The hypothesis was rejected when the χ^2 statistic, with the associated degrees of freedom, was so large that the probability that it occurred by chance was less than .001.

The χ^2 test was also used to determine if the response pattern for each characteristic for 25 PSES survey questions were statistically significant. The hypothesis being tested was whether the subgroups for each characteristic had the same response distribution.

The assessment showed that there was substantial under and over representation by occupational group within department. Therefore non-response adjustment weights were calculated for each respondent to compensate for those that did not respond. A random non-response mechanism was assumed.

Due to the proportion of small cells, the χ^2 test was not a valid test for the smaller departments. Therefore no weight adjustment for non responses was done for the small departments, that is the weight for each response in a small departments is equal to one. That is no adjustment for non-response was done for small departments.

10.2 Weighting Procedures

The weight placed on each record of the micro-data file adjusts for the disproportionate response rates by occupational group within each federal department.

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

$$w_i = \left(\frac{\sum_{i=1}^{6} n_i}{n_i} \right) * \left(\frac{N_i}{\sum_{i=1}^{6} N_i} \right)$$

That is, for department *j*, the weight $w_{i,}$ for each response is equal to the inverse of the proportion of the responses for occupational group *i* multiplied by the proportion of occupational group *i* in the population.

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	1000

Not Adjusted: unweighted

Survey %'s	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	% dist
Subgroup A	1500	50.0%	13.3%	20.0%
Subgroup B	1500	50.0%	53.3%	80.0%
total	3000	100.0%	33.3%	100.0%

Weight Adjustment		
Subgroup A	**2.50**	= (1000/200)*(1500/3000)
Subgroup B	**0.63**	= (1000/800)*(1500/3000)

Adjusted: weighted

Survey Counts	Yes(adj)	No(adj)	Total(adj)
Subgroup A	50.0	450.0	500.0
Subgroup B	450.0	50.0	500.0
total	500.0	500.0	1000.0

Adjusted: weighted

Survey %'s	Yes(adj)	No(adj)	Total(adj)
Subgroup A	10.0%	90.0%	100.0%
Subgroup B	90.0%	10.0%	100.0%
total	50.0%	50.0%	100.0%

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 that to that effect can be made.

Note further, that no adjustment for non-response for responses in small departments was done, due to the proportion of small cells in small departments. See Section 10.1 for further information.

11.0 Questionnaire

The file ‘Pses99_QuestE.pdf’ contains the English Questionnaire.

12.0
Record Layout and Univariate Counts

The file ‘LayoutEng.pdf’ contains the English detailed record layout and univariate counts.