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Racial Pay Gap: An Analysis of CARL Libraries

Yanli Li

Using data from the 8Rs CARL Libraries Practitioner Survey in 2014, this study assesses the impact of race on the earnings attainment process based on a sample of 392 CARL library practitioners. It determines that there is a significant salary disparity between visible minorities and nonvisible minorities. Racial differences in job characteristics account for a larger portion of the explained racial salary gap than individual and labor market characteristics. The effect of race on salary is shown to be weaker for librarians than for support staff.

Introduction

Diversity and inclusion are very important in academic libraries because the increasingly diverse patron population will benefit from library staff that can reflect the demographics of their patrons.[1] Racial equity is vital to recruit and retain a diverse library workforce. The Canadian Association of University Teachers (CAUT) states this in its Position Statement on Equity: "CAUT is committed to securing equity for members of marginalized groups disproportionately excluded from full participation in the academy."[2] Many studies have discussed various diversifying efforts in hiring and promotion of library staff from ethnic minority groups, such as MLIS enrollment diversification, equity-related workshops, mentorship programs, leadership trainings and financial supports,[3] whereas pay equity is an understudied measure of racial equity. Although studies show that the racial pay gap exists in the general Canadian labor market, little research has focused on the field of library science.

Canadian Association of Research Libraries (CARL) provides leadership on behalf of Canada's 29 largest university libraries. The 8Rs Redux CARL Libraries' Human Resources Study is a comprehensive study undertaken to investigate the important human resources issues in CARL libraries. It consists of a survey of 26 CARL libraries conducted in 2013 (referred to as the 8Rs Institutional Survey) and a survey of individuals employed in these libraries in 2014 (referred to as the 8Rs Practitioner Survey).[4] Using the 8Rs Practitioner Survey data, this study will attempt to answer the following questions:

- Is there a significant racial pay gap among CARL library practitioners?
- If a significant racial pay gap exists, what are the key contributing factors?
- How does the effect of race on earnings vary between librarians and support staff?

This paper starts with a review of relevant literature that has explored the racial pay gap in Canadian labor market and in academia and the models of earnings attainment with a focus

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on academic libraries. What follows is a presentation of the data, model specifications, and measures. Next is a detailed discussion of the results, followed by the limitations of this study and directions of further research.

Literature Review
Representation of Visible Minorities in Canadian Libraries
Members of marginalized groups include visible minorities in Canada. The Employment Equity Act of 1995 defines visible minorities as "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in color."[5] The United Nations has requested Canada not to use the term "visible minorities," as the phrase itself is considered discriminatory.[6] However, given the fact that it is the term used in Canada's human rights legislation and in Statistics Canada data, surveys conducted in the field of Canadian library science still use the term "visible minorities." The first National Survey of Visible Minority Librarians reported that at least 120 librarians identified as visible minorities in 2014.[7] There was an upward trend in hiring visible minority librarians over a decade.[8] The 8Rs Institutional Survey showed that visible minority librarians increased their representation rate from 5 percent in 2003 to 11 percent in 2013.[9] Nevertheless, visible minorities are underrepresented in the Canadian librarianship (see table 1). According to 2016 Census data, visible minorities comprised only 11 percent of all librarians,[10] compared to 22 percent of visible minorities in Canada's labor force.[11] Canadian Association of Professional Academic Librarians (CAPAL) conducted census of academic librarians in 2016 and 2018, which reported 9 percent[12] and 10 percent[13] respectively being visible minorities. Not only librarians, other types of library practitioners are also underrepresented. In 2013, 9 percent (n = 54) of the other professionals and 8 percent (n = 274) of the support staff in CARL libraries belonged to a visible minority group.[14]

TABLE 1 Representation of Visible Minorities in Canadian Librarianship		
Source	**Total Number of Librarians**	**Percent of Visible Minorities**
8Rs 2003 Institutional Survey	826	5%
8Rs 2013 Institutional Survey	600	11%
2006 Census of Population[15]	11,975	10%
2016 Census of Population	9,570	11%
CAPAL 2016 Census	866	9%
CAPAL 2018 Census	838	10%

Racial Pay Gap in Canada
To contextualize this research, it is useful to provide an overview of racial pay gap in the Canadian labor market. The 2002 Ethnic Diversity Survey revealed that visible minorities reported lower household incomes, higher poverty rates, and higher chance in experiencing discrimination in comparison to ethnic groups of European origins.[16] Canadian census data during 1995–2015 also showed that visible minorities have experienced lower average incomes than nonvisible minorities for two decades (see table 2).

TABLE 2
Average Total Incomes by Visible Minority Status

	1995[17]	2000[18]	2005[19]	2010[20]	2015[21]
Visible Minorities	21,958	24,385	27,750	33,322	36,955
Nonvisible Minorities	28,056	30,516	36,847	42,196	50,225

The 2016 Census provides data[22] on average employment income by occupation (see table 3), which can help us understand the state of racial income disparity in library-related occupations. In 2015, visible minorities earned less employment income than nonvisible minorities in 5 out of 7 occupations, including librarians, library assistants and clerks, technicians, archivists, conservators, and curators. Exceptionally, visible minorities earned more as managers or supervisors in libraries and related occupations.

TABLE 3
Average Employment Income by Occupation and Visible Minority Status in 2015

	Librarians	Library, archive, museum and art gallery managers	Supervisors, library, correspondence and related information workers	Library assistants and clerks	Archivists	Conservators and curators	Library and public archive technicians
Visible Minorities	59,020	59,367	31,365	25,025	47,116	48,119	37,302
Nonvisible Minorities	59,221	57,242	30,716	25,530	48,050	48,651	37,455

Racial Pay Gap in Academia

Very few researchers have explored pay differences by race in Canadian academic libraries. Kandiuk's study revealed that 5.5 percent (n = 57) of the visible minority librarians felt disadvantaged and 7.3 percent felt somewhat disadvantaged in salary.[23] Researchers in the United States have undertaken a limited number of studies in this area as well. As opposed to using basic comparisons of group means to examine the racial salary gap in Canada, American studies adopt multiple regression models to assess multiple variables of earnings in the library science labor market. Sweeper and Smith used data from the 2003 National Survey of College Graduates to illustrate the impacts of gender, race, and ethnicity on earnings of library science professionals. No significant difference was identified in earnings among blacks, Asians, Hispanics, and Native Americans as compared to whites.[24] Two recent studies on racial wage gap focus on the ARL librarians. Galbraith, Kelley, and Groesbeck examined the wage gap between racial minorities and whites based on 35 years of raw salary survey data for ARL librarians. Controlling for institution, years of experience, years of experience squared, position, law or medical library, and sex, their findings showed that the salary gap between racial minorities and whites gradually closed over 1980–2014.[25] Using a similar methodology, Galbraith, Merrill, and Outzen explored the librarian salary differences between public and private ARL libraries. ARL member libraries in Canada were invited to participate in the survey, but this research did not indicate how many Canadian librarians were included in

the analysis. The gap between public and private institutions for minority salaries showed to have been insignificant over a period of 34 years. The 2014 adjusted ARL data revealed no significant librarian salary gap between minorities and whites.[26]

Considering faculty members are very similar to academic librarians, as the latter enjoy faculty status in most Canadian academic institutions, it is useful to review the literature on the racial pay gap among faculty members. However, very few Canadian studies have been conducted in this area. CAUT reported that, in 2015, "almost every group of racialized and Aboriginal women and men university teachers earned less than the average for all workers of all sexes, with the exception of Southeast Asian men (+4.1%) and Chinese men (+2.0%). Non-racialized university professors received 2.9% above the average for all workers, rising to +12.3% for all non-racialized men."[27] Likewise, being Asian significantly increased faculty salary relative to whites in the United States,[28] whereas some earlier studies in academia have failed to provide strong evidence that there are remarkable pay differences by race/ethnicity.[29]

The Models of Earnings Attainment

There are various theories of earnings attainment on which the regression models are built to assess library professionals' salaries. Research in this area provides valuable insights into this present study pertaining to model development and variables selection. Sweeper and Smith categorized the theories of earnings attainment into three schools of thought: (1) the status attainment/human capital perspective; (2) the occupationalist perspective; and (3) the structuralist perspective. Occupationalist/structuralist theories stress the influence of social constraints in individual mobility in the labor market, whereas human capital/status attainment theories emphasize the role of the individuals.[30] Based on these theories, Sweeper and Smith assessed the impact of three categories of variables on earnings in the library science labor market of the United States: individual variables, job/occupational variables, and labor market variables. Individual variables include sex, age, age squared, race, citizenship, number of children, marital status, and highest degree; job/organizational factors include management position, membership in a professional organization or society, and attendance of professional meetings; labor market factors include sector of employment and geographic region. Two other notable studies on the factors determining librarian salaries, although race is not examined, use variables primarily based on the human capital theory. These studies focus on the role of the characteristics that influences one's work productivity and contribution in the labor market through investment in accumulating knowledge and experience. Van House examined the determinants of ALA librarians' salaries by sex and type of library.[31] In comparison to Sweeper and Smith, Van House used fewer personal variables but explored more human capital factors including degree, experience as a librarian, tenure in current job, and time taken for personal leaves and for continuing education. The effects of job-related variables on librarian salary were also tested, including level in organization, number of professionals and nonprofessionals supervised, size of organization, activity in professional associations, and number of publications. The research findings showed that academic librarians' salaries largely depended on professional experience for both women and men. Level in organization, tenure on the current job and additional education were significant to male librarians' salary only. Most job-related variables were significant to female librarians only. Personal variables, including family situation and mobility limits, had virtually no effect on salaries of librarians. Siebert and Young also built their model on the human capital theory to

test the effects of personal, human capital, and workplace factors on earnings of librarians in Great Britain.[32] Personal variables included age and children. Human capital factors focused on education and experience, which was specifically measured by years in current institution, years in other institutions, years of nonlibrary work experience, and years of part-time experience. Education index, experience in the current library, and experience in other institutions were all found to be highly significant for librarians. Workplace characteristics were also taken into account such as the size of the town in which the librarian's institution was located and the library size. In addition, other studies on earnings attainment of librarians[33] and faculty[34] are worth inclusion and shed light on the present research.

A review of the literature reveals that there are not abundant studies on the earnings attainment in the Canadian library science labor market. Research focusing on the effect of race on pay in Canadian academic libraries is rare. This study will contribute to the original research on this topic.

Data and Methodology

Salary and race data for Canadian academic library practitioners are not readily available. There are a limited number of data sources, each having its limitation. First, some library associations report summary salary data only but do not collect race information. For instance, CARL has managed an annual library statistics program since 1976 that collects median salary and average salary of librarians.[35] Since the 1980s, CAUT has administered a biennial Librarian Salary & Academic Status Survey (LSASS), which reports average librarian salary by sex, age, and region.[36] However, neither CARL annual statistics nor LSASS survey data includes any race-related information, making it impossible to explore the relationship between salary and race. Second, some associations collect data on salary and race, but there has been a lack of examination of the relationship between the two. CAPAL's censuses of academic librarians in 2016 and 2018 gather race and salary information; however, the summary reports do not present any analysis of the relationship between salary and race, as is the case for the 8Rs Individual Survey in 2004.[37] Third, it is very hard to get raw salary and race data on individuals in academic libraries from library associations to make an in-depth examination of salary by race. So far, the 8Rs Practitioner Survey in 2014 is the only available survey that allows for downloading microdata[38] and therefore forms the basis of this research.

The rich dataset from the 8Rs Practitioner Survey contains valuable demographic and employment information on 837 CARL library staff. Demographic information includes gender, year of birth, aboriginal identity, visible minority status, disability status, and the province where the respondents live. Employment information covers job characteristics, job attitudes, and career development/training/education. Some survey questions are designed for librarians only, such as MLIS (or equivalent) education, additional degrees, what is important in a job, barrier to research, job changes, and retirement. Nonlibrarians are asked separately about their education and perceptions of what is important in a job. To obtain the usable sample data for this research, responses to the survey were filtered out if the participant indicated his or her annual salary as a negative amount, extremely low between zero and $400, or extremely high such as $300,000 and above. Additionally, the responses were removed if the respondents did not report data for any other variables included in this analysis. In the end, the sample for this study consists of 392 practitioners employed in CARL libraries in 2014.

Measures

Following the approach taken by Sweeper and Smith, this study develops multiple regression models to measure salary differences between visible minorities and nonvisible minorities while accounting for a number of different variables. These variables are selected based on the data available in the 8Rs Practitioner Survey and literature review. Table 4 presents all variables included in the models along with their specification and sample mean. The dependent variable is the natural log of salary (lnsalary). Salary refers to the annual gross salary (before taxes and deductions) in 2012. The mean of annual salary is $67,100.41 and the mean of lnsalary is 11.02. In multiple regression models, this study examines three categories of independent variables and the focal variable captures the visible minority status. The sample mean of each of the dichotomous independent variables in table 4 represents what percentage that respective variable accounts for in the overall sample.

TABLE 4
Definition and Full-Sample Means for Variables Used in the Models

Variable	Specification	Mean (Standard Deviation)
Dependent Variable		
Salary	Annual Gross Salary in 2012	$67,100.41 (27,127.29)
ln [Salary]	Natural Log of Salary in 2012	11.02 (0.48)
Individual Variables		
Visible Minority	Visible Minority = 1, Otherwise = 0	0.06 (0.24)
Female	Female = 1, Otherwise = 0	0.78 (0.42)
Disabled	Disabled = 1, Otherwise = 0	0.06 (0.23)
Age	Age in years as of survey day	45.6 (11.17)
Age-squared	Age squared	2,203.96 (1,026.84)
Experience in current library	Years of work in the current library	12.47 (11.18)
Highest degree obtained		
Without a graduate degree	Without a graduate degree = 1, Otherwise = 0	0.44 (0.50)
Master's degree	With a master's degree = 1, Otherwise = 0	0.54 (0.50)
PhD	With a PhD = 1, Otherwise = 0	0.02 (0.13)
Job Variables		
Staff type		
Librarians	Librarians = 1, Otherwise = 0	0.49 (0.50)
Other professionals	Other professionals = 1, Otherwise = 0	0.09 (0.29)
Paraprofessional	Paraprofessionals = 1, Otherwise = 0	0.35 (0.48)
Other support staff	Other support staff = 1, Otherwise = 0	0.07 (0.25)
Management Position		
Nonmanagement	Nonmanagement = 1, Otherwise = 0	0.66 (0.47)
Supervisors	Supervisors = 1, Otherwise = 0	0.15 (0.35)
Middle management	Middle management = 1, Otherwise = 0	0.12 (0.32)
Senior administrators	Senior administrators = 1, Otherwise = 0	0.07 (0.26)

Variable	Specification	Mean (Standard Deviation)
TABLE 4 Definition and Full-Sample Means for Variables Used in the Models		
Job category		
Public services	Public services = 1, Otherwise = 0	0.47 (0.50)
Technical services	Technical services = 1, Otherwise = 0	0.18 (0.38)
Collections	Collections = 1, Otherwise = 0	0.08 (0.27)
Information technology (IT)	Information technology = 1, Otherwise = 0	0.06 (0.23)
Management	Management = 1, Otherwise = 0	0.11 (0.31)
Other category	Other category = 1, Otherwise = 0	0.10 (0.31)
Permanent	Permanent position = 1, Otherwise = 0	0.90 (0.30)
Hours	Work hours per week	36.69 (6.21)
Labor Market Variable		
Province living in		
British Columbia	British Columbia = 1, Otherwise = 0	0.08 (0.27)
Alberta	Alberta = 1, Otherwise = 0	0.14 (0.34)
Saskatchewan	Saskatchewan = 1, Otherwise = 0	0.10 (0.30)
Manitoba	Manitoba = 1, Otherwise = 0	0.04 (0.20)
Ontario	Ontario = 1, Otherwise = 0	0.33 (0.47)
Quebec	Quebec = 1, Otherwise = 0	0.29 (0.45)
Nova Scotia	Nova Scotia = 1, Otherwise = 0	0.03 (0.16)

The first category of independent variables are individual variables primarily consisting of demographic and human capital factors such as education and experience. This sample is 78 percent female, 6 percent visible minorities and 6 percent with disability. The average age is 45.6 years. Age squared is included in the models to account for the curvilinear relationship between age and salary. The average years of experience in the current library is 12.47 years. The educational attainment measured by the highest degree obtained is recoded into three groups: without a graduate degree, master's degree, and PhD. In Canada, an MLIS (or equivalent) degree is a required qualification for a librarian position. This is reflected in the sample that all librarians have received their MLIS (or equivalent) degree. Overall, 44 percent of all library practitioners do not possess a graduate degree, 54 percent possess a master's degree, and 2 percent obtain a PhD. Specifically, 39 percent of other professionals (n = 36) and 7 percent of the paraprofessionals (n = 136) have a master's degree. Additionally, 2.6 percent of the librarians (n = 194) and 5.6 percent of other professionals (n = 36) have a PhD (not shown in table 4).

The second category of independent variables are job variables including staff type, management position, job category, permanent job, and weekly hours. Regarding staff type, nearly half (49%) of the sample are librarians, followed by paraprofessionals (35%), other professionals (9%), and other support staff (7%). As defined in the 8Rs Practitioner Survey, librarians are professionals who possess a master's degree from a library education program (MLIS or its equivalent) accredited by the American Library Association. Other professionals are those professionals other than librarians "who are not required to have an MLIS degree

and are not working as a library technician or library assistant and who perform work requiring knowledge of an advanced type."[39] Other professionals customarily obtain a professional qualification or advanced degree, such as PhD. Meanwhile, support staff are those individuals "who work in a support role and typically do not have a master's degree in library or information science or in another discipline. Support staff includes paraprofessionals who usually possess a technical certificate or diploma from a library technician program (e.g. IT support, library technicians), but they might also work in paraprofessional roles with an undergraduate degree and/or relevant experience (e.g. library assistants)."[40]

Management positions in academic libraries include supervisors, middle management, and senior administrators. Examples of middle management are branch head and department head. Senior administrators include head/chief librarian, director, or deputy/assistant head, chief, director.[41] A large portion (66%) of the sample do not hold any management position at the library. Among those on management positions, 15 percent are supervisors, 12 percent are middle management, and 7 percent are senior administrators.

The library practitioners are employed in five primary areas: (1) Public Services, including reference, circulation/reserve, instruction, liaison, learning commons, and support activities; (2) Technical Services: including cataloguing/metadata, acquisitions, and support activities; (3) Collections: including acquisitions, management, and preservation of collections in all formats, including special collections; (4) Information Technology (IT): including digital and web services; (5) Management: responsible for budgets and personnel, overseeing operations, instituting policies and accountability measures.[42] The largest group in the sample is employed in public services (47%), followed by technical services (18%), management (11%), collections (8%), and IT (6%). Furthermore, 90 percent of the individuals in the sample work 36.69 hours per week on average.

The third category of variable is labor market variable. Province where the respondent is living is the only labor market variable available in the 8R Practitioner Survey. The sample is not evenly distributed across Canada, with the largest number (33%) living in Ontario, followed by Quebec (29%), and the smallest (3%) in Nova Scotia. This sample excludes individuals living in Prince Edward Island because none of the CARL libraries are located in this province, and those in New Brunswick and Newfoundland and Labrador because data are missing for some variables.

Table 5 shows the percentage distribution of library staff by visible minority status. Nonlibrarians (7.1%) have a higher rate of visible minorities than librarians (5.7%). Among nonlibrarians, paraprofessionals (8.1%) are more than twice as likely to be visible minorities as other support staff (3.8%).

TABLE 5 Percentage Distribution of Library Staff by Visible Minority Status				
Staff Type	Nonvisible Minorities	Visible Minorities	Total	Percent of Visible Minorities
Librarians	183	11	194	5.7%
Nonlibrarians	184	14	198	7.1%
Other Professionals	34	2	36	5.6%
Paraprofessionals	125	11	136	8.1%
Other Support Staff	25	1	26	3.8%

TABLE 6
Percentage Distribution of Management Position by Visible Minority Status

Management Position	Nonvisible Minorities	Visible Minorities	Total	Percent of Visible Minorities
Nonmanagement	242	18	260	6.9%
Supervisors	52	5	57	8.8%
Middle Management	45	1	46	2.2%
Senior Administrator	28	1	29	3.4%

TABLE 7
Percentage Distribution of Educational Level by Visible Minority Status

Highest Degree Obtained	Nonvisible Minorities	Visible Minorities	Total	Percent of Visible Minorities
Without a graduate degree	160	13	173	7.5%
Master's degree	200	12	212	5.7%
PhD	7	0	7	0

Table 6 shows the percentage distribution of management position by visible minority status. The percentage of library practitioners who do not hold any management position and are visible minorities is 6.9 percent. Supervisors (8.8%) have the higher rate of visible minorities

TABLE 8
Mean Annual Salary by Visible Minority Status

Status	Mean	Standard Deviation
Visible minorities	$50,377.61	20,637.55
Nonvisible minorities	$68,239.56	27,162.92

than middle management (2.2%) and senior administrators (3.4%). In terms of the highest degree obtained (see table 7), 5.7 percent of those who have a master's degree are visible minorities; no visible minorities have a PhD.

Table 8 illustrates the difference between visible minorities and nonvisible minorities in their mean annual salary. However, whether such a difference is significant should be examined, after controlling for all of the other variables described in table 4. That will be the focus of the next section.

Model Specifications
Two sequential ordinary-least-squares (OLS) regression models are estimated with lnsalary as the dependent variable. The models are run first for all library practitioners in the sample.

lnsalary = B_0 + B_1*vismin + ε (1)
lnsalary = B_0' + B_1'*vismin + B_{xj}*X_j+ ε (2)

Model 1 includes only one dummy variable: visible minority (vismin). B_0 represents the intercept of the equation, B_1 is coefficient for visible minority, which represents the difference in lnsalary between visible minorities and nonvisible minorities in the sample. Model 2 adds the covariates as described in table 4. B_{xj} is a vector of coefficients for each of the covariates to salary, and ε is a vector of random error terms. The change in the coefficient associated with vismin from Model 1 to Model 2 (B_1- B_1') is the portion of the observed difference in lnsalary between visible minority and nonvisible minority library practitioners that is accounted for by the included covariates.

The same sequential OLS regression models are also run separately for librarians and support staff, including paraprofessionals and other support staff. To make an easier comparison of the regression results between the two groups, all variables and categories use the same names as displayed in table 4, whereas the two variables without a graduate degree and master's degree are defined differently for librarians. As having an MLIS (or equivalent) degree is required to enter the librarian profession in Canada, it is more meaningful to examine if having an additional master's degree would have a significant impact on the librarian's salary. Hence, for librarians specifically, without a graduate degree means that the librarian does not have any additional master's degree or one has MLIS (or equivalent) only, and master's degree means having additional master's degree(s). Please note that the number of additional master's degrees one possesses is not taken into account in this study. Of the 194 librarians, 137 (71%) have MLIS (or equivalent) only and 52 (27%) have additional master's degree(s). For the support staff, these two variables are defined in the same way as they are in the models for the full sample: without a graduate degree means that one does not have any master's degree, and master's degree means having any master's degree.

Results
All Library Practitioners
OLS regression models are run first for all library practitioners, and the results are presented in table 9 (columns 2 and 3). Model 1 simply estimates the observed differences in lnsalary by visible minority status without accounting for other variables. Visible minorities have an average log salary gap of 0.408 relative to nonvisible minorities, which is statistically significant at $p < 0.01$. In Model 2, with selected controlled variables added, visible minority remains highly statistically significant to lnsalary ($p < 0.01$). The coefficient for visible minority decreases from −0.408 in Model 1 to −0.256 in Model 2, suggesting that 37 percent of the observed average log salary gap between visible minorities and nonvisible minorities can be explained by their differences in the controlled variables.

TABLE 9
Regression Results for lnsalary

	All Practitioners		Librarians		Support Staff	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Visible minority	−0.408‡	−0.256‡	−0.407‡	−0.173†	−0.322†	−0.303†
	(0.101)	(0.065)	(0.115)	(0.080)	(0.147)	(0.124)
Age		0.039‡		0.039†		0.048†
		(0.012)		(0.016)		(0.020)
Age-squared		−0.000‡		−0.000†		−0.000†
		(0.000)		(0.000)		(0.000)
Female		−0.020		0.012		−0.008
		(0.040)		(0.045)		(0.077)
Disabled		0.039		0.093		−0.085
		(0.069)		(0.100)		(0.106)
Experience in current library		0.006‡		0.010‡		0.004
		(0.002)		(0.003)		(0.003)
Master's degree		0.152*		0.034		0.060
		(0.077)		(0.044)		(0.124)

		TABLE 9 Regression Results for Insalary				
	All Practitioners		**Librarians**		**Support Staff**	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
PhD		0.066 (0.138)		−0.001 (0.125)		
Staff type (librarians)						
Other professionals		−0.042 (0.074)				
Paraprofessionals		−0.267‡ (0.081)				
Other support staff		−0.323‡ (0.103)				
Position (nonmanagement)						
Supervisors		0.055 (0.047)		0.043 (0.059)		0.144* (0.078)
Middle management		0.068 (0.061)		0.058 (0.061)		-0.070 (0.279)
Senior administrators		0.227‡ (0.082)		0.226‡ (0.082)		0.333 (0.377)
Job category (public services)						
Technical services		0.038 (0.045)		-0.050 (0.056)		0.033 (0.073)
Collections		0.022 (0.062)		0.003 (0.078)		-0.010 (0.104)
Information technology		0.146* (0.076)		0.139 (0.094)		0.117 (0.153)
Management		0.003 (0.075)		-0.007 (0.082)		0.114 (0.275)
Other		0.017 (0.054)		0.062 (0.072)		-0.056 (0.087)
Hours		0.027‡ (0.003)		0.022‡ (0.003)		0.060‡ (0.007)
Permanent		0.230‡ (0.057)		0.250‡ (0.059)		0.158 (0.113)
Province (Ontario)						
British Columbia		−0.061 (0.064)		-0.056 (0.065)		-0.100 (0.145)
Alberta		0.100* (0.052)		0.050 (0.060)		0.095 (0.093)
Saskatchewan		−0.189‡ (0.059)		0.081 (0.088)		-0.455‡ (0.094)
Manitoba		−0.199† (0.083)		-0.059 (0.101)		-0.264* (0.154)

TABLE 9
Regression Results for lnsalary

	All Practitioners		Librarians		Support Staff	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Quebec		-0.054		-0.049		-0.059
		(0.042)		(0.047)		(0.078)
Nova Scotia		-0.059		0.102		-0.192
		(0.105)		(0.163)		(0.147)
Constant	11.044[‡]	8.827[‡]	11.272[‡]	9.100[‡]	10.728[‡]	7.372[‡]
	(0.025)	(0.311)	(0.027)	(0.375)	(0.040)	(0.525)
Observations	392	392	194	194	162	162
R-squared	0.040	0.648	0.061	0.645	0.029	0.586
Standard errors in parentheses						
*p < 0.1, †p < 0.05, ‡p < 0.01						

To gain a better understanding of the contribution of each controlled variable to the accounted portion of the negative effect of visible minority status, the researcher has performed both regression decomposition and Oaxaca decomposition using the coefficients from the pooled sample in the calculation. These two decomposition techniques produce the same results, as supported by Hou's study.[43] In regression decomposition, the contribution of each covariate X_j to the overall "explained" effect is defined as follows:

$$\beta_{xj} * \rho_{xj} / \Sigma(\beta_{xj} * \rho_{xj})$$

where β_{xj} is the standardized regression coefficients in Model 2 for all library practitioners, and ρ_{xj} is the bivariate correlation between visible minority and each covariate. As shown in table 10, the decomposition results reveal that racial differences in job characteristics play the largest role, explaining 62.9 percent of the explained racial salary gap. Racial differences in labor market characteristics (19.9%) and individual characteristics (17.2%) play smaller roles. Regarding the job characteristics, weekly hours is the predominant contributor (42.3%) to the explained salary gap between visible minorities and nonvisible minorities. The contribution of staff type (11.1%) to the racial salary gap is larger than that of management position (7%) and that of job category (5.2%). Within staff type, racial difference in paraprofessionals (17.4%) is the largest contributor to the explained salary gap. Within management position, racial difference in senior administrators (5.4%) explains the largest portion of the accounted effect of visible minority status on salary. In terms of job category, racial difference in information technology (IT) plays the largest role, explaining 5.8 percent of the explained salary gap.

In addition to visible minority status, the estimation of Model 2 in table 9 for all library practitioners yields a few other statistically significant variables. The three individual variables that are significant are age, age-squared, and experience in the current library. The coefficient of the age variable (0.039) is positive and significant (p < 0.01), whereas the coefficient of age-squared (–0.00037) is negative and significant (p < 0.01), suggesting that the impact of age on salary is not linear. In other words, salary increases with age as library practitioners become more experienced; but, as they get older, salary increases at a decreasing rate. Both the age and age-squared variable need to be considered to assess the overall impact of age on salary.

TABLE 10 Decomposition of the Effect of Visible Minority Status on Insalary	
Observed effect	−0.408
Adjusted effect	−0.256
Effect explained	−0.152 (37% of the observed effect)
Contributing components	% of the effect explained
Individual Characteristics	**17.2%**
Female	−0.8%
Age	17.4%
Age squared	−14.5%
Disabled	0.4%
Experience in current library	7.4%
Master's degree	6.5%
PhD	0.8%
Job Characteristics	**62.9%**
Staff type	11.1%
Other professionals	−0.3%
Paraprofessionals	17.4%
Other support staff	−6.0%
Management position	7.0%
Supervisors	−2.1%
Middle management	3.7%
Senior administrators	5.4%
Job category	5.2%
Technical services	−1.7%
Collections	1.2%
Information technology (IT)	5.8%
Management	0.2%
Other category	−0.2%
Permanent	−2.7%
Hours	42.3%
Labor Market Characteristics	**19.9%**
British Columbia	5.2%
Alberta	3.9%
Saskatchewan	13.3%
Manitoba	−5.7%
Quebec	2.6%
Nova Scotia	0.6%
Total	**100%**
Source: Author's tabulations, see text for details.	

The percentage impact of age on salary for the library practitioners is calculated using the equation below:

Coefficient of age + 2 ∗ (coefficient of age-squared) ∗ Mean of age

At the average age of 45.6 years, this gives: $0.039 + 2 * (−0.00037) * (45.6) = 0.005$, or a return of about 0.5 percent per year of age on average. In other words, with a one-year increase in age, salary increases by 0.5 percent, all else being equal. This result is consistent with Sweeper and Smith's study of the library science labor market in the United States.[44] In addition, experience in the current library is significant at the 0.01 level, with an additional year of experience leading to 0.6 percent increase in salary.

Of the job variables that are significant in Model 2, hours and permanent are both significant at 0.01 level and can be interpreted as follows: per additional hour per week increases salary by 2.7 percent, and having a permanent job translates into an increase of 23 percent in salary, compared to a temporary job, while holding other factors constant. Regarding the staff type, the coefficients of paraprofessionals and other support staff are both negative and significant at the 0.01 level, with a 26.7 percent and 32.3 percent salary gap respectively, compared with librarians. In terms of management positions, this research does not support Sweeper and Smith's findings that being supervisors significantly increases earnings;[45] instead, it shows that being senior administrators significantly increases salary by 22.7 percent ($p < 0.01$). In addition, the library staff living in Saskatchewan and Manitoba earn 18.9 percent ($p < 0.01$) and 19.9 percent ($p < 0.05$) respectively less than their counterparts in Ontario.

Librarians versus Support Staff

The same OLS regression models are separately estimated using samples of librarians

and support staff, and the results are presented in table 9 (columns 4–7). The negative coefficient for visible minority is statistically significant for both librarians ($p < 0.01$) and support staff ($p < 0.05$). Among librarians, the average salary of visible minorities is 40.7 percent less compared to nonvisible minorities ($p < 0.01$). The corresponding gap is 32.2 percent for support staff ($p < 0.05$). From Model 1 to Model 2 for the librarians, the coefficient for visible minority drops from –0.407 to –0.173, suggesting that 57 percent of the observed racial differences in lnsalary can be explained by their differences in the controlled variables. In comparison, from Model 1 to Model 2 for the support staff, the coefficient for visible minority decreases from –0.322 to –0.303, suggesting that the differences in the controlled variables can explain only 6 percent of the observed salary gap between visible minorities and nonvisible minorities. As such, on average, the negative effect of visible minority status on salary is stronger for support staff than for librarians.

In addition to visible minority status, a few other variables are statistically significant for librarians, including age, age-squared, experience in the current library, senior administrators, hours, and permanent job. Using the same technique for calculating the combined impact of age and age-squared as stated earlier, the analysis shows that at the average age of 45.1 years, with a one-year increase in age, librarians' salary increases by a 0.5 percent on average, all else being equal. An additional year of experience in the current library translates into a 1 percent increase in librarians' salary on average, which is consistent with Siebert and Young's study.[46] Senior administrators earn 22.6 percent more than nonmanagement, and per additional weekly hour increases salary by 2.2 percent. Moreover, having a permanent job translates into an increase of 25 percent in salary.

In contrast, far fewer variables are statistically significant for support staff. Age and age-squared remain significant. As is the case for librarians, at the average age of 45.8 years, a one-year increase in age increases salary by 0.5 percent, all else being equal. An additional weekly hour significantly increases salary by 6 percent, higher than its effect for librarians (2.2%). Support staff in Saskatchewan on average earn 45.5 percent ($p < 0.01$) less than their counterparts in Ontario, holding other things constant. Other variables that are significant for librarians lose significance for support staff, including experience in the current library, permanent job, and senior administrators.

Discussion
The research findings show that there is a significant salary gap between visible minorities and nonvisible minorities in CARL libraries. This result is disappointing, considering that some recent studies have found the racial pay gap closed in the library science labor market in the United States.[47] However, it is not surprising given the fact that pay equity challenges have persisted for decades in Canada. This research provides evidence that the experiences of visible minorities in CARL libraries do not differ from those of workers in the general labor market. As visible minorities are underrepresented in CARL libraries, practicing toward racial pay equity is important to recruit and retain visible minorities in the workplace and address the diversity gap. Both universities and CARL have realized the importance of employment equity. Employment equity policies or plans have been in place in large universities; however, they are usually very broad, just providing guidance on general equity principles.[48] Increasing hires for visible minorities is often clearly stated as a numerical employment equity goal, such as Memorial University's *Employment Equity and Diversity Plan: 2019–2021*.[49] Yet pay equity is

not explicitly specified as a measurable indicator of successful implementation of employment equity in institutional policies. It is commendable that CARL has prioritized equity, diversity, and inclusion (EDI) as an important area for capacity building within its members. In May 2019, CARL announced a newly created role of Visiting Program Officer for EDI, who, with the support of an advisory working group composed of librarians across Canada, would guide the development of CARL's EDI initiatives.[50] There is not a clear statement as to what the future diversity efforts in CARL libraries would entail. The findings from this research suggest that more attention needs to be given to the racial pay equity and a comprehensive assessment is necessary in CARL libraries. As the negative effect of visible minority status on salary is shown to be stronger for support staff than for librarians, more efforts need to be put into reducing racial pay gap among support staff, although that is an important issue to tackle for librarians as well.

The decomposition results indicate that 37 percent of the salary gap between visible minority and nonvisible minority library practitioners can be explained by their differences in the controlled variables. Yet a large portion of the gap, 63 percent, remains unexplained. A review of research on gender earnings differences finds that no method exists for measuring discrimination directly, and the unexplained sex-linked residual is usually used to estimate the effect of sex discrimination.[51] This provides a clue for us to understand the unexplained portion of the racial salary gap in this research. On one hand, it may reflect personal choices of the library practitioners in the aspects that are not included as explanatory variables in this analysis. On the other hand, it may reflect discrimination in hiring decisions by employers or more systemic discrimination affecting the labor market opportunities and job-related decisions of individuals.[52] Visible minorities belong to one of the designated groups that tend to experience discrimination in the Canadian labor market. In the postsecondary education environment, CAUT has acknowledged that "systemic discrimination has manifested itself in barriers to access, employment, governance, inclusion, respect, and acceptance."[53] Federal Contractors Program (FCP) was established in 1986 to require universities as contractors under the FCP to commit to implementing employment equity because data show that disadvantage against four designated groups persists to this day including women, Aboriginal peoples, members of visible minorities, and persons with disabilities.[54] Although it is not safe to assign all the unexplained portion of salary gap to discrimination against visible minorities, to what extent the salary gap might be caused by discrimination merits further research.

The research results also confirm the findings of Dowell[55] and Van House[56] that a higher level of position is significant to librarians' salaries. In particular, they illustrate the significant impact of being senior administrators on the earnings attainment process. In reality, it has been cited that "librarians with early success in frontline and middle-management roles are uncomfortable with the idea of moving toward senior levels of leadership."[57] Overall, the senior administration of academic libraries in Canada does not reflect the population demographic it serves. Particularly, visible minority librarians are confronted with challenges in rising to senior leadership positions due to lack of access to network, lack of mentorship, lack of training and other reasons.[58] The findings from this research may be encouraging to some librarians to move up their career from a financial incentive perspective.

Limitations and Further Research

The results of this study are based on a sample of 392 individuals employed in CARL libraries only. This sample is not representative of all Canadian academic libraries and their staff. The study is also limited by preexisting variables in the 8Rs Practitioner Survey. For instance, province is the only available labor market variable in the survey. As stated in the Measures section, three provinces (Prince Edward Island, Newfoundland and Labrador, and New Brunswick) are not included in the analysis. All these limitations suggest that caution is needed in generalizing the results from this research to all academic libraries across Canada. However, it is important to note that empirical studies of the effect of race on earnings in library science are few. This study will form the basis for continued work in this area. Possibilities for future research include further examination of how the adjusted effect of visible minority status on salary would change over time. Since this research examines visible minorities in general, if more data were available, further research could permit a more detailed analysis of earnings differentials across racial/ethnic groups such as Asian, Black, and Hispanic. Additionally, it would be meaningful to conduct a comparative study of the racial salary gap between CARL libraries and non-CARL libraries or between academic libraries and public libraries. Another area for future research would be a more in-depth examination of the impacts of specific factors on the racial salary gap, such as hiring, promotion, and access to senior positions, particularly the discrimination against visible minorities in the library science labor market.

Conclusion

CARL libraries have made progress in hiring and retaining employees from underrepresented groups, although the number of ethnic minority employees is still fairly low compared to the Canadian labor force. There has been a lack of study on the racial pay gap in academic libraries. This research examines the impact of visible minority status on salaries of CARL library practitioners, controlling for individual, job, and labor market variables. Research findings reveal that visible minority status has a significant impact on salary, with the negative effect being stronger for support staff than for librarians. CARL libraries should continue to develop and improve initiatives to foster racial equity. Pay gap needs to be taken into account when assessing racial equity among each type of library staff. ARL libraries have made great strides in the last three decades toward decreasing the racial pay gap, and CARL libraries can learn from their best practices. Future research efforts should seek to provide practical recommendations for the evaluation of improvement initiatives in CARL libraries. Additionally, the decomposition analysis indicates that racial differences in job characteristics account for a larger portion of the explained racial salary gap than individual and labor market characteristics. Unexplained portion of the racial salary difference can be partially attributed to discrimination, which warrants further study. Future research would also include more in-depth examination of racial salary gap in other types of libraries, by ethnicity groups as well as its change over time.

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