

Article

# The Gender Pay Gap in Academia: Evidence from the Beedie School of Business

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**Abstract:** We analyzed gender pay gap in academia using detailed performance data of all faculty members at the Beedie School of Business, Simon Fraser University, during 2012–2022. Although we initially observed a small average pay gap in favor of male academics, we found that female academics received higher remuneration compared to their male counterparts, once we controlled for research and teaching productivity, prior education and work experience, ethnicity, and various academic appointments. Our results provide an insight into possible sources of gender bias and highlight the need to control for teaching and research performance when investigating gender pay gaps.

**Keywords:** gender pay gap; academia; case study

## 1. Introduction

Extensive research and statistical data from various governmental agencies worldwide support the existence of the gender pay gap, where male employees are paid more than their female counterparts for performing the same work (Blau and Kahn 1992, 2007; Chen et al. 2022). Despite accounting for factors such as occupation, collective bargaining coverage, prior work experience, and education, the gender pay gap in the United States has persisted at around 20% for two decades (20% in 2002 and 18% in 2022), according to the Pew Research Center (2023). This income disparity is not only prevalent in sectors such as medicine, corporate management, or science and engineering (Hoff and Lee 2021; Hrazdil and Novak 2023; Graham and Smith 2005; Ding et al. 2021) but is also widespread in universities (Hatch 2017; Holmes 2017).

Research related to the academic setting provides evidence that, in 2014, US-based male full professors earned 15% more than their female colleagues (Hatch 2017), and, in 2015–2016, UK universities had a 10.5% gender pay gap across ranks (Holmes 2017). Chen and Crown (2019) found an 11% pay gap across 23,000 observations and a 5.3% gap within ranks. In a Canadian case study, Smith-Carrier et al. (2021) found both an entry gender pay gap close to CAD9000 and longer-term gender gaps attained in people's total career earnings (CAD300,000–CAD400,000) and pension earnings (CAD148,000 and CAD259,000, respectively). Other studies have observed causes for concern such as decreasing female participation rates between the assistant level and childbirth and the full professor level (Greska 2023), a reduction in women receiving tenure relative to men due to the use of "gender-neutral" policies such as pausing the tenure clock for childbirth or adoption (Antecol et al. 2018), higher standards for women in the peer review process (Hengel 2022), and more heavily discounting co-authored publications for women than men (Wiedman 2020; Sarsons 2017). These studies are based on universities from various geographic regions (e.g., US and UK) and of differing sizes. A general finding derived from the gender pay gap literature based on universities is that male academics continue to receive a higher remuneration compared to women.



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The ongoing evidence of a wage disparity in universities raises concerns about the fundamental fairness of compensation and leads to two key research questions. Is university pay distributed equally to reflect the skills and contributions of both men and women? Or does bias lead to differing rewards based on an individual's gender in university settings? Our research sheds light on these questions.

Much of the gender pay gap literature employs data arising from either surveys or large samples derived from across institutions. Survey research suffers from the recognized limitation of response bias (Aiston and Jung 2015). Large studies based on publicly available data overcome this bias; however, data from across institutions may suffer from differences in how variables (e.g., "salary") are defined, since these definitions may depend on differing institutional policies or procedures, and from the availability of control variables specific to various organizations (Sayre et al. 2000). Recent papers call for further research to examine more comprehensive data, particularly regarding the quality and quantity of the output. For instance, Kim et al. (2023) argue that employing more detailed data and investigating whether there are higher returns on the quantity and quality of research in economics as opposed to agricultural/applied economics could shed light on the underlying factors contributing to the pronounced gender gap in economics.

To overcome these limitations, we based our research on a case study of one Canadian business school that includes all continuing faculty members during the period 2012–2022. The advantages of case study research include the ability to examine a situation in more depth compared to survey or large sample studies based on publicly available data. This case study advantage allowed us to access more detailed records resulting in the ability to control for more variables that might have affected the presence or size of any perceived pay gap. Thus, while survey or large-sample publicly available data provide more breadth, case study data access more granular data while avoiding the response bias of surveys and the variable definition issue that plagues cross-institutional data. Following the 2023 Nobel prize-winning work of Goldin (2002, 2023), our use of more granular data allowed us to better control for performance differences between genders. We recognize that a major limitation of case-based research is the inability to generalize the results. With respect to our study and its contributions, our findings provided evidence that allowed us to examine and explain a gender pay gap using consistently defined variables for one business school and the ability to examine specific data (e.g., additional teaching and leaves) that gave depth to this topic.

Several of our findings contribute to the gender pay gap literature and have important implications for business schools, universities, and the broader community. First, we observed a non-significant gender pay gap in salaries (average salary of CAD162,079 for male academics and CAD159,154 for female academics, respectively) in the Beedie School of Business during 2012–2022. This null result suggests that some business schools and universities are experiencing a narrowing and, under some circumstances, the elimination of the gender pay gap. This evidence provides good news for faculty members and the broader community seeking salary equity between genders. Second, we found that female academics received significantly higher remuneration compared to their male counterparts, once we controlled for research and teaching productivity, prior education and work experience, ethnicity, and various academic appointments. These results indicate lesser clarity on whether the previously documented gender wage gap in academia results from taste-based discrimination (i.e., preference for male employees) or whether compensation reflects differences in objectively measured markers of productivity, a statistical-based discrimination (Aiston and Jung 2015; Hasselback et al. 2012; Bujaki and McConomy 2017).<sup>1</sup>

The rest of this paper is organized as follows. Section 2 discusses the relevant literature; Section 3 outlines our methodology and data; Section 4 presents and discusses our results; and Section 5 concludes our study.

## 2. Extant Research

### 2.1. Previous Research on the Gender Wage Gap in Academia

Several recent studies have examined the gender pay gap within the academic sector, providing valuable insights into its causes and implications. For example, [Woodhams et al. \(2022\)](#) have analyzed how organizational factors explain gender pay gaps. Using data from two large UK Russell Group universities, the authors examined the pay of faculty members [N(1) = 1998 and N(2) = 1789] in these two universities for a single month in 2018, looking for characteristics which explained merit pay. The authors' analyses within and across groups for these merit characteristics (e.g., Britishness, whiteness, seniority) indicated that "merit" appeared to stick more to male than female individuals in the same ranks. [Brower and James \(2020\)](#) have utilized a unique dataset in New Zealand and found that men had more than double the odds of achieving higher academic ranks compared to women, even after controlling for research score, age, field, and university. Their study revealed a significant lifetime gender pay gap of approximately NZD400,000, with less than half of it explained by research score and age. In the US setting, [Obloj and Zenger \(2022\)](#) have examined the influence of pay transparency on pay inequity, inequality, and the performance basis of pay using a dataset of approximately 100,000 US academics. Their findings indicate that pay transparency leads to increased equity and equality in pay, as well as reduced linkages between pay and individually measured performance. Others, such as [Chen and Crown \(2019\)](#), have focused on one university and found a persistent 11% gender pay gap among regular, tenure-track faculty at the Ohio State University, even after controlling for various factors such as fiscal year, race, clinical appointments, experience, and department.

In the Canadian setting, [Momani et al. \(2019\)](#) have examined the gender pay gaps in Ontario's public post-secondary education sector from 1996 to 2016, finding that the gaps widened across all faculty ranks over time. Their analysis revealed that men were consistently paid more than women in different employee categories, even when controlling for common explanations like the "pipeline effect" (i.e., more females than males leave the discipline over time) and years of experience. Similarly, [Wiedman \(2020\)](#) has explored role congruity bias and its contribution to the gender pay gap in academia, focusing on the field of accounting in Canada. Her study revealed that bias in attributing credit for co-authored research resulted in lower returns to research for female professors, indicating a significant pay gap for women who published in selective journals. This bias influenced the determination of salaries and raised ethical concerns about providing lower rewards for equal work. These studies collectively highlight the persistent gender pay gap in academia and emphasize the need for changes in hiring practices, transparency, and addressing bias in the attribution of credit for research to mitigate this disparity. Although the extant literature provides valuable insights into the factors contributing to pay differentials and proposes potential solutions to address the gender pay gap within the academic field, these studies also highlight the importance of performance in explaining the gender pay gap.

A portion of the gender pay gap can be clarified by various performance-related factors. For instance, [Sarsons \(2017\)](#) has discovered that women are less likely to attain tenure as their co-authorship increases. Within academic settings, women encounter specific obstacles, such as facing higher standards in the peer review process ([Hengel 2022](#)), and receive less acknowledgment for collaborative research efforts ([Sarsons 2017](#); [Wiedman 2020](#); [Sarsons et al. 2021](#)). Moreover, policies like "clock-stopping", designed to accommodate childbirth or adoption, adopt a gender-neutral approach but may unintentionally diminish the likelihood of women attaining tenure compared to their male counterparts ([Antecol et al. 2018](#)). Consequently, [Aiston and Jung \(2015\)](#) have observed that women publish significantly less than men in Finland, Germany, Hong Kong, and Japan, although this pattern is not evident in the US. In a Canadian accounting setting, [Bujaki and McConomy \(2017\)](#) have reported that the twenty most productive accounting researchers in Canada, across different time periods, are all male.

## 2.2. Theory

The idea that male academics receive greater compensation than their female counterparts is grounded in role congruity theory. According to this theory, a group is more positively assessed when its characteristics align with the typical social roles associated with that group. Additionally, stereotypes exist that dissociate female attributes from leadership qualities, thereby contributing to this assertion (Eagly and Karau 2002).

Goldin's (2002) labor economics research explores observable factors (e.g., female work force participation, age, marital status, having young children, work experience, and educational background) to help explain the gender pay gap and its narrowing in the broader economy over time. She notes that, while the gap in female versus male earnings narrowed during the 1980s in the US, the gap failed to disappear. Some of the remaining gap is explained by economic sectors that reward "performance" factors such as working longer hours, taking little time off, or working an inflexible schedule (Goldin 2014; Goldin et al. 2017).

There is a limited amount of systematic research on how performance contributes to the wage gap in academia. As previously noted, existing research examines the gender pay gap while controlling for various variables (e.g., age, rank, experience, department). However, the term "performance" is sometimes ambiguously defined. Examples of varied performance definitions include the number of publications and citations (Kim et al. 2023), the research score (Brower and James 2020), the number of publications in the Brigham Young University (BYU) journals list (Wiedman 2020), and the "pipeline" effect (Momani et al. 2019). Despite these different performance definitions, these studies only account for a small percentage of the overall gender pay gap (Kim et al. 2023). Some findings indicate that the gap persists and, in certain instances, widens with rank. Consequently, it remains unclear whether the wage disparity stems from taste-based discrimination or if compensation reflects differences in productivity.

Mainstream theory argues that gender inequality is reduced once the pay gap is "adjusted" for differences in individual characteristics (education, experience, etc.). However, studies have shown that gender inequities exist in multiple other facets of academic work-life, such as teaching, research, service, and resources. Depending on study design, such facets are difficult to systematically identify or report. The impact of the gender pay gap in academia over the course of a career and retirement is also a significant concern. For example, if women are, on average, more agreeable or less risk-tolerant than men, they may negotiate less assertively about their remuneration and accept less lucrative compensation packages (Hrazdil and Novak 2023; Hrazdil et al. 2023).

## 2.3. Institutional Background

Simon Fraser University (SFU) opened in 1965 and is a public university located in British Columbia, Canada. SFU has achieved recognition, including, in 2023, when it was named the Top Comprehensive University by MacLean's rankings and ranked as the top Canadian university for innovation by the World University Rankings for Innovation. SFU has also received recognition from the Times Higher Education (THE) as the eighth (tied) top-ranked university in 2022 and by THE's Impact Rankings (eighth in the world) in 2021 for its contributions to the United Nation's environmental, social, and economic development goals. SFU was accredited by the Northwest Commission on Colleges and Universities (NWCCU) in 2015.

When SFU opened, business courses were taught in the Department of Economics and Commerce, which evolved into two departments, Economics and Business in the School of Business and Economics. Following rapid growth, the Business Department became the Faculty of Business Administration in 1982, becoming a named business school in 2011, following a donation by Ryan and Keith Beedie. The Beedie School is a non-departmentalized business school composed of "areas" (e.g., Accounting, Finance, Marketing) that report directly to the Dean or the Dean's official designates (i.e., Associate Deans). The Beedie School of Business is accredited by the AACSB (Association to Advance Collegiate Schools

of Business) and EQUIS (European Quality Improvement System). Additionally, the Beedie School is a signatory to PRME (Principles for Responsible Management Education).

The salary for permanent faculty members in the Beedie School of Business is initially negotiated with the Associate Dean of Faculty Development and can change over time due to biennial evaluations (based on salary scales, with 0–2 possible step increases) and/or can be renegotiated through retention stipends (CAD amounts). Promotions are accompanied by salary increases based on biennial salary reviews, with the Tenure and Promotion Committee (TPC) determining the appropriate step placement for a newly promoted faculty member in recognition of the individual's research and teaching performance. Salaries for permanent faculty members earning CAD75,000 or more are mandated to be publicly disclosed by the provincial government for all publicly funded organizations, including universities. Due to this salary disclosure threshold, very few part-time (such as sessional instructors) faculty members' salaries are publicly disclosed. We use these public salary data that are available from annual statements of financial information at <https://www.sfu.ca/finance/publications.html> (accessed on 1 November 2023).

The Business School's faculty members can further supplement their salary through teaching additional course sections (overloads), for which they are paid, or teaching fewer courses if they have gathered partial credits through nonremunerated overload teaching, various committee involvements, or engaging in graduate project supervisions. In rare situations (i.e., when research grants permit or when approval from the Associate Dean is granted), faculty members can buy back courses, which would reduce their pay without the buy-back. Study leaves are generally associated with a decrease in pay, since these are often taken with a 20 percent or higher pay deduction during the leave. Faculty members on study leave may teach additional course section(s) to make up for some of their reduced salary. However, most overloads occur when a faculty member teaches a course section in addition to their normal load. We controlled for study leaves to ensure that this distinction was made in our data. We also controlled for parental and unpaid leaves, although these were not associated with teaching overload sections.

### 3. Methodology and Data

Following [Blau and Kahn \(2017\)](#), we employed log wage regressions to estimate the gender wage gap. To ensure a comprehensive analysis, we gradually introduced larger sets of control variables. The complete specification, estimated using ordinary least squares, is represented as follows:

$$\ln(\text{Salary})_{it} = \beta_0 + \beta_1 \text{Female}_i + \beta_2 P_{it} + \beta_3 F_{it} + \beta_4 X_{it} + \gamma_t + \gamma_a + \varepsilon_{it} \quad (1)$$

The dependent variable is the log of the annual salary, for an individual  $i$  in year  $t$ . The primary coefficient of interest is  $\beta_1$ , which represents the estimated wage gap for female (*Female*) relative to male academics. We then followed prior literature (i.e., [Ward 2001](#); [Sayre et al. 2000](#); [Chen and Crown 2019](#); [Smith-Carrier et al. 2021](#); [Kim et al. 2023](#)) and added a set of control variables  $P_{it}$  as proxies for productivity for an individual  $i$  in year  $t$  (obtained from Google Scholar, ResearchGate, and the most recent individual CVs), which included the following (up to year  $t$ ): the log of citations (*Cite*), the number of books (*#Books*), the number of chapters/cases (*#Ch/Ca*), the number of publications in peer-reviewed journals (*#PR Pubs*), and the number of publications in journals on the Financial Times list (*#FT Pubs*); a set of control variables  $F_{it}$  as proxies for full-time equivalency, which included (for year  $t$ ) an indicator variable for part-time (*PT*), the number of semesters of unpaid leave (*UL*), the number of semesters of study leave (*SL*), the number of courses taught as an overload or bought out and not taught (*OL*), and the number of semesters of parental leave (*PL*); and a set of control variables  $X_{it}$ , which included ethnicity controls (indicators for race/ethnicity—African American, Indian, Asian/Pacific Islander, Native American, and Other, including multiple and undisclosed ethnicities, with Caucasian as the omitted category), prior experience controls (indicators for prior academic experience—*Prior AE*, and prior work experience—*Prior WE*, and the number of years employed by SFU—*#SFU*), education controls (indicators for PhD

degree—*PhD*, professional designation and certificate—*Des/Cert*), and rank and promotion controls (indicators for faculty rank: Assistant—*Assist Prof*, Associate—*Assoc Prof*, and Full—*Full Prof*, with Lecturer and Other—*Lect/Other* as the omitted category; and indicators for promotions from Lecturer, Assistant, and Associate levels). Table 1 presents the definitions for all the variables utilized in our analysis.

**Table 1.** Variables' definitions.

Variable	Definition
<i>Salary</i>	Salary in year $t$ (in CAD).
@ <i>SFU</i>	Number of years a faculty member was employed at SFU prior to and including year $t$ .
<i>Prior AE</i>	Indicator variable that equals one if a faculty member held an academic position prior to joining SFU and is zero otherwise.
<i>Prior WE</i>	Indicator variable that equals one if a faculty member had work experience prior to joining SFU and is zero otherwise.
<i>PhD</i>	Indicator variable that equals one if a faculty member held a PhD degree in year $t$ and is zero otherwise.
<i>Des/Cert</i>	Indicator variable that equals one if a faculty member held a professional designation or a certification in year $t$ and is zero otherwise.
<i>Full Prof</i>	Indicator variable that equals one if a faculty member held the rank of Full Professor in year $t$ and is zero otherwise.
<i>Assoc Prof</i>	Indicator variable that equals one if a faculty member held the rank of Associate Professor in year $t$ and is zero otherwise.
<i>Assist Prof</i>	Indicator variable that equals one if a faculty member held the rank of Assistant Professor in year $t$ and is zero otherwise.
<i>Lect/Other</i>	Indicator variable that equals one if a faculty member held the rank of Lecturer or Senior Lecturer in year $t$ and is zero otherwise.
<i>PROM</i>	Indicator variable that equals one if a faculty member was promoted during year $t$ and is zero otherwise.
<i>PT</i>	Indicator variable that equals one if a faculty member was a part-time employee during year $t$ and is zero otherwise.
<i>UL</i>	Number of semesters a faculty member was on unpaid leave during year $t$ .
<i>SL</i>	Number of semesters a faculty member was on study leave during year $t$ .
<i>OL</i>	Number of courses a faculty member taught as an overload or bought out and not taught during year $t$ (buy-outs are coded as negative numbers).
<i>PL</i>	Number of semesters a faculty member was on parental leave during year $t$ .
<i>Cite</i>	Cumulative number of citations, obtained from Google Scholar and/or ResearchGate, that a faculty member had up to year $t$ (excluding year $t$ ).
# <i>Books</i>	Cumulative number of published books, obtained from the CV, that a faculty member had up to year $t$ (excluding year $t$ ).
# <i>Ch/Ca</i>	Cumulative number of published cases and chapters, obtained from the CV, that a faculty member had up to year $t$ (excluding year $t$ ).
# <i>PR Pubs</i>	Cumulative number of published refereed publications, obtained from the CV, that a faculty member had up to year $t$ (excluding year $t$ ).
# <i>FT Pubs</i>	Cumulative number of published papers in journals included on the FT list, obtained from the CV, that a faculty member had up to year $t$ (excluding year $t$ ).

Finally, we included fiscal year fixed effects ( $\gamma_t$ ), which accounted for aggregate wage fluctuations which affected the Beedie School of Business as a whole (e.g., provincial budgets) and area fixed effects ( $\gamma_a$ ). By controlling for area's (e.g., accounting, marketing,

strategy) fixed effects, we assumed that variations in the average earnings were unrelated to the gender composition within those specific areas. The Business School’s Deans and Associate Deans are not part of the SFU faculty association and are governed by different policies when it comes to salary differentials. As a result, we deleted the observations for each year during which a faculty member served as either the Dean or Associate Dean (our results were robust if we controlled for the Associate Dean role). With this exception, our sample was the population of permanent faculty members whose salaries were publicly available as prescribed by jurisdictional law. Our sample comprised 923 faculty academic members for the years from 2012 to 2022. In Table 2, Panel A provides the descriptive statistics of the variables used in our analysis, whereas Panel B reports the average salaries by gender and rank.

**Table 2.** Panel A: descriptive statistics. Panel B: mean salaries by gender and rank.

Panel A						
Variable	Min	25%	Mean	Median	75%	Max
<i>Salary *</i>	60,791	132,878	161,014	157,972	184,882	335,636
<i>@SFU</i>	0.00	7.00	14.28	13.00	19.00	45.00
<i>Prior AE</i>	0.00	1.00	0.78	1.00	1.00	1.00
<i>Prior WE</i>	0.00	1.00	0.77	1.00	1.00	1.00
<i>PhD</i>	0.00	1.00	0.90	1.00	1.00	1.00
<i>Des/Cert</i>	0.00	0.00	0.29	0.00	1.00	1.00
<i>Full Prof</i>	0.00	0.00	0.30	0.00	1.00	1.00
<i>Assoc Prof</i>	0.00	0.00	0.36	0.00	1.00	1.00
<i>Assist Prof</i>	0.00	0.00	0.11	0.00	0.00	1.00
<i>Lect/Other</i>	0.00	0.00	0.23	0.00	0.00	1.00
<i>PROM</i>	0.00	0.00	0.05	0.00	0.00	1.00
<i>PT</i>	0.00	0.00	0.02	0.00	0.00	1.00
<i>UL</i>	0.00	0.00	0.04	0.00	0.00	2.00
<i>SL</i>	0.00	0.00	0.25	0.00	0.00	3.00
<i>OL</i>	−1.00	0.00	0.14	0.00	0.00	8.50
<i>PL</i>	0.00	0.00	0.04	0.00	0.00	3.00
<i>Cite *</i>	0.00	3.81	5.27	5.98	7.16	10.66
<i># Books</i>	0.00	0.00	1.11	0.00	1.00	12.00
<i># Ch/Ca *</i>	0.00	0.00	6.74	2.00	7.00	60.00
<i># PR Pubs *</i>	0.00	6.00	22.20	12.00	25.00	386.00
<i># FT Pubs *</i>	0.00	0.00	3.06	2.00	4.00	46.00

  

Panel B				
Variables	Salary (Female)	Salary (Male)	N (Female)	N (Male)
<i>Full Prof</i>	CAD191,566	CAD187,631	81	196
<i>Associate Prof</i>	CAD162,735	CAD155,530	117	215
<i>Assistant Prof</i>	CAD150,697	CAD159,831	68	37
<i>Lect/Other</i>	CAD123,877	CAD136,778	70	139
N	336	587		

\* denotes variables that are log-transformed for the regression analysis. N denotes the number of observations in each group.

#### 4. Results

We hereby first present a bi-variate analysis of our dependent and control variables. Table 3 reports differences in the salaries and variables related to the demographics between male and female faculty members for our sample of 923 academic-year observations. Consistent with prior research (Ward 2001; Smith-Carrier et al. 2021; Chen and Crown 2019; Uribe-Bohorquez et al. 2023), we documented a gender pay gap, where female academics earned about CAD3000 less per year relative to their male counterparts; however, unlike prior studies, we found that this difference was not statistically significant. In terms of significant differences between the two groups, Table 3 reveals that female academics

comprised about 36% of our sample, worked about 2 years less on average at the SFU, and had significantly less work experience prior to joining the SFU. In terms of differences in ranks, female academics were also more junior (i.e., held significantly more Assistant Professor-level positions, where they earned a lower salary, and held significantly less Full Professor-level positions, where they earned a higher salary) than male academics.

**Table 3.** Panel A: female academics’ demographics over time. Panel B: male academics’ demographics over time.

Panel A											
Year	N	Salary	#SFU	Prior AE	Prior WE	PhD	Des/Cert	Full Prof	Assoc Prof	Assist Prof	Lect/Other
2012	20	CAD136,586	12.9	0.70	0.65	1.00	0.25	0.25	0.45	0.20	0.10
2013	26	CAD138,997	12.5	0.73	0.62	0.96	0.27	0.23	0.35	0.23	0.19
2014	28	CAD135,487	12.3	0.76	0.61	0.93	0.25	0.18	0.39	0.18	0.25
2015	27	CAD138,378	12.8	0.78	0.56	0.93	0.22	0.15	0.41	0.22	0.22
2016	30	CAD151,242	11.9	0.73	0.50	0.93	0.30	0.23	0.30	0.23	0.24
2017	33	CAD159,145	12.8	0.73	0.64	0.91	0.27	0.24	0.33	0.21	0.22
2018	33	CAD154,996	13.8	0.73	0.64	0.91	0.27	0.24	0.39	0.15	0.22
2019	33	CAD163,772	13.9	0.73	0.61	0.91	0.27	0.21	0.42	0.18	0.19
2020	34	CAD177,815	14.2	0.76	0.62	0.91	0.26	0.29	0.32	0.21	0.18
2021	37	CAD180,322	12.8	0.78	0.68	0.86	0.22	0.30	0.27	0.19	0.24
2022	35	CAD187,830	12.9	0.77	0.71	0.86	0.23	0.29	0.26	0.23	0.22
Mean		CAD159,154	13.0 *	0.75	0.63 *	0.91	0.26	0.24 *	0.35	0.20 *	0.21
Panel B											
Year	N	Salary	#SFU	Prior AE	Prior WE	PhD	Des/Cert	Full Prof	Assoc Prof	Assist Prof	Lect/Other
2012	46	CAD143,725	13.7	0.83	0.80	0.93	0.33	0.35	0.39	0.09	0.17
2013	47	CAD151,245	13.1	0.81	0.81	0.89	0.34	0.32	0.43	0.06	0.19
2014	49	CAD145,033	13.9	0.82	0.82	0.94	0.33	0.33	0.45	0.06	0.16
2015	53	CAD151,549	15.3	0.81	0.85	0.92	0.32	0.34	0.42	0.06	0.18
2016	53	CAD157,309	14.9	0.81	0.85	0.91	0.32	0.32	0.43	0.02	0.23
2017	55	CAD157,111	14.8	0.80	0.85	0.87	0.31	0.31	0.40	0.02	0.27
2018	55	CAD162,368	15.5	0.80	0.85	0.87	0.31	0.33	0.36	0.02	0.29
2019	58	CAD165,352	15.7	0.76	0.86	0.86	0.31	0.36	0.31	0.05	0.28
2020	56	CAD169,960	15.9	0.77	0.88	0.91	0.27	0.34	0.32	0.11	0.23
2021	59	CAD181,332	15.9	0.76	0.88	0.88	0.27	0.34	0.29	0.10	0.27
2022	56	CAD188,684	16.0	0.75	0.88	0.88	0.27	0.34	0.27	0.11	0.28
Mean		CAD162,079	15.1 *	0.79	0.85 *	0.90	0.30	0.33 *	0.37	0.06 *	0.24

This table reports the raw salaries and the variables related to demographics for female faculty members (Panel A) and male faculty members (Panel B). All the variables are defined in Table 1. \* denotes 5% significance levels between the final row of variables in Panel A and Panel B based on the Wilcoxon two-sample *t*-test.

Table 4 reports the differences in salaries and the variables related to productivity and full-time equivalency between male and female faculty members (for the same number of observations as Table 3). The differences in the means between the variables in Panel A and Panel B suggested that neither gender of academics took a significantly different number of semesters of study leave and parental leave, with the exception of male academics, who took significantly more semesters of unpaid leave. However, the differences further indicated that male academics taught significantly more courses as overloads, which significantly increased their earnings. Furthermore, while there were no significant differences in citations and number of articles published in FT journals between the two genders, male academics published significantly more books, chapters, cases, and peer-reviewed studies. While these differences suggest that genders may approach work differently in terms of the quality and quantity of output, these differences may help explain the sources of the gender pay gap in academia, as they relate to activities which are the key determinants of salary levels, promotions, and salary changes over time.

Finally, we now turn to the multivariate analysis. To enhance transparency in our estimation and prevent the excessive control of factors which could have potentially been influenced by gender-based treatment or opportunity differentials, we progressively introduced larger sets of control variables when presenting our results. This approach allowed us to avoid overlooking gender disparities that may have arisen from factors such as the promotion process (Sarsons 2017), which could have been obscured by solely controlling for faculty rank.

**Table 4.** Panel A: female academics’ performance over time. Panel B: male academics’ performance over time.

Panel A										
Year	Ln (Salary)	PT	UL	SL	OL	PL	Cite	# Books	# Chl/Ca	#PR Pubs
2012	11.81	0.00	0.00	0.35	0.03	0.25	5.19	1.75	6.70	17.35
2013	11.82	0.00	0.00	0.38	0.06	0.04	4.72	1.35	5.85	15.50
2014	11.80	0.00	0.00	0.29	0.05	0.18	4.70	1.21	5.67	15.28
2015	11.82	0.00	0.00	0.22	−0.06	0.04	5.01	0.74	6.04	15.11
2016	11.91	0.00	0.03	0.27	−0.13	0.00	5.03	0.67	5.63	15.53
2017	11.95	0.00	0.06	0.36	0.02	0.00	5.16	0.85	5.82	16.48
2018	11.93	0.00	0.03	0.45	−0.01	0.00	5.37	0.85	6.12	17.39
2019	11.99	0.00	0.03	0.15	−0.05	0.03	5.29	0.82	5.94	16.27
2020	12.06	0.06	0.03	0.18	−0.01	0.03	5.51	0.79	6.65	17.79
2021	12.07	0.05	0.05	0.08	0.09	0.03	5.04	0.43	5.00	14.43
2022	12.11	0.06	0.00	0.23	0.10	0.06	5.08	0.46	5.43	14.75
Mean	11.95	0.02	0.02 *	0.26	0.01 *	0.05	5.11	0.85 *	5.86 *	15.96 *
Panel B										
Year	Ln (Salary)	PT	UL	SL	OL	PL	Cite	# Books	# Chl/Ca	#PR Pubs
2012	11.85	0.00	0.06	0.30	0.09	0.02	4.85	1.41	6.85	23.52
2013	11.89	0.00	0.04	0.21	0.20	0.02	5.03	1.32	7.02	22.81
2014	11.85	0.00	0.18	0.24	0.38	0.02	5.46	1.39	7.35	23.35
2015	11.89	0.00	0.11	0.34	0.46	0.00	5.35	1.49	7.19	25.82
2016	11.94	0.00	0.02	0.15	0.08	0.02	5.35	1.43	7.11	25.72
2017	11.94	0.00	0.05	0.38	0.15	0.07	5.26	1.24	6.65	24.98
2018	11.97	0.00	0.05	0.36	0.19	0.00	5.44	1.18	7.31	27.47
2019	11.99	0.03	0.03	0.28	0.25	0.07	5.35	1.14	7.19	27.09
2020	12.01	0.05	0.04	0.20	0.03	0.07	5.57	1.18	7.89	28.05
2021	12.08	0.07	0.00	0.17	0.13	0.02	5.54	1.14	7.53	27.58
2022	12.12	0.07	0.02	0.11	0.30	0.05	5.56	0.98	7.46	25.82
Mean	11.96	0.02	0.05 *	0.25	0.21 *	0.03	5.36	1.26 *	7.24 *	25.77 *

This table reports the salaries and the variables related to performance for female faculty members (Panel A) and male faculty members (Panel B). All the variables are defined in Table 1. \* denotes 5% significance levels between the final row of variables in Panel A and Panel B based on the Wilcoxon two-sample *t*-test.

Beginning with the most parsimonious model, which included controls for ethnicity and year and area fixed effects, column 1 of Table 5 suggests that female academics earned lower salaries at the Beedie School of Business. Based on the mean salary of CAD161,014 during 2012–2022, this gap translated into an average annual loss of about CAD3000 for female faculty, relative to their male peers, which was statistically insignificant. Adding controls for prior work experience and education (column 2) had essentially no incremental effect on the non-significant gender salary gap. The model in column 3 incorporates the faculty’s publication and research impact (as well as controls for promotion, rank, education, prior experience, and ethnicity) and shows that the faculty members with more peer-reviewed publications, cases, and chapters received significantly higher salaries, whereas the faculty members with a high number of citations received significantly lower salaries. However, including these additional controls did not indicate a significant gender pay gap (the estimated coefficient for female academics was 0.00, with a *t*-statistic of 0.28). In column 4, we have included controls for various forms of leave and teaching overloads (including controls for promotion, rank, education, prior experience, and ethnicity) and found that faculty members who worked part-time, took more unpaid leave, study leave, or parental leave semesters received significantly lower salaries, whereas academics who taught additional courses as overloads had significantly higher salaries. The inclusion of these controls again did not suggest a significant gender pay gap (the estimated coefficient for female academics was 0.02, with a *t*-statistic of 1.47). Instead, the results in columns 3 and 4 suggest the opposite: after controlling for variables related to productivity and full-time equivalency, female academics received higher remuneration relative to their male counterparts.

Finally, we included all the controls together, and the results are presented in column 5, where the results stand contrary to prior literature: after controlling for productivity (where publication record was positively associated with salary) and full-time equivalency (where various forms of leave resulted in a lower salary and teaching extra courses increased one’s salary), we found that female faculty members received a significantly higher salary

compared to male academics (the estimated coefficient for female academics was 0.02, with a t-statistic of 2.21). To ensure that our results held for the whole data panel, we also removed the rank controls in column 6 and found that the estimated coefficient for female academics was even larger and more significant (0.04, with a t-statistic of 2.91).<sup>2</sup>

**Table 5.** Multivariate regressions.

Model Variable	(1) <i>Ln</i> (Salary)	(2) <i>Ln</i> (Salary)	(3) <i>Ln</i> (Salary)	(4) <i>Ln</i> (Salary)	(5) <i>Ln</i> (Salary)	(6) <i>Ln</i> (Salary)
<i>Female</i>	−0.02 (−1.06)	−0.02 (−1.03)	0.00 (0.28)	0.02 (1.47)	0.02 ** (2.21)	0.04 *** (2.91)
<i>Cite</i>			−0.02 *** (−4.27)		−0.01 *** (−3.51)	−0.01 (−1.50)
<i>#Books</i>			0.00 (1.35)		0.00 (0.01)	−0.00 (−1.14)
<i>#Ch/Ca</i>			0.02 *** (3.28)		0.04 *** (4.26)	0.03 *** (4.20)
<i>#PR Pubs</i>			0.07 *** (5.61)		0.05 *** (4.26)	0.10 *** (10.48)
<i>#FT Pubs</i>			0.01 (1.35)		0.04 *** (4.47)	0.07 *** (7.61)
<i>PT (Part-time)</i>				−0.48 *** (−13.78)	−0.48 *** (−14.29)	−0.49 *** (−13.58)
<i>UIL (Unpaid leave)</i>				−0.29 *** (−13.54)	−0.29 *** (−14.02)	−0.29 *** (−13.19)
<i>SL (Study leave)</i>				−0.03 *** (−3.73)	−0.03 *** (−3.80)	−0.03 *** (−3.20)
<i>OL (Overload courses)</i>				0.08 *** (10.39)	0.08 *** (10.33)	0.08 *** (9.26)
<i>PL (Parental leave)</i>				−0.10 *** (−5.51)	−0.10 *** (−5.65)	−0.09 *** (−4.64)
Intercept	Yes	Yes	Yes	Yes	Yes	Yes
Ethnicity controls	Yes	Yes	Yes	Yes	Yes	Yes
Prior experience controls	No	Yes	Yes	Yes	Yes	Yes
Education controls	No	Yes	Yes	Yes	Yes	Yes
Rank controls	No	No	Yes	Yes	Yes	No
Promotion controls	No	No	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Area fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	923	923	923	923	923	923
Adjusted R <sup>2</sup>	0.278	0.295	0.540	0.698	0.719	0.663

The values in brackets are the *t*-values of the regression coefficients. \*\*\* and \*\* denote 1% and 5%, significance levels, respectively.

These findings are consistent with the aggregate evidence on the unexplained variation in the gender pay gap (Grove et al. 2011; Maitra et al. 2021; Kim et al. 2023). We contribute to this literature by suggesting that the wage differential may not result from taste-based discrimination in an academic setting, but rather that the salary gap can be explained by factors related to teaching and research productivity.

### 5. Conclusions, Discussion, and Limitations

We documented that differences in teaching and research performance among academics at the Beedie School of Business significantly affected their remuneration. More importantly, we documented a significant gender pay gap, where male academics earned significantly less than their female colleagues, once we controlled for teaching and research performance. These results indicate that salary differences between male and female academics likely reflect differences in objectively measured markers of productivity, which is a form of statistical-based discrimination. These results highlight the need to control for teaching and research performance when investigating gender pay gaps in various settings.

This study contributes to the gender pay gap literature through the use of a case study, finding that the pay gap in the Beedie School of Business is in favor of women and not men. This gender pay gap is significant but small compared to previous studies. Since our finding is contrary to other studies’ findings, we think it provides impetus to continue research on this important area of equity.

Our results do not offer conclusive evidence on the gender pay gap in business academia. Apart from the limitations associated with a case study of one institution, the gender pay gap in academia can be influenced by additional omitted variables or factors

that are difficult to estimate (Goldin 2002). For example, there may be other implicit unconscious biases and stereotypes that can affect the evaluation of women's qualifications, skills, and productivity compared to their male counterparts. These biases may influence promotion and salary decisions, leading to unequal pay. First, academic success is often linked to research productivity and publication records. Gender biases can influence the opportunities, resources, and recognition available to women, affecting their research output and potential for career advancement. Unequal access to grants, fellowships, and research funding can also contribute to the gender pay gap. Second, the presence or absence of family-friendly policies, such as paid parental leave, childcare support, flexible work arrangements, and tenure clock extensions, can significantly impact women's ability to balance work and family responsibilities. Women often face a heavier burden of caregiving responsibilities, including childcare and eldercare, which can disrupt their career progression and limit their availability for work-related activities. Balancing work and family responsibilities can result in a reduced research output or slower career advancement, affecting salary and promotion opportunities. In our study, we used publicly available data and were unable to test how work–life responsibilities might affect the results. Given our study's finding that the gender pay gap favored women, we are only able to speculate on the reasons for this result. Three possible explanations are the equality-based policies at this university, the transparency that results from the public disclosure of salaries, or the family-friendly atmosphere provided by academe. Future gender gap research might explore how leave and other policies, caregiving (e.g., eldercare, childbirths pre and post hiring) responsibilities, reasons for leaving academe such as work–life balance, and public versus non-public disclosure of salaries affect the pay gap. Third, gender-specific exits from the payroll might help explain differences in gender results. Consequently, our study is limited by our inability to track and comment on how such departures might affect our results. Finally, female academics may also engage more in volunteer activities and undertake additional administrative responsibilities and committee activities that are important for the school; however, such activities take time away from teaching and research that is reflected in additional salary. As we do not have data to control for these potential factors, we encourage research to continue engaging in surveys and case studies to provide evidence on these important issues.

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## Notes

<sup>1</sup> Taste-based discrimination is essentially prejudice, where, for example, a male academic may be hired over a better qualified female candidate. Statistical discrimination is a theorized behavior (i.e., “male academics may, on average, have higher productivity”) rather than a blanket dislike for a particular gender.

<sup>2</sup> As a sensitivity test, we also run model 5 separately for each rank category (Full Prof, Associate Prof, Assistant Prof, and Lect/Other) and find a positive and significant coefficient on Female for all ranks, except Associate Prof.

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