

Exploring Career Stagnation in Employment Equity Groups Amongst Canadian Public Servants

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Introduction

Public service sectors aim to represent the interests of a country's population in policy and decision-making and should therefore act as leaders in racial equity in employment. In recent years, institutions globally have increasingly recognized that equitable representation of historically excluded groups is essential to healthy and productive workplaces. For example, an Executive Order from the President of the United States in June 2021 reaffirmed that America is at its strongest when its nation's public servants reflect the full diversity of the American people (Ref. 1). Similarly, in Canada the President of the Federal Treasury Board Secretariat indicated that the government is committed to building a diverse, accessible, and inclusive federal public service that truly reflects the population they serve (Ref. 2). In Canada, people of colour have been defined as visible minorities (VMs) in legislation related to human rights and labour (Ref. 3). Within this framework, those who self-identify as Black are classified as a subgroup of VM's (Ref. 3). According to data from the US Office of Personnel Management, Black and other employees of colour make up 53% of clerical positions but only 32% of the professional workforce. Citing this data, the Partnership for Public Service claims that the US Government is failing to hire and promote employees from underrepresented groups into professional positions (Ref. 4). In this paper, we examine salary data from the core federal public service in Canada to determine whether Black public servants in Canada face inequalities to a different extent than the rest of the VM group.

Contemporary metrics for determining inclusion in employment amongst racialized groups can fail to identify barriers to entry and career advancement and the quality and depth of the necessary data begs improvement. Many use aggregated diversity data as a "catch-all" for representation metrics. Persons belonging to historically excluded groups may enter a sector via the improvement of hiring practices, yet they often remain disproportionately underrepresented in positions of leadership (a lapse in equity). At first glance, the population of Black employees in the federal public service (3.8% in 2021) may be close to what is expected by labour market demographics in Canada. However, a quintile analysis could determine whether there is a disproportionate distribution of Black employees with a significant underrepresentation at the higher salary and executive levels and an overrepresentation in the lower paying positions. In Canada, equality rights under Section 15 of the Charter of Rights and Freedoms allow special equity programs or measures to be implemented to address inequalities in employment (Ref. 5).

Increased availability and analysis of disaggregated employment data allows employers and employees to quantify equitable representation amongst historically excluded groups. Here, median values, a quintile analysis, and the definition of a disproportionality index (DI) are used as evaluation metrics.

Methods

Publicly available disaggregated data from the Treasury Board of Canada of salary range representation for core public service administration (2017-2021) are presented using the open-source software, R (Ref. 6). The salary data was web-scraped from the Treasury Board Diversity and Inclusion Statistics Report (Ref. 7) released in April of 2022 using the R package 'rvest'. Data from self-identified VM employees (including Black employees), employees with disabilities, and Indigenous employees were pulled from the website. Select data points (those containing 1-5 persons) from the original dataset had been suppressed for privacy and additional points had been suppressed to avoid residual disclosure. These values were imputed by estimation to provide a complete dataset for this analysis. Information on the imputed values can be found in Supplementary Table 1. The number of non-VM employees per salary category was calculated by subtracting the number of VM employees from the total number of employees. Median salaries per group were estimated and rounded to the nearest \$50 (Formula 1).

$$median = L + \frac{\left(\frac{n}{2} - F\right)}{f} * w$$

Formula 1 Equation used to estimate median salaries of Canadian core public service employees from salary bins where L is the lower limit of the median salary range, n is the total number of employees in a group, F is the cumulative frequency up to the median salary range, f is the number of employees in the median salary range, and w is the width of the median salary range.

Each year's salary categories were grouped into quintiles representing 20±6% of the population, allowing for comparison of employment equity over time (Supplementary Table 2). Finally, Disproportionality Indices (DI) were calculated for the dataset (Formula 2). The use of DI was first introduced in two presentations to employees of the Canadian federal public service on June 23, 2023, and October 6, 2023 (Ref. 8). DI is a measure of representation proportional to the overall sample population, with a DI of more than 1 suggesting overrepresentation and a DI of less than 1 suggesting underrepresentation.

$$\frac{\%_{Group X; salary range i}}{\%_{All employees; salary range i}} = DI_{Group X; salary range i}$$

Formula 2 Equation used to calculate DI of a group at a salary range.

In this case, DI is utilized as it accounts for differences due to naturally varying distributions of employee salary. The data was then visualized using the R package 'ggplot2'. The scripts for the web-scraping and analysis can be found in the [project's Github repository](#).

Results

Non-VM employees were found to have a higher median salary than all other equity groups, as well as the “all employees” group (Table 1). The aggregated VM employees group demonstrated median salaries which were more comparable to the “all employees” group than to the disaggregated data for Black employees. Black employees were found to have the lowest median salaries of all analyzed groups between 2017-2021, including the VM group (Table 1). The median salaries for Black and White employees in the US Federal Civil Service in 2018 show a similar trend and were reported to be \$70,304 and \$84,522 USD per annum respectively (Ref. 9).

Year	All Employees	Non-Visible Minority Employees	Visible Minority Employees	Black Employees	Indigenous Employees	Employees with Disabilities
2021	79,900	80,450	77,100	71,150	77,450	77,050
2020	76,900	77,500	74,250	67,250	73,350	73,100
2019	75,750	76,200	73,650	67,450	72,400	72,700
2018	72,450	72,550	71,950	68,500	70,450	71,200
2017	69,550	69,600	69,250	65,450	67,250	67,800

Table 1 Median salaries (CDN per annum) of Canadian core public service employees from 2017-2021, rounded to the nearest \$50. Median salary was estimated with Formula 1. Orange values indicate a higher value than the “all employees” group, and blue values indicate a lower value per year. Data from Treasury Board of Canada Secretariat [Diversity and Inclusion Statistics Report](#).

Black employees were found to have the highest DI values (1.42 and 1.36) at the two lowest salary ranges (<60.0 and 60.0-69.9K CDN per annum) and the lowest DI values (0.81 and 0.68) at the highest salary ranges (85.0-99.9 and 100.0K+ CDN per annum) in 2021 (Figure 1; Supplementary Table 3). Non-VM employees’ DI showed little change over the salary ranges, with a mean of 1.00 ($s = 0.02$; Figure 1).

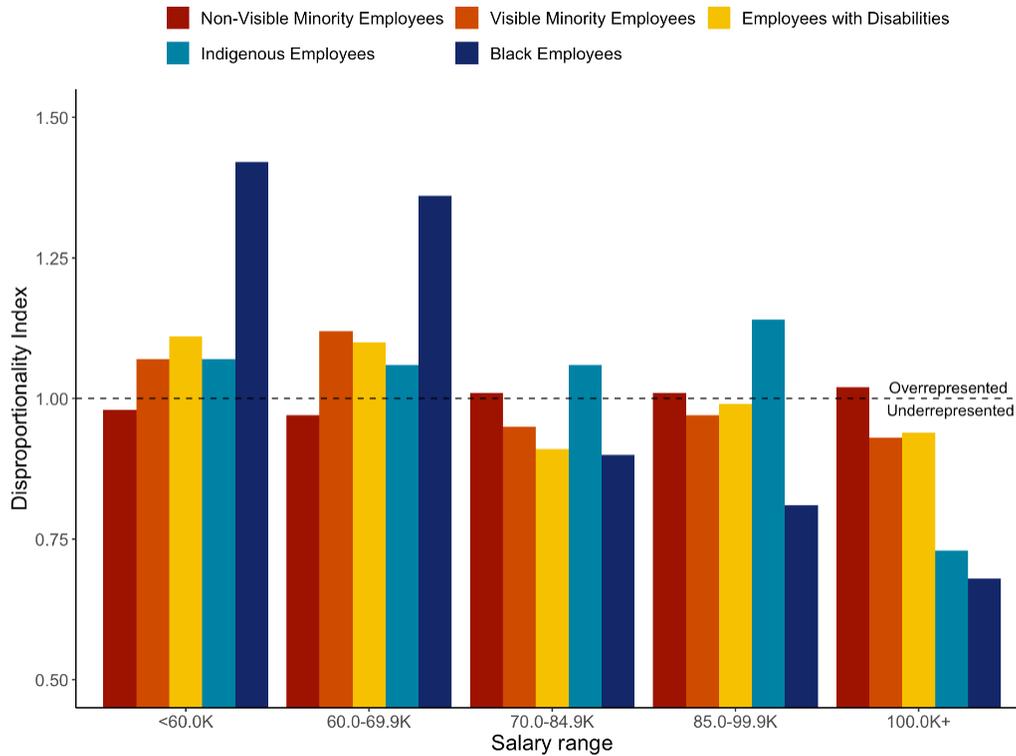


Figure 1 DI values of Canadian core public service employee salary ranges in 2021. Non-VM employees (n = 185,223), VM employees (n = 43,122), employees with disabilities (n = 12,893), and Black employees (n = 8,754) are shown in red, orange, yellow, light blue, and blue respectively. A DI of more than 1 (shown by the dotted line) represents overrepresentation of a group in a salary range with a DI of less than one representing underrepresentation. Data from Treasury Board of Canada Secretariat [Diversity and Inclusion Statistics Report](#).

To compare DIs between years, salary categories were divided into quintiles (Supplementary Table 1). The trend in DI amongst Black employees compared to their non-VM counterparts demonstrated in 2021 persists in previous years included in the dataset, dating back to the year 2017 (Figure 2). Black employees consistently presented a DI of more than 1 and DI of less than 1 at the bottom and top 20th percentiles respectively (Figure 2).

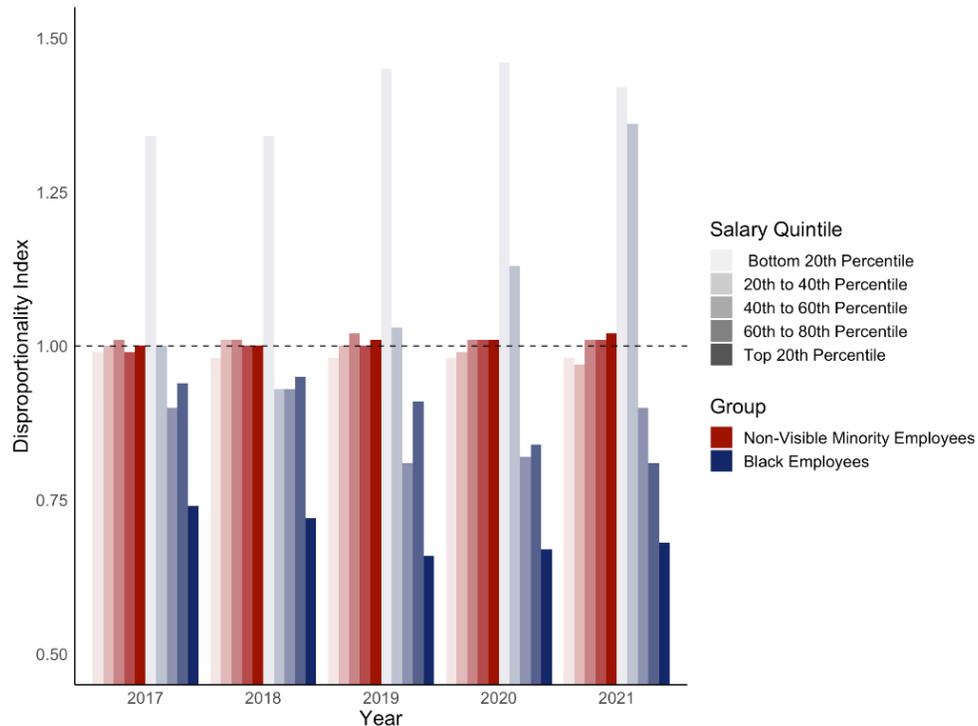


Figure 2 DI values of Black and non-VM employees (blue and red, respectively) core public service employee salary ranges from 2017-2021. A DI of more than 1 (shown by the dotted line) represents the overrepresentation of a group in a salary range with a DI of less than one representing underrepresentation. Data from Treasury Board of Canada Secretariat [Diversity and Inclusion Statistics Report](#).

Discussion

This disproportionality analysis is novel because of the following reasons:

1. The disaggregated data allows for the elucidation of trends in subgroups within the recognized VM employment equity group which has historically been presented and analyzed as a single classification.
2. A comparison of the distribution of groups or subgroups across the hierarchy of the public service provides more details about equity than obtained from the overall representation. Thus, two groups which may show the same overall representation could have significantly different distributions across salary levels.
3. The disparity in the results for the median salaries was further examined through a quintile analysis of salaries. It enabled a comparison of the representation in the highest quintile (higher than the 80th percentile) and the lowest quintile (lower than the 20th percentile). In absence of disparities among groups the representation of a given group would be expected to be the same as the metric for all (i.e., a disproportionality index (DI) =1 or the observed value would be what is expected). If the representation of a group is higher than what is expected (i.e.,

DI > 1), it would amount to overrepresentation. Similarly, lower representation would be signalled by a DI value < 1.

4. Evidence for stagnation and barrier to entry to the executive level and higher salaried jobs were obtained by a comparison of the DI values for the Black and other equity groups.

The data presented in the article suggests that Black employees in the Canadian core public service face career stagnation. They demonstrate the greatest inequality in salary distribution and the lowest median salaries of all analyzed groups. This is also apparent to a lesser extent in other groups, for example, Indigenous employees. In the future, it would be useful to analyse how gender, age, and job classification, affect the disparity in Black employees' salary distribution. Furthermore, disaggregated salary data for separate agencies in the federal public service should be included to get the complete picture of federal workers in Canada. In addition, it is recommended that the microdata that was used to generate the Treasury Board report be re-analyzed to investigate inequities in salary amongst subgroups and explore the effects of intersectionality, identifying any particularly vulnerable or marginalized intersectional identities which can be used to inform future action. This data series should also continue to be maintained and released by the Treasury Board yearly to create transparency and allow for data-driven solutions to inequality. Lastly and most importantly, the career advancement of Black employees must be prioritized by implementing the Call to Action on Anti-Racism, Equity and Inclusion by the Clerk of the Privy Council Office, which has called for the following special measures for Indigenous employees and Black and other racialized employees (quoted below; Ref. 10):

- i. **Appoint** employees to and within the Executive Group through career development and talent management*
- ii. **Sponsor** high-potential employees to prepare them for leadership roles*
- iii. **Support** the participation of employees in leadership development programs (for example, the Executive Leadership Development Program) and career development services (for example, official language training)*

Conclusion

These findings demonstrate that although the overall percentage representation in the core public service may have increased from 2017 to 2021, career stagnation indicates additional barriers faced by this subgroup that must be addressed to achieve equitable representation. The clear disadvantage in career progression amongst Black public servants should be addressed with a strategic plan to improve retention and focused support for Black employees to reach the higher levels at the rate of their non-racialized peers. This could be achieved by implementing the Call to Action on Anti-Racism, Equity, and Inclusion in the Federal Public Service, which includes a direction for public service leaders to transition Black employees to leadership roles via career development and talent management.

Sources Cited

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10. Clerk of the Privy Council and Secretary to the Cabinet (Head of the Public Service (2021) [Call to Action on Anti-Racism, Equity, and Inclusion in the Federal Public Service](#)

Supplementary Information

Supplementary Table 1 Imputed estimated values used in place of numbers suppressed in the original dataset salary ranges for the purposes of the analysis. Data from Treasury Board of Canada Secretariat [Diversity and Inclusion Statistics Report](#).

Year	Black Employees (n)	VM Employees (n)	Indigenous Employees (n)
2021	17 (<25K); 3 (200-249K); 0 (>250K)	80 (<25K); 2 (>250K)	No imputation required
2020	4 (200-249K); 0 (>250K)	36 (200-249K); 2 (>250K)	116 (150-199K); 3 (200-249K)
2019	2 (>15K); 1 (200-249K); 0 (>250K)	21 (<15K); 1 (>250K)	5 (>15K); 2 (200-250K)
2018	No imputation required	No imputation required	No imputation required
2017	No imputation required	No imputation required	No imputation required

Supplementary Table 2 List of quintiles by percent of representative population per year. Quintiles are <60.0K, 60.0-69.9K, 70.0-84.9K, 85.0-99.9K, and 100.0K+ Canadian dollars per annum for all years except for 2017, for which the quintile are >55K, 55.0-64.9K, 65.0-79.9K, 80.0-94.9K, and 95.0K+. Quintiles represent 20±6% of each year's population. Data from Treasury Board of Canada Secretariat [Diversity and Inclusion Statistics Report](#).

Representative quintile	2017	2018	2019	2020	2021
Bottom 20th Percentile	Bottom 23.7%	Bottom 25.9%	Bottom 25.2%	Bottom 23.8%	Bottom 16.7%
20th to 40th Percentile	23.7% - 41.2%	25.9% - 45.3%	25.2% - 42.3%	23.8% - 41.4%	16.7% - 34.3%
40th to 60th Percentile	41.2% - 63.9%	45.3% - 65.2%	42.3% - 63.7%	41.4% - 61.2%	34.3% - 57.4%
60th to 80th Percentile	63.9% - 81.6%	65.2% - 82.1%	63.7% - 81.7%	61.2% - 79.5%	57.4% - 76.7%
Top 20th Percentile	Top 18.4%	Top 17.9%	Top 18.3%	Top 20.5%	Top 23.3%

Supplementary Table 3 DIs and percent of employees per salary range in 2021. For DIs in subsequent years, see the [Github repository](#). Data from Treasury Board of Canada Secretariat [Diversity and Inclusion Statistics Report](#).

Salary Range	All Employees		Black Employees		All Visible Minority Employees		Non-Visible Minority Employees		Indigenous Employees		Employees with Disabilities	
	Percent	DI	Percent	DI	Percent	DI	Percent	DI	Percent	DI	Percent	DI
Less than \$60,000	16.70	1	23.73	1.42	17.89	1.07	16.43	0.98	17.91	1.07	18.54	1.11
\$60,000 to \$69,999	17.56	1	23.86	1.36	19.67	1.12	17.06	0.97	18.61	1.06	19.31	1.10
\$70,000 to \$84,999	23.14	1	20.94	0.90	22.07	0.95	23.39	1.01	24.46	1.06	21.07	0.91
\$85,000 to \$99,999	19.30	1	15.72	0.81	18.68	0.97	19.45	1.01	21.97	1.14	19.19	0.99
Over \$100,000K	23.30	1	15.75	0.68	21.69	0.93	23.67	1.02	17.05	0.73	21.90	0.94
All ranges	100.00	1	100.00	1.00	100.00	1.00	100.00	1.00	100.00	1.00	100.00	1.00