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MEMBERS OF EMPLOYMENT EQUITY GROUPS: CHANCES OF PROMOTION



A STATISTICAL STUDY CONDUCTED BY THE
PUBLIC SERVICE COMMISSION OF CANADA

MARCH 2014

Canada

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Highlights

The Public Service Commission of Canada (PSC) committed to conducting a study on employment equity (EE) in the public service with a special emphasis on persons with disabilities. This commitment is reflected in the PSC's 2011-2012 Annual Report. This undertaking falls under the PSC's mandate as per the *Public Service Employment Act* and the *Employment Equity Act*.

This study consists of an analysis of promotions of members of EE groups based on the public service workforce as of June 30, 2010, and on staffing activities concluding between July 1, 2010, and June 30, 2011. It shows that EE status has an impact on chances of promotion even when other individual and institutional factors – such as years of service and organization – are controlled for. It is a companion to the study *Members of Employment Equity Groups: Perceptions of Merit and Fairness in Staffing Activities*, which shows that EE status has an impact on perceptions of merit and fairness in staffing activities.

When the chances of promotion of EE men and women are compared with those of their respective comparison groups (men or women who have not self-identified as an Aboriginal person, a person with disabilities or a member of a visible minority), the findings indicate that:

- ▶ Men who are members of visible minorities have greater chances of promotion than their comparison group, and women who are members of visible minorities have fewer chances of promotion than their comparison group;
- ▶ Men and women with disabilities have fewer chances of promotion than their respective comparison groups;
- ▶ Aboriginal men and women have similar chances of promotion than their respective comparison groups; and
- ▶ Women who do not belong to another EE group have similar chances of promotion to men who do not belong to other EE groups.

Persons with disabilities are not like the other designated groups. Disabilities can be acquired over the course of a life. Because of this, age is a critical factor in understanding the chances of promotion of persons with disabilities and their perceptions of merit and fairness in staffing activities. Only one quarter of persons with disabilities report their disability within the first two years of public service; the rest report it over the course of their career.

This study confirms that men and women with disabilities have fewer chances of promotion than their comparison groups. The reasons for this remain unknown. However, this finding may suggest heterogeneity in unobservable characteristics within the group of persons with disabilities that may not apply to Aboriginal Peoples and members of visible minorities. Further research on the career path of persons with disabilities may shed light on the potential barriers to their promotion. This difference highlights the fact that the impact of EE status varies depending on EE group and thus supports the need to study each EE group separately.

The results of the study apply to the reference period covered in the analysis. The PSC cautions against making any generalizations for periods other than that of the study, since these results represent a single snapshot in time. Given the importance of these findings, the PSC is undertaking more detailed work in 2013-2014 to both update the results of the studies and take a deeper look at the career progression of EE groups. This will enable the PSC to determine more precisely whether these results represent a trend.

Introduction

About the Public Service Commission

The mandate of the Public Service Commission (PSC) is to promote and safeguard merit-based appointments and, in collaboration with other stakeholders, to protect the non-partisan nature of the public service. The PSC reports independently on its mandate to Parliament.

Under the delegated staffing system set out in the *Public Service Employment Act* (PSEA), the PSC fulfills its mandate by providing policy guidance and expertise, as well as by conducting effective oversight. In addition, the PSC delivers innovative staffing and assessment services.

Issue

The PSC committed to conducting a study on employment equity (EE) in the public service with a special emphasis on persons with disabilities. This commitment was reflected in the PSC's 2011-2012 Annual Report. This undertaking falls under the PSC's mandate as per the PSEA and the *Employment Equity Act* (EEA).

The Preamble of the PSEA states that Canada will continue to benefit from a public service that is representative of Canada's diversity. Under the EEA, the PSC, as a co-employer of the public service, must identify and eliminate employment barriers in the appointment system for the four EE designated groups; develop positive policies and practices; and provide reasonable accommodation to create a representative public service.

Objective of the study

The study aims to determine whether there is a significant difference between promotions of EE group members and their respective comparison groups.

Methodology

The analysis is based on the public service workforce as of June 30, 2010, and on staffing activities between July 1, 2010, and June 30, 2011. The results of the study apply to the reference period covered in the analysis. The PSC cautions against making any generalizations for periods other than that of the study, since these results represent a single snapshot in time. Given the importance of these findings, the PSC is undertaking more detailed work in 2013-2014 to both update the results of the studies and take a deeper look at the career progression of EE groups. This will enable the PSC to determine more precisely whether these results represent a trend.

The methodology is based on the following comparisons:

- ▶ The chances of promotion of Aboriginal men, men with disabilities and men who were members of visible minorities were compared with those of men who did not belong to any EE group¹;
- ▶ The chances of promotion of Aboriginal women, women with disabilities and women who were members of visible minorities were compared with those of women who did not belong to another EE group; and
- ▶ The chances of promotion of women who did not belong to another EE group were compared with those of men who did not belong to any EE group.

To clarify analysis, individuals belonging to more than one group were excluded from this analysis, except, of course, for women. Thus, the groups compared are mutually exclusive.

A binary logistic regression model was used to test the differences in EE groups' chances of promotion. This analysis used two sources of information: the Employment Equity Data Bank (EEDB); and the Job-based Analytical Information System. The information on EE status was gathered from the EEDB.

In determining whether there were differences between EE groups and their respective comparison groups, a number of factors, such as years of service, were controlled for; that is, their possible influence was removed so that the effect of belonging to an EE group was isolated. The lists of these factors are found in Appendix 2.

The study has limitations inherent to the data and the statistical model. While the model allows for the determination of whether there is a difference between EE groups and their respective comparison groups, it does not explain why these differences exist. Further, the model operates on the assumption that a number of relevant — but unobservable — factors, such as skills and desire for promotion, are randomly distributed among EE groups.

Independent external review

The study underwent an external peer review. An academic expert in the area of labour economics confirmed the applicability and accuracy of the methodology and findings.

¹ From this point on, “belonging to an EE group” means persons who have self-identified as a woman, an Aboriginal person, a person with disabilities and/or a member of a visible minority as described in the EEA; “not belonging” means persons who have not self-identified.

Employment equity group profiles

This section presents a brief overview of the characteristics of the members of EE groups in the public service and provides a context for the analysis of promotions. Here we present a description of characteristics distinguishing men and women within each group. The results of the logistic regression analysis comparing EE men and women with their respective comparison groups are presented after this section. Appendix 4 provides a comparison across all groups. Note that rates of promotion, as presented here, are simple ratios. Chances of promotion, discussed later, are estimated through a logistic regression that controls for a number of factors.

On June 30, 2011, the annual promotion rate for the PSEA population in indeterminate positions, or in specified term positions of more than six months, was 8.6%. Table 1 of Appendix 4 provides an overview of the public service workforce based on promotions, obtained during the period of July 1, 2010, to June 30, 2011.

Aboriginal Peoples

Aboriginal men and women in the public service have similar promotion rates — around 8%. The average age for each group is 43. The proportion of Aboriginal women who identified English as their first official language is 75.5%, compared to 79.1% of Aboriginal men. A little over 30% of Aboriginal women held bilingual positions in the public service (versus 27.4% for Aboriginal men). A little over one third (35.7%) of the positions held by Aboriginal women are located in the National Capital Region (NCR), compared to 32.6% of positions held by Aboriginal men.

Members of visible minorities

The promotion rates for members of visible minorities in the public service are 10.2% for women and 9.8% for men. The average age of women who are members of visible minorities is 40, compared to 42 for men in the same EE group. Close to 81% of men and women who are members of visible minorities report English as their first official language. Women who are members of visible minorities hold bilingual positions within the public service at a rate of 34.8%, compared to 30.9% of men. Close to half of women (49.5%) and men (51.6%) who are members of visible minorities have positions in the NCR.

Persons with disabilities

The promotion rate of the persons with disabilities group in the public service is 6.6% for women and 5.2% for men. The average age of women with disabilities is 48, compared to 49 for men. Close to three quarters (73.3%) of women with disabilities identified English as their first official language, compared to 79.2% of men. The proportion of women with disabilities who hold bilingual positions in the public service is 39%, compared to 30% of men. Over 40% of persons with disabilities hold positions in the NCR (46.8% for women and 43.1% for men).

Recruitment is not the only factor contributing to the representation of persons with disabilities in the public service. Persons with disabilities tend to identify themselves as members of this EE group after being hired as public servants, rather than when they are recruited. An estimated 25% of persons with disabilities report being members of this EE group in the two years following their hiring; the other 75% report being members of this group sometime during the remainder of their career. One third of all persons with disabilities identify themselves as members of this EE group after 15 or more years of service.

Women not belonging to another employment equity group

Women not belonging to another EE group in the public service have a promotion rate of 9%, compared to 8.2% for men not belonging to an EE group. The average age of women is 43, compared to 44 for men. Some 62.9% of women identified English as their first official language (compared to 69.3% for men). Close to half of the women (47.3%) hold bilingual positions in the public service, compared to 37.2% of the men. The proportion of women who hold positions in the NCR is 48%, compared to 42.3% for men.

Promotions of employment equity members

A binary logistic regression model (promotion versus non-promotion) was used to estimate the annual chances of promotion for employees holding indeterminate positions, or specified term positions of 6 months or longer, on July 1, 2010.² For each EE group, a null hypothesis was constructed that “there is no difference in the promotions” for EE group members compared to their respective comparison groups, that is, men and women who do not belong to an EE group.

The comparisons are based on the significance of odds ratios. In this study, the odds ratio measures the relative probability that an EE group receives a promotion, compared to the relative probability of the comparison group receiving one. An odds ratio of 1.0 indicates with certainty that there is no difference in the chances of promotion between the groups compared. Unless otherwise indicated, the results have a significance level of 1%.

Other than EE status, this model accounts for (controls for) the impact of first official language, language requirements of the position, region of the current position, years of service in the substantive position and starting salary in the public service. This last consideration acts as a control variable representing the conditions of employment at the career outset, for example, employability. The organization and professional group of each employee on July 1, 2010, were also taken into consideration to measure the institutional effects on chances of promotion.

The analysis is based on hypotheses constructed to compare the chances of promotion of the following groups:

- Aboriginal men, men with disabilities and men who are members of visible minorities compared to men who do not belong to an EE group;
- Aboriginal women, women with disabilities and women who are members of visible minorities compared to women who do not belong to an EE group; and
- Women and men who both do not belong to an (other) EE group.

Results

The analysis suggests that Aboriginal men and women have similar chances of promotion to their respective comparison groups.

Men and women with disabilities have fewer chances of promotion than their respective comparison groups. The odds ratio is 0.61 for men and 0.72 for women.

Men who are members of visible minorities have greater chances of promotion than their comparison group; women who are members of visible minorities have fewer chances of promotion than their comparison group. The promotion odds ratio for men who are members of visible minorities is 1.10; the ratio for women is 0.94.

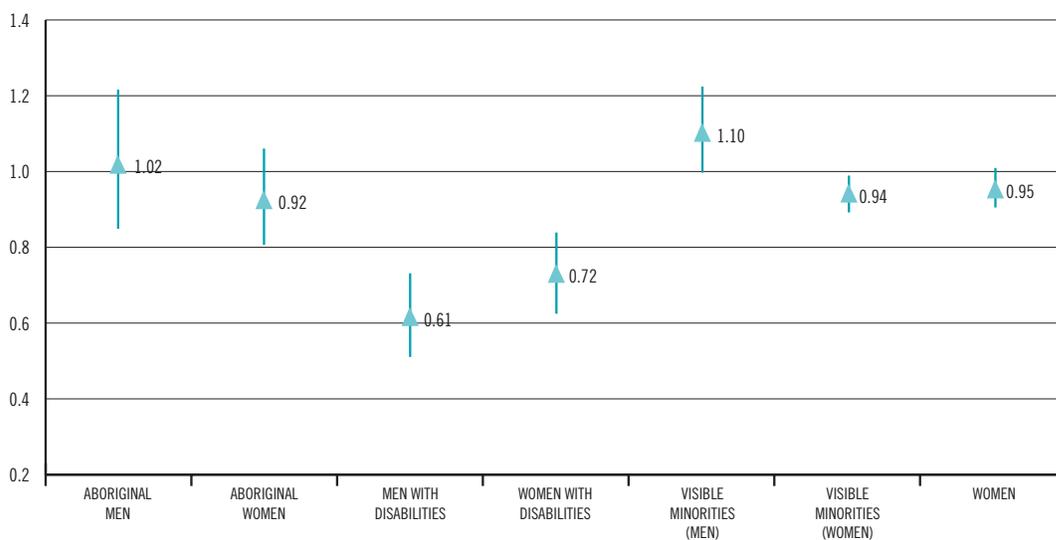
Women who do not belong to another EE group and men who do not belong to an EE group have similar chances of promotion.

² See Appendix 2 for details on the methodology.

A summary of the results is presented in Figure 1³. The triangles in the Figure show the estimated odds ratios. A ratio above 1.0 indicates that the designated EE group has greater chances of promotion than the comparison group. Inversely, a ratio below 1.0 means that the designated EE group has fewer chances of promotion than the comparison group. For example, an odds ratio of 0.90 indicates that the group analysed has 10% (0.9 - 1 = -0.10) less of an opportunity for promotion than the comparison group. Inversely, an odds ratio of 1.20 means that the group analysed has 20% more opportunity for promotion (1.20 - 1 = 0.20) than the comparison group.

The vertical lines represent confidence intervals at a significance level of 1% of these estimators. The confidence interval allows the margin of error for the odds ratio to be evaluated. Thus, it can be said that the chances of promotion for the groups compared are similar if the ratio of 1.0 falls within the confidence interval. That is to say, if the vertical line crosses the horizontal line of “1.0,” there is no statistically significant difference between the EE group and its respective comparison group. Therefore, the same odds ratio may or may not indicate a difference, depending on the confidence interval. The length of the line — the confidence interval — depends on the variability in promotions.

Figure 1: Promotion odds ratios and 99% confidence intervals



Source: Job-based Analytical Information System

The study also suggests that chances of promotion of EE group members may be affected by other factors, which are controlled for in the model.

For example, the organization in which the person is employed has an impact on chances of promotion. Similarly, chances of promotion vary based on the professional group of the position held.

Employees in the NCR have greater chances of promotion than those who hold positions outside the NCR.

Employees who begin their public service career at a relatively lower salary level have greater chances of promotion. The chances of promotion also increase based on the number of applications submitted by employees in response to staffing activities.

³ Appendix 4 presents a different view of the difference in chances of promotion between employment equity designated groups and their comparison groups.

Conclusion

This study suggests that EE status has an impact on EE members' chances of promotion. However, conclusions cannot be reached on the nature of this impact, since it may vary depending on the EE group. Thus, each EE group must be examined separately. The study is also a snapshot of one year so the results cannot be generalized beyond this.

The results of this study and those of its companion study *Members of Employment Equity Groups: Perceptions of Merit and Fairness in Staffing Activities*, suggest that perceptions of merit and fairness in staffing activities may not always align with chances of promotion. The current study also underscores the importance of interpreting the impact of EE status in light of factors that may mitigate or amplify chances of promotion.

Research analysing EE status in relation to individual and socio-economic variables such as competencies, skills, place of residence and economic and labour market conditions might provide better identification and understanding of the challenges regarding the chances of promotion of EE members.

The fact that men and women with disabilities have significantly lower chances of promotion than their comparison groups gives rise to a number of questions. This finding may suggest heterogeneity in unobservable characteristics within the persons with disabilities group that do not apply to Aboriginal Peoples or members of visible minorities.

The nature of disabilities may vary significantly. However, the specific conditions and the characteristics of disabilities cannot be captured by statistics; therefore, their impact on the chances of promotion of persons with disabilities cannot be measured. Further research on the career path of persons with disabilities could shed some light on the potential barriers to the promotion of persons with disabilities.

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Appendices

Appendix 1 – Sources of information

The administrative data used were taken from two different sources:

- ▶ The Job-based Analytical Information System, which contains information on population, characteristics and staffing activities, including promotions; and
- ▶ The Employment Equity Data Bank, which contains cumulative information on employment equity (EE) status.⁴

⁴ The collection of information on employment equity is provided by employees on a voluntary basis. The information is used for statistical purposes in order to analyze and monitor progress made with regard to designated groups in the public service and to produce reports on representation within the workforce.

Appendix 2 – Methodology

A logistic regression model is used to estimate the effects of belonging to an EE group.⁵ The generic formula for this model is:

$$\textit{logit} (p) \equiv \log \left(\frac{p}{1-p} \right)$$

Where p represents the probability of obtaining a promotion during the reference period (binary model);

Explanatory variables x are used to estimate these models:

$$\textit{logit} (p) = a + \beta x$$

For positive values of β , an increase in x values increases the $\textit{logit}(p)$. $\textit{logit}(p)$ increases monotonically in p . Therefore, examining the signs of explanatory variables helps determine the effect of a variable on probability p . As x contains categorical variables (belonging to an EE group), and the goal is to compare an EE group to a comparison group, the following relative odds ratios are used:

$$\frac{p/(1-p)}{q/(1-q)}$$

Where p represents probability of promotion of the EE group and q represents the probability of promotion of the comparison group. The relative odds ratio therefore measures the association that indicates the probability of observing a result in an EE individual compared to an individual in the comparison group.

⁵ For logistic regression models, see Agresti, A. (2002), "Categorical Data Analysis, Second Edition," New York: John Wiley & Sons. The "Proc Logistic" procedure in the SAS v 9.3 software is used to obtain odds ratios for promotions and favourable perceptions, as well as confidence intervals.

List of controlled variables for the promotions model:

Variables :

- EE status
- Age
- First official language
- Bilingualism
- Place of employment (NCR or other region)
- Organization (22 organizations)
- Professional group (25 groups)
- Starting salary
- Number of applications
- Experience in the position (years)
- Experience in the public service (years)

Appendix 3 – Glossary

Two comparison groups were created for the purposes of this study:

- Women who have not self-identified or self-declared themselves as an Aboriginal person, person with a disability and/or member of a visible minority; and
- Men who have not self-identified or self-declared themselves as an Aboriginal person, person with a disability and/or member of a visible minority.

For more definitions, please visit the Public Service Commission Glossary at www.psc-cfp.gc.ca/abt-aps/gls/index-eng.htm.

Appendix 4 – Table and Figure

Table 1: Characteristics of employees in indeterminate positions, or in specified term positions of more than six months, on July 1, 2010

	Aboriginal Peoples		Members of visible minorities		Persons with disabilities		Men*	Women*	Public service
	Men	Women	Men	Women	Men	Women			Total
Number of employees	3 047	5 271	8 448	11 401	4 580	5 257	63 869	82 354	184 227
Promotion rate (%)**	7.9	8.0	9.8	10.2	5.2	6.6	8.2	9.0	8.6
Representation (%)	1.7	2.9	4.6	6.2	2.5	2.9	34.7	44.7	100.0
First official language—English (%)	79.1	75.5	80.5	80.8	79.2	73.3	69.3	62.9	68.4
Bilingualism (%)	27.4	32.1	30.9	34.8	30.0	39.0	37.2	47.3	40.9
Place of employment—NCR (%)	32.6	35.7	51.6	49.5	43.1	46.8	42.3	48.0	45.5
Average age	43	43	42	40	49	48	44	43	43
Experience in the public service (years)	12	12	10	9	18	16	13	13	13
Experience in the position (years)	5	5	4	4	6	5	5	4	5
Starting salary (\$ in 2002)	43 206	40 187	47 728	42 832	45 366	40 468	47 509	42 090	44 272

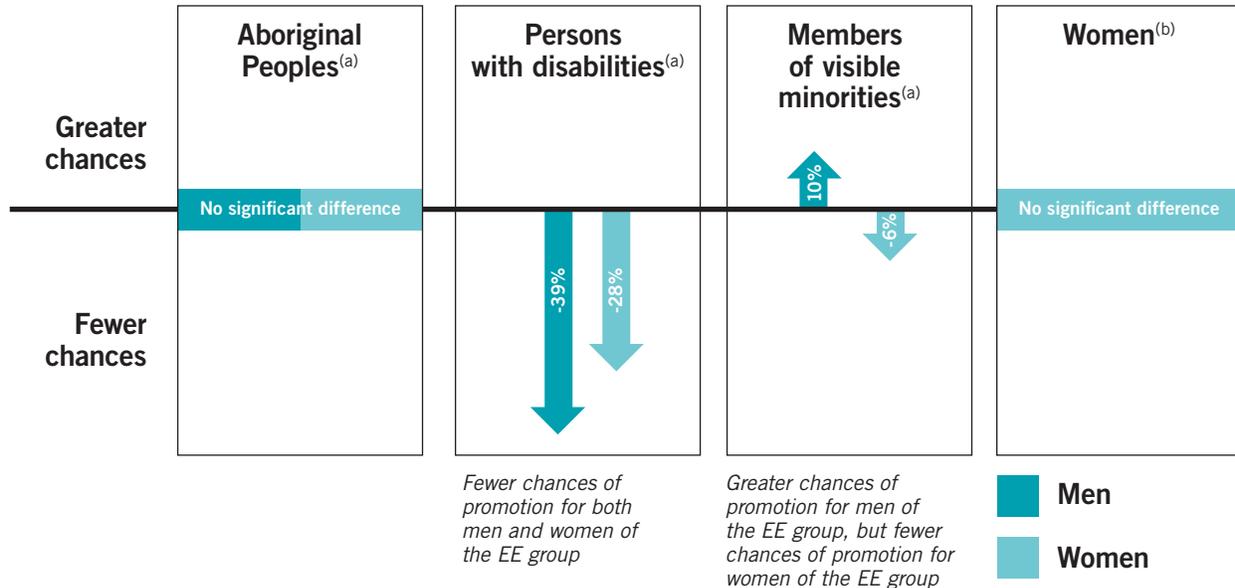
Source: Job-based Analytical Information System

*These are men and women who do not belong to an(other) employment equity group.

** The promotion rate is calculated from July 1, 2010, to June 30, 2011.

Figure 2: Difference in chances of promotion between employment equity designated groups and their comparison groups

July 1, 2010 to June 30, 2011



Source: Job-based Analytical System and Employment Equity Data Bank

^(a) Women of EE groups are compared to women who do not belong to another EE group, and men of EE groups are compared to men who do not belong to an EE group.

^(b) Women who do not belong to another EE group are compared to men who do not belong to an EE group.

Caution: The results of the study apply to the reference period covered in the analysis. The PSC cautions against making any generalizations for periods other than that of the study, since these results represent a single snapshot in time. Given the importance of these findings, the PSC is undertaking more detailed work in 2013-2014 to both update the results of the studies and take a deeper look at the career progression of EE groups. This will enable the PSC to determine more precisely whether these results represent a trend.

