

Analytics in the Canadian Sport Industry: A Macro-Level Analysis of Online Job Advertisements

Erik L. Lachance, Brad Millington, and Michael L. Naraine

This study examined analytics job advertisements in the Canadian sport industry. Grounded in signaling theory, job advertisements were collected during each week of the 2023 calendar year from a selection of online job-search websites. Data were analyzed via a codebook thematic analysis. One hundred eighty-five analytics job advertisements were found, most in the for-profit sport industry, at the lower level of the organizational hierarchy, full-time, and in-person at organizational headquarters. Variations are also observed in the frequency of posted jobs during the calendar year. Contributions include a landscape view of analytics jobs to support their prevalence and growth in the sport industry and advance discussions about their relevance for the operations of for-profit, non-profit, and public sport organizations. In practice, the findings provide strategies for job seekers to navigate the market and for practitioners to frame analytics job advertisements.

Keywords: sport analytics, job postings, documents, Canadian sport system

Introduction

Sports analytics is typically focused on the processes of information gathering (e.g., via wearable technology), data management (e.g., compiling performance data), and data analysis (e.g., statistical assessment) in the interest of improving performance in training and competition (Mongeon et al., 2017; Morgulev et al., 2018). That said, analytics in sport can also relate to business analytics, which

Erik L. Lachance, PhD, is an assistant professor in the Department of Sport Management at Brock University. His research interests include non-profit sport organizations' board decision making and performance, as well as the experiences of sport event volunteers. Email: elachance@brocku.ca

Brad Millington, PhD, is an associate professor and chair of the Department of Sport Management at Brock University. His research interests include sport and environmental sustainability, and sport media and technology. Email: bmillington@brocku.ca

Michael L. Naraine, PhD, is an associate professor in the Department of Sport Management at Brock University. His primary research is in the area of digital sport management and marketing, examining the strategy, fan engagement, and analytics related to new developments in the sport business landscape (e.g., social media, eSports, blockchain). Email: mnaraine@brocku.ca

refers to insights derived from big data to enhance business operations (Wanless & Naraine, 2023).

Beyond the dichotomy of performance versus business analytics from a conceptual standpoint, what has received less attention to date is the nature of work—and potentially its changing nature—in the sport industry as analytics has risen in prominence (Bouchet et al., 2020; Davenport, 2014a; McHale, 2018; Wanless & Naraine, 2023; Winston et al., 2022). Watanabe and colleagues (2021, p. 197) claimed that “analytics [has] become an essential component of organizational operations.” This raises the question of what this means in practical terms. What do analytics job opportunities look like? Specifically, job advertisements can provide insight into whether (and how) sport organizations are incorporating analytics into their organizational operations.

Accordingly, we examined analytics job advertisements in one market: the Canadian sport industry. Specifically, we drew on research into analytics job advertisements in the Canadian context across an entire calendar year, thereby adopting a macro-level view of the analytics job market. The value of adopting a macro-level approach in this way is that it can yield broad insight into trends surrounding the uptake of analytics across the sport industry, for instance, into organizations and job roles that might interest analytics job seekers. Indeed, to this end, the following research questions were posed: (1) What is the frequency of analytics job advertisements in the Canadian sport industry? (2) What job titles, employers, organizational types, hierarchical levels, status (e.g., full-time, part-time, internship), and locations (e.g., in-person, hybrid, remote) are represented in analytics job advertisements in the Canadian sport industry? Addressing these questions provides initial macro-level insights into a topic that merits ongoing attention in sport management.

Literature Review

Since the early 2000s, there has been growing interest in the use of analytics in the sport industry—a trend that is fueled by technological change and the mounting interest among sport organizations in data-informed insight to guide decision making (Alamar, 2024; Davenport, 2014a, 2014b; Fried & Mumcu, 2016; Green, 2021; McHale, 2018; Schoenfeld, 2023; Winston et al., 2022). Morgan and Magnussen (2022) noted that analytics are not a new concept in sport. Instead, the heightened focus on analytics follows from new technological affordances, combined with the long-standing management-level interest in maximizing wins or profits, or both. As Morgan and Magnussen (2022, p. 12) wrote: “Over the past decade ... the term ‘analytics’ is commonly used and understood to refer to any number of advanced techniques and/or algorithms, such as random forests

and machine learning, applied to data collected during and about sports.” They add that the use of analytics is purposeful: “Underneath the complexity of these tools is a primary goal that has long been incorporated in the sports-related decision-making: prediction and classification via pattern detection” (Morgan & Magnusen, 2022, p. 12). Researchers have provided insight into the application of analytics across various sports, including baseball, football, basketball, soccer, ice hockey, volleyball, golf, and e-sports (Winston et al., 2022).

Hayduk (2023) noted the common distinction between “on-field” (also known as performance) and “business” analytics. On-field or performance analytics have garnered mainstream attention. The book *Moneyball* (Lewis, 2003) narrates the paradigm-shifting managerial strategy of Major League Baseball’s Oakland Athletics near the turn of the 21st century. The approach was to look beyond conventional statistics and the status quo in player evaluation to find marginal but still meaningful value in areas such as roster management. Beyond the Athletics’ successes, *Moneyball* inspired teams from across the sport landscape to adopt a similar ‘game of edges’ approach (Schoenfeld, 2023).

Watanabe and colleagues (2021, p. 198) noted that academic literature “has focused primarily on big data and on-field performance.” We would add that much of this literature is technical, focusing on analytics models and other tools to improve sports performance or address problems such as injury prevalence. Less frequently, managerial and sociological considerations are discussed in the on-field performance analytics literature (Fernandes et al., 2024; Greene et al., 2023; Manley & Williams, 2022; Millington & Millington, 2015; Narayanan & Pifer, 2023).

Business analytics in sport is similarly inclined toward data-informed insight, though in this case, pertaining to sport management functions such as marketing, sales, and event operations. Troilo and Bouchet (2022) argued that the adoption of business analytics in sport has lagged behind the adoption of on-field analytics (also see Davenport, 2014a). Yet, they also anticipate growth in business analytics, at least in North American professional sports leagues, given the growing complexity of sports business environments. Examples of business analytics in practice include the Orlando Magic’s application of decision tree models to categorize season ticket renewals (i.e., most likely to renew, least likely to renew, and fence sitters) to target individuals for renewal marketing campaigns (Davenport, 2014a, 2014b) and the Boston Red Sox’s efforts in pioneering dynamic ticket pricing to increase revenue (Schoenfeld, 2023). Hayduk (2023) provided additional examples of business analytics in sport organizations, such as A/B testing, where different consumer groups are presented with varying stimuli (e.g., related to purchasing decisions) to assess the responses they elicit. Again, as in sports analytics (i.e., on-field performance), the fundamental

principle in business analytics is to deploy technology and leverage big data to gain insights that would otherwise be difficult to obtain.

Thus, there exists analytics-focused literature in sport management. However, two issues remain. First, discussions regarding business analytics are often geared towards commercial sport organizations in the context of the United States, and especially professional sport teams (e.g., Alamar, 2024; Davenport, 2014; Freeman, 2016; Mondello & Kamke, 2014; Schoenfeld, 2023; Troilo et al., 2016; Wanless & Naraine, 2023). This knowledge gap is problematic, as current claims are contextually limited to a particular organizational type and country, suggesting a need to explore business analytics in various sport organizations (e.g., non-profit, public, and commercial) and other markets. Second, although analytics has attracted attention, empirical evidence remains limited regarding specific job roles in the sport industry. This gap is problematic when assessing the evolving nature of the sport industry, which continues to grapple with emerging technologies to harness analytics (Naraine et al., 2023).

Theoretical Framework

Signaling theory explores situations where two distinct entities, such as an organization and its external audience, possess disparate levels of information (Spence, 1973). This premise motivates these entities to exchange signals, thereby mitigating potential ambiguity resulting from information asymmetry and bolstering their perceived reputations (Melton & MacCharles, 2021). The term “signal” denotes purposeful dissemination of favorable information aimed at portraying positive organizational attributes (Connelly et al., 2011, p. 44). Signaling theory encompasses various elements, including the signaler (i.e., entity sending the information), the signal (i.e., information sent to the receiver), a receiver (i.e., entity receiving and interpreting the information), and feedback (i.e., sent back from the receiver to the signaler; Connelly et al., 2011).

Signaling theory has been applied to job markets of various kinds. For example, Walldrodt and Thieme (2020) utilized curriculum vitae documents to examine the signaling effect of volunteer experience on hiring managers in sport (also see Lindt et al., 2024). Other existing work considers job advertisements as signals in the opposite direction: from employers to prospective employees (e.g., Moore & Khan, 2020). Indeed, we suggest that job advertisements serve as market signals. They presume an information asymmetry between employers and job seekers and seek to remedy this by expressing relevant qualifications, work patterns (e.g., in-person vs. remote), job titles and responsibilities, and more. And yet, there is a dearth of sport management research on the signal function of job advertisements in the industry.

That said, job advertisements are only one means of recruitment. The concept of the “hidden job market” suggests that employers, in sport and beyond, do not always advertise job opportunities widely (Ross et al., 2022). As one example, Morrow and Howieson (2014), in soliciting perspectives from aspirant football (soccer) managers in Europe, noted that opportunities can arise for some individuals when they are “able to activate personal social networks to open up access to the ‘hidden job market’” (p. 520). This can be beneficial, though Morrow and Howieson (2014) also noted that the hidden job market can be a source of frustration for those without access. While necessary, the hidden job market is scarcely discussed in sport management literature, though there is adjacent work on the value of networking in accessing job opportunities and pathways to career advancement, as well as problems associated with this (Gardner & Love, 2023; Parnell et al., 2023; Walker et al., 2020; Zdroik & Babiak, 2017). As we eventually note in our discussion, the *missing* signal—the suspected hidden job market—is worth considering for the job advertisements contained in this study’s dataset.

Method

A case study methodology was used (Yin, 2018), focusing on the Canadian sport industry as the unit of analysis. Although this approach differs from an in-depth focus on single or multiple organizations, it is appropriate given the stated purpose of this study, which is to provide a macro-level, landscape view of analytics job advertisements in the Canadian sport industry.

Data Collection

Job advertisements are inherently text-based, and with the ongoing evolution of the digital frontier in the sport industry (Naraine et al., 2023), they are generally found online. Thus, online job advertisements from the Canadian context served as the data source. This approach extends prior works on the job application process in sport (e.g., Lindt et al., 2024; Wallrodt & Thieme, 2020).

The study involved weekly searches for job advertisements from the following sites: Sport Information Resource Centre, Google Jobs, Workday, Indeed, and Monster. The selection of these sites was made through discussions among the research team members, who are knowledgeable about the sites students and alumni visit in pursuit of jobs in the Canadian sport industry. These sites have been consulted in prior job-related empirical research (e.g., Debortoli et al., 2014; O’Brien et al., 2025; Patel et al., 2022; Zhu et al., 2021). No additional sites were considered.

Data were collected on each Monday of the 2023 calendar year, starting on Jan. 2, 2023. Each Monday, the main pages of the aforementioned websites were accessed. Next, the search term “sport analytics” was entered into each

website's general search engine. The only exception to this approach was the Sport Information Research Centre, where "analytics" was used as the search term. This modification was made because the search engine on this website has an inherent, limited focus on sport-related jobs in Canada. Additional search terms were not used, given our interest in exploring the salience of analytics, specifically, in the Canadian sport industry. This approach was consistently adopted throughout the calendar year. A pilot search was conducted at the end of 2022 to confirm the applied search term and selection criteria for included job advertisements. Duplicated jobs from the same organizations were included only if they were advertised and collected at different points in time during the calendar year. The study's longitudinal research design is also appropriate, as it avoids potential limitations associated with the timing of data collection and with consulting a single site (cf. Finch et al., 2022).

Only Google Jobs ($n = 152$) and the Sport Information Resource Centre ($n = 33$) yielded results from this search protocol. Even so, Workday, Indeed, and Monster were still searched weekly for consistency throughout the year.

Data Analysis

Data were analyzed in NVivo 14, whereby a codebook thematic analysis was conducted (Braun & Clarke, 2022). This analytical approach is deductive and based on predetermined themes outlined by researchers (Braun et al., 2019). The codebook was framed according to the concepts outlined in the study's theoretical framework, with a focus on both quantitative and qualitative insights. On the one hand, data are analyzed descriptively to provide insights into frequencies, including the number of advertisements in the 2023 calendar year, the types of organizations represented (i.e., for-profit, non-profit, or public), job status (i.e., full-time, part-time, or internship), hierarchical level within the organization (i.e., high-level, mid-level, or lower-level), and location (i.e., in-person, hybrid, or remote). The location of the completed work also provides insights into the geographic distribution of analytics jobs, based on the location of organizational headquarters (e.g., Toronto for Maple Leaf Sports and Entertainment). On the other hand, the texts of the collected job advertisements were used to yield additional insights into the signalers and signals, based on job titles and organizations.

Results

Analytics Job Advertisements: Frequency

In total, 185 analytics job advertisements were posted in the 2023 calendar year specific to the Canadian sport industry (see Table 1).

Table 1. Analytics Job Advertisements in the Canadian Sport Industry

Organizations	Job Postings
AdParlor	Marketing Manager
Amer Sports Canada	Global Data Analytics Specialist
Amer Sports Canada	Global Logistics Data Analytics Specialist
Amer Sports Canada	Logistics Data Analytics Specialist
AthletesCAN	Coordinator, Digital Media & Communications
Athletica	Director of Analytics
Athletics Canada	Coordinator, Communications
Athletics Canada	Coordinator, Digital Communications
Basketball Canada	Business Operations and Events Intern*
Basketball Canada	Communications Intern
Basketball Canada	Communications Intern*
Basketball Canada	Community Impact Inter
Basketball Canada	Domestic Development Intern, Sport Development*
Basketball Canada	Men's High-Performance Intern
Basketball Canada	Partnership and Retail Intern*
Basketball Canada	Women's High-Performance Intern*
Basketball Canada	Youth Development Intern*
Bauer	Web Analyst
British Columbia Soccer	Digital Media & Communications Coordinator
Betstamp	Affiliate Program Administrator
Betstamp	Sports Betting Ambassador
Betstamp	Sports Marketing Associate
Blazesoft	Game Analyst
Broadband TV	Senior Director, Sports Partnerships
Brock Solutions	Software Deployment Engineer
Calgary Sports and Entertainment Corporation	Systems Analyst, Finance
Calgary Sports and Entertainment Corporation	Data Analyst
Calgary Sports and Entertainment Corporation	Data Analytics Lead
Canadian Olympic Committee	Coordinator, Communications and Events
Canadian Olympic Committee	Coordinator, Digital Products
Canadian Olympic Committee	Intern, Game Plan
Canadian Olympic Committee	Intern, Sport Business
Canadian Olympic Committee	Project Manager, Digital Partnerships
Canadian Paralympic Committee	Manager, Content & Digital Marketing
Canadian Paralympic Committee	Officer, Paralympic Performance
Canadian Premier League	Coordinator, Compliance & Operations
Canadian Sport Centre	Performance Analyst, Data Analyst

Table 1 continues

Table 1. Analytics Job Advertisements in the Canadian Sport Industry

Canadian Sport Institute Ontario	Sport Data Scientist
Canadian Tire Bank	Senior Data Scientist
Canadian Tire Corporation	Audience & Insights Analyst Student, Digital Media Delivery
Canadian Tire Corporation	Business Intelligence Analyst Student, BIDM
Canadian Tire Corporation	Data Analytics
Canadian Tire Corporation	Data Analyst Student, BIDM
Canadian Tire Corporation	Data/Automation Analyst Student, Data Governance and Merch Services
Canadian Tire Corporation	Manager Sports Analytics
Canadian Tire Corporation	Sports Analyst Student
Canlan Sports	Database Analyst
Carleton University	Digital Content Marketing Coordinator
Coaching Association of Canada	Coordinator, Coach & Partner Services and Analytics
Coaching Association of Canada	Coordinator, Coach & Partner Services and Analytics
Coaching Association of Canada	Intern, Special Projects
Crescendo Technology	eSports Data Scientist*
Cycling Canada	Digital Media Coordinator
Dyaco Canada	Digital Marketing Specialist
EDGE10 Group	Junior Data Analyst
EDGE10 Group	Lead Product Manager
EDGE10 Group	Product Manager
Edmonton Oilers	Data Analyst
Electronic Arts Sports	Data Analyst*
Electronic Arts Sports	Senior Director, Sports Analytics
Electronic Arts Sports	Senior Financial Analyst
Electronic Arts Sports	Senior Marketing Analyst, Sports
EXL	Analytics Consultant
FanDuel	Analyst
FanDuel	Analytics Manager
FanDuel	Commercial Strategy Analyst
FGL Sports	Category Business Analyst
FGL Sports	Data Analytics & Business Insight
FGL Sports	Manager, Store Operations Reporting & Analytics
FGL Sports	Senior Data Analyst
Golf Canada	Manager, Brand
Golf Canada	Manager, Digital Products
Group23 Sports Medicine Inc.	Data Analyst
HockeyTech	Customer Support Analyst*
HotTakes Sports	Junior Venture Analyst

Table 1. Analytics Job Advertisements in the Canadian Sport Industry

KaChan Research Inc.	Sports Research Data Scientist
Katz Group	Director, Business Intelligence Reporting and Analysis
KORE Software Inc.	Senior Consultant, Global Analytics Strategy
Laurentian University	Sports Administration Professor
Maple Leaf Sports and Entertainment	Business Strategy & Analytics Intern
Maple Leaf Sports and Entertainment	Financial Analyst
Maple Leaf Sports and Entertainment	Manager of Insights
Maple Leaf Sports and Entertainment	Manager, Machine Learning and Advanced Analytics
Maple Leaf Sports and Entertainment	Marketing Program Analyst, Global Partnerships
Maple Leaf Sports and Entertainment	Product Analyst, Digital & Mobile
Maple Leaf Sports and Entertainment	Project Manager
Maple Leaf Sports and Entertainment	Senior Data Scientist
Maple Leaf Sports and Entertainment	Strategy, eSports & Analytics Intern
Mount Royal University	Full Time Assistant Coach, Women's Hockey
NeuroSpoh Development	Data Scientist
Office of the Sport Integrity Commissioner	Registry and Database Administrator
Ontario Cycling Association	Marketing & Communication Summer Support
Ontario Hockey Federation	Manager, Communications and Marketing
Ontario Lottery and Gaming Corporation	Senior Retail Sports Analyst
Ontario Soccer	Coordinator, Digital Communications
Ontario Soccer	Inter, OPDL and Provincial Xcel
Ontario Soccer	Intern, Social Media and Communications
Ontario Soccer Centre	Manager, Facilities Administration
Ontario University Athletics	Manager of Digital & Communications
Ottawa Sports & Entertainment Group	Senior Manager, Sports Marketing, Brand and Content
Pro Vision Sports Management Inc.	Hockey Analytics Consultant
Queen's University	Director, High Performance Sport
Ringette Ontario	Board of Directors Positions
Rogers Communications	Sports Analyst, Media Planning*
Rogers Communications	Senior Analyst Insights, News & Entertainment
Skate Canada	Communications Administrator
Sport Dispute Resolution Centre of Canada	Communications Manager
Sport Information Resource Centre	Managing Editor
Sport Nova Scotia	Functional Analyst
SportChek	Business Analyst
SportChek	Data Analyst*
Sporting Life	Operations Specialist, Analytics and Reporting
Sporting Life Group	Merchandising Analyst
Sporting Life Group	Supply Chain Analyst

Table 1 continues

Table 1. Analytics Job Advertisements in the Canadian Sport Industry

Sportlogiq	AI Researcher
Sportlogiq	Backend Developer
Sportlogiq	DevOps Engineer
Sportlogiq	Director of Hockey Services
Sportlogiq	Full Stack Developer
Sportlogiq	Hockey Video Annotator
Sportlogiq	Professional Services Intern,
Sportlogiq	Scrum Master
Sportlogiq	Senior Backend Developer*
Sportlogiq	Senior IT System Administrator
Sportlogiq	Senior Software Engineer, AI Platforms*
Sportlogiq	UX Designer
Sports Experts	Business Intelligence Analyst
Sports Experts	Data Analyst
Sports Interaction	Marketing BI Analyst
Sports IQ	Analytics, Product Manager
St. Andrews College	Social Media and Digital Content Internship
St. Andrews College	Video and Digital Content Intern
Stadium Live Studios	Data Analyst
Staffmax	Data Creation Analyst
Stathletes	Hockey Video Analyst*
Stathletes	Real Team Hockey Data Analyst
Studio Data Insights	Lead Analyst
Studio Data Insights	Senior Analyst, Sport
Swimming British Columbia	Technical Coordinator
Swimming Canada	Data Analyst
Tennis Canada	Brand Manager
The Score Media and Gaming	Change Management Analyst
The Score Media and Gaming	Data Analyst
The Score Media and Gaming	Director, Marketing Data Insights
The Score Media and Gaming	Junior Data Analyst
The Score Media and Gaming	Manager, Data Insights and Analytics
The Score Media and Gaming	Risk & Trading Insights Analyst
The Score Media and Gaming	Senior Product Manager*
The Score Media and Gaming	Senior Analytics Engineer
The University of Toronto	Associate Professor, Sports Analytics
Ubisoft	Analytics Assistant
Ubisoft	Data Developer
Vancouver Ultimate League Society	Website and Communications Manager

Table 1. Analytics Job Advertisements in the Canadian Sport Industry

Vancouver Whistler Games Corporation	Head of Finance
Vancouver Whistler Games Corporation	Head of Marketing
Vancouver Whitecaps FC	Performance Data Scientist
Vancouver Whitecaps FC	Senior Financial Analyst
Vancouver Whitecaps FC	Vice-President, Marketing
VERB Interactive	Account Manager
Zuffa Canada Production	Digital Content & Social Media Coordinator

Note. An asterisk indicates a duplicated job advertisement found during the data collection period.

An average of four analytics job advertisements were posted per week, with variations found throughout the 2023 calendar year. These variations are illustrated in Figure 1.

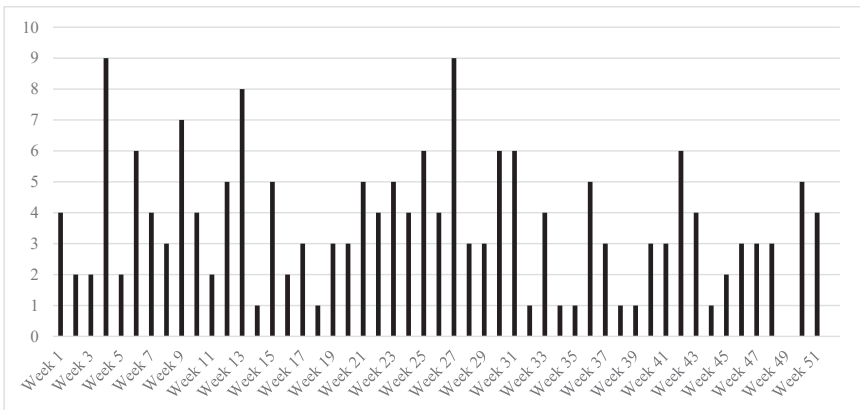


Figure 1. 2023 calendar year distribution of analytics job advertisements.

Analytics Job Advertisements Characteristics

Within the collected analytics job advertisements, most signalers were found in the for-profit sport industry ($n = 118$), followed by their non-profit ($n = 59$) and public ($n = 8$) counterparts. Selected examples of signalers for each context type are provided in Table 2.

Overwhelmingly, analytics job advertisements had full-time status ($n = 143$). However, there were instances of internships ($n = 35$) and part-time ($n = 7$) opportunities as well. Most analytics job advertisements were specific to the lower level ($n = 141$) in the organization’s hierarchy, followed by those at the mid level ($n = 38$) and high level ($n = 6$). Selected examples of analytics job advertisements for each hierarchical level are found in Table 3.

Table 2. Examples of Canadian Sport Industry Signalers with Analytics Job Advertisements

Industry	Examples
For-Profit	<ul style="list-style-type: none"> • Canadian Premier League • Canadian Tire Corporation • Calgary Sports and Entertainment Corporation • EA Sports • Edmonton Oilers • Maple Leaf Sports and Entertainment • Sports Experts • Sportlogiq • Stathletes • The Score Media and Gaming • Ubisoft • Vancouver Whitecaps FC
Non-Profit	<ul style="list-style-type: none"> • AthletesCAN • Athletics Canada • British Columbia Soccer • Canada Basketball • Canadian Olympic Committee • Canadian Paralympic Committee • Golf Canada • Ontario Cycling Association • Ontario Hockey Federation • Ontario Soccer • Swimming Canada • Tennis Canada
Public	<ul style="list-style-type: none"> • Carleton University • Laurentian University • Mount Royal University • Office of the Sport Integrity Commissioner • Queen's University • Sport Dispute Resolution Centre of Canada • Sport Nova Scotia • University of Toronto

Most analytics job advertisements required successful applicants to complete their work in person at organizational headquarters ($n = 135$). However, some job advertisements were specific to hybrid ($n = 27$) and remote work ($n = 23$). Interestingly, the geographic distribution of these job advertisements in Canada appears to focus on major metropolitan areas, including the Greater Toronto Area

Table 3. Examples of Job Advertisements and Hierarchical Levels

Hierarchical Levels	Examples
High-Level	<ul style="list-style-type: none"> • Head of Finance (Vancouver Whistler Games Corporation) • Head of Marketing (Vancouver Whistler Games Corporation) • High Performance Sport Director (Queen’s University) • Vice-President, Marketing (Vancouver Whitecaps FC)
Mid-Level	<ul style="list-style-type: none"> • Analytics Manager (FanDuel) • Brand Manager (Tennis Canada) • Director, Business Intelligence Reporting and Analytics (Katz Group) • Director, Marketing Data Insights (The Score Media and Gaming) • Director of Analytics (Athletica) • Lead Product Manager (EDGE10 Group) • Manager, Sports Analytics (Canadian Tire Corporation) • Manager, Machine Learning and Advanced Analytics (Maple Leaf Sports and Entertainment) • Project Manager, Digital Partnerships (Canadian Olympic Committee) • Senior Manager, Sports Marketing, Brand, and Content (Ottawa Sports and Entertainment Group)
Lower-Level	<ul style="list-style-type: none"> • Analyst (FanDuel) • Business Analyst (SportChek) • Backend Developer (Sportlogiq) • Business Intelligence Analyst (Sports Experts) • Business Strategy and Analytics Intern (Maple Leaf Sports and Entertainment) • Data Analyst (EA Sports) • Data Analyst, Ticketing and Sales (Calgary Sports and Entertainment Corporation) • Hockey Video Analyst (Stathletes) • Junior Data Analyst, Product (The Score Media and Gaming) • Logistics Data Analyst Specialist (AMER Sports Canada) • Performance Data Scientist (Vancouver Whitecaps FC) • Sports Analyst, Media Planning (Rogers Communications) • Supply Chain Analyst (Sporting Life Group) • Systems Analyst, Finance (Calgary Sports and Entertainment Corporation)

(e.g., Toronto, Vaughan, Mississauga, Etobicoke, and North York), Vancouver, Montreal, Calgary, Edmonton, and Ottawa. Yet, some exceptions exist in smaller-sized cities (e.g., Quebec City, St. Catharines, Kingston, Belleville, Kitchener, Waterloo, Laval, Victoria, Burlington, and Niagara Falls). Table 4 summarizes the geographical location of in-person analytics job advertisements in Canada.

Table 4. Geographical Locations of In-Person Analytics Job Advertisements in Canada

City	Total
Toronto	41
Etobicoke	22
Vancouver	13
Ottawa	10
Montreal	9
Calgary	8
Edmonton	3
Quebec City	3
Belleville	3
St. Catharines	3
Laval	3
Mississauga	2
Waterloo	2
Oakville	2
Victoria	2
Vaughan	2
Niagara Falls	1
Kingston	1
Burlington	1
Cambridge	1
Milton	1
North York	1
Kitchener	1

Discussion

Given our aim of adopting a macro-level view of analytics in the Canadian sport industry, and considering relevant literature, in this section, we assess the above study findings by exploring three main points of discussion.

First, analytics jobs are regularly advertised. We cannot comment with certainty on the proportion of analytics-related job roles in sport compared to other positions. This is a subject for further study. Yet, our findings suggest that a job applicant who has invested in analytics education and training (e.g., university courses in data science) and is interested in working in the Canadian industry will encounter a relatively steady stream of job opportunities, as relevant job advertisements were posted throughout 2023. We suspect other geographic contexts beyond Canada would likewise present steady job opportunities for interested applicants.

For example, many relatively new analytics master's programs in the United States could plausibly lead students to positions, such as data scientist, data analyst, and other job titles noted in Table 1. Research into other contexts beyond Canada is also an area for further study. But in the first instance, our findings suggest a recurring signal in analytics for job seekers in sport. Although one might assume the existence of analytics job roles, given the recent analytics revolution in sport (Kim, 2022), the findings provide more tangible evidence.

Second, analytics job roles are found across the sport industry in Canada. In one sense, there is at least some degree of geographical dispersion. However, Toronto (i.e., Canada's largest city) unsurprisingly stands out as particularly prominent in analytics-related job roles in Canada. Forty-one advertisements for in-person positions were for jobs in Toronto; the number swells to 72 if one considers the Greater Toronto Area (GTA), which comprises six local boroughs and encompasses other locations (i.e., Etobicoke, Mississauga, Oakville, Vaughan, Burlington, Milton, and North York). That said, other cities are represented,

including Vancouver, Montreal, Calgary, and Ottawa—Canada’s second-largest (if counting Metro Vancouver), third-, fourth-, and fifth-largest cities, respectively. Unsurprisingly, then, analytics roles are located mainly in Canada’s metropolitan areas. Among the missing locations in the dataset are Canada’s maritime provinces, and thus the entire country’s east coast. Nevertheless, the prospect of remote work does not necessarily preclude job seekers in other locations (in or beyond Canada) from pursuing analytics work.

In another sense, the majority of advertisements noted were for lower-level positions (141 of 185). This suggests job seekers can find entry-level work in roles such as “Junior Data Analyst, Product” (The Score Media and Gaming) or “Performance Data Scientist” (Vancouver Whitecaps FC) early in their careers. Mid- and high-level jobs are less common. Yet, their presence in the dataset suggests opportunities for career advancement in analytics and that some senior-level jobs are analytics-related. Indeed, whereas some mid-level jobs seem, based on titles, to be direct products of the analytics revolution in sport and broader trends of technological advancement—for example, “Manager, Machine Learning and Advanced Analytics” (Maple Leaf Sports and Entertainment)—other job titles suggest more traditional roles are incorporating data- and analytics-related functions, such as “Brand Manager” (Tennis Canada). Although our findings provide initial evidence, specific qualifications and responsibilities in analytics jobs (i.e., at the micro level) are beyond the scope of our study and warrant future research.

In another sense, a macro-level view reveals that analytics are relevant across the industrial structure of sport in Canada, as represented in our sample by for-profit, non-profit, and public entities at various levels and jurisdictions (Thibault, 2017). There is a signal here about the sport industry itself. Notably, this finding suggests a degree of professionalization for analytics in the non-profit and public industries, which is noteworthy given how analytics is often associated with professional sport and for-profit teams and leagues. However, we contend that there is also a related signal for job applicants—that investing in analytics knowledge and skills through educational opportunities can pay off in various ways in the job market. Analytics training could lead to opportunities everywhere, from analytics companies such as Sportlogiq, which offer services to professional teams (e.g., National Hockey League teams), to non-profit organizations such as Golf Canada, and to athletic departments in public entities (e.g., universities).

Third, there is the question of what is missing from our findings. It would be reasonable to expect an abundance of jobs related to performance (i.e., sports analytics) across professional and elite amateur sport leagues and teams, where performance analytics are understood to encompass data-informed insights into on-field results, as previously described. For example, in ice hockey, Canada has seven professional men’s teams in the National Hockey League, four teams in the

Professional Women's Hockey League (PWHL), and a vast institutional structure at the junior level. As one component of the last of these, there are three regional, junior-level men's leagues in Canada that, together, comprise 60 teams and make up the Canadian Hockey League. Our point here is not that performance analytics in professional and elite amateur sport organizations are entirely missing from the dataset. The National Hockey League's Edmonton Oilers are represented in our sample, as is the Calgary Sports and Entertainment Corporation, which owns sports properties including the Calgary Flames.

But our findings do suggest a hidden job market in analytics. As previously noted, the hidden job market refers to job opportunities that employers do not make publicly available, at least not widely (Asher, 2010; Hansen, 2008; Mathison & Finney, 2009), for example, those circulated by word of mouth and through professional networks. This phenomenon has received attention in the management field, where discussions focus on strategies for job seekers to access opportunities that are ostensibly out of sight (Asher, 2010; Hansen, 2008; Mathison & Finney, 2009). The hidden job market has also been criticized, however, for the challenges it creates in terms of access and breakthrough. This is also mentioned in the grey literature on analytics, where book authors provide insight into the process by which management teams create their performance analytics departments (Custance, 2024; Lewis, 2004; MacLean, 2023; Megdal, 2016; Schoenfeld, 2023).

It is expected that there is a hidden job market relevant to this research. Jobs in professional sport are generally sought after, and teams can recruit from competing organizations or lower-level teams to fill sport operations roles. Organizations may not consider it necessary or valuable to circulate job advertisements widely. Equally, it is worth noting that, while thorough, our research does not constitute an exhaustive search of the Canadian job market, as it was delimited by the job-search platforms and search terms we selected. Even so, the upshot here is that job seekers should be aware of the value of networking in searching for and learning about analytics job opportunities (Asher, 2010; Custance, 2024; Hansen, 2008; MacLean, 2023; Mathison & Finney, 2009), lest they miss out on job roles for which they are qualified by searching for signals only in the form of online advertisements. Internships and other work placement opportunities may also be valuable in this regard—that is, valuable not just in accruing knowledge, skills, and experience, but also in gaining an understanding of networking and job recruitment pathways. Furthermore, as educational institutions invest in training opportunities, such as analytics courses or entire programs, they have a duty to be mindful not only of what jobs are available but also of how job seekers might find them. This, too, merits further study through empirical research exploring

the experiences of signal receivers, such as sport management students, and the intentions of signalers seeking qualified job candidates.

Conclusion

This study examined analytics job advertisements in the Canadian sport industry. By applying signaling theory, findings provided macro-level insight into analytics job advertisements in Canada, as signals, according to their frequency during the 2023 calendar year. Our theoretical contributions are novel, as the results lend important insight into analytics. On the one hand, the successful application of constructs from signaling theory demonstrates that they can be operationalized to analyze job advertisements. Such contributions advance knowledge about the “what” (i.e., measurement of phenomena via constructs; Whetten 1989) of signaling theory, whereby constructs can support empirical claims about job advertisements. On the other hand, the contextual boundary (i.e., the settings in which theory is applied; Whetten, 1989) of signaling theory is advanced to a new context (i.e., the Canadian sport industry) and a type of job advertisement specific to analytics. By doing so, prior works adopting signaling theory for general sport management jobs (Lindt et al., 2024; Moore & Khan, 2020; Walldrodt & Thieme, 2020) are advanced to a particular type of advertisement that is growing in popularity within the sport industry: analytics. Lastly, our study contributes to the application of signaling theory by providing a methodological approach for researchers interested in job markets through a longitudinal design.

From a results and analytical standpoint, we acknowledge the limitations of providing a descriptive examination of analytics job advertisements. This approach differed from, for instance, adopting a quantitative approach to conduct statistical analyses or using an additional method (e.g., interviews with job seekers as receivers). Future research should consider quantitative analyses, such as cluster analyses, ANOVAs, and independent-samples t-tests. This research stream is necessary to provide insights into the characteristics of analytics job advertisements and the differences between job roles, as demonstrated in research on human capital archetypes (e.g., Weight et al., 2021). In turn, future research should gather data from job seekers per the receiver concept in signaling theory. Such insights would be valuable for extending prior work on the job application process from the sport managers’ perspective (cf. Lindt et al., 2024; Wallrodt & Thieme, 2020) to those who are, instead, the applicants. Future research may also look beyond analytics toward artificial intelligence and its promise of a supercharged sport industry (Millington et al., 2025). Future research is also encouraged to provide a micro-level analysis of analytics job advertisements, focusing on qualifications and responsibilities.

Acknowledgments

This work was financially supported by post-doctoral research grants from the Social Sciences and Humanities Research Council of Canada (#756-2023-0063) and Sport Canada (#862-2023-0015).

References

- Alamar, B. C. (2024). *Sports analytics: A guide for coaches, managers, and other decision makers*. Columbia University Press. <https://doi.org/10.7312/alam20520>
- Asher, D. (2010). *Cracking the hidden job market: How to find opportunity in any economy*. Ten Speed Press.
- Bouchet, A., Troilo, M., Urban, T. L., Mondello, M., & Sutton, W. A. (2020). Business analytics, revenue management and sport: Evidence from the field. *International Journal of Revenue Management*, 11(4), 277–296. <https://doi.org/10.1504/IJRM.2020.110634>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE. <https://doi.org/10.53841/bpsqmip.2022.1.33.46>
- Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic analysis. In P. Liamputtong (Ed.), *Handbook of research methods in health social sciences* (pp. 843–860). Springer. https://doi.org/10.1007/978-981-10-5251-4_103
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management*, 37(1), 39–67. <https://doi.org/10.1177/0149206310388419>
- Custance, C. (2024). *The franchise: The business of building winning teams*. Simon & Schuster.
- Davenport, T. H. (2014a). *Analytics in sports: The new science of winning*. International Institute for Analytics. <https://studylib.net/doc/8079544/analytics-in-sports--the-new-science-of-winning>
- Davenport, T. H. (2014b). What businesses can learn from sports analytics. *MIT Sloan Management Review*, 55(4), 10–13.
- Debertoli, S., Müller, O., & vom Brocke, J. (2014). Comparing business intelligence and big data skills: A text mining study using job advertisements. *Business & Information Systems Engineering*, 6(5), 289–300. <https://doi.org/10.1007/s12599-014-0344-2>
- Fernandes, C., Vescovi, J. D., Norman, R., Bradish, C. L., Taback, N., & Chan, T. C. (2024). Equity, diversity, and inclusion in sports analytics. *Journal of Quantitative Analysis in Sports*, 20(2), 87–111. <https://doi.org/10.1515/jqas-2022-0025>
- Finch, D. J., O'Reilly, N., Legg, D., Levallet, N., & Fody, E. (2022). So you want to work in sports? An exploratory study of sport business employability. *Sport, Business and Management: An International Journal*, 12(2), 117–134. <https://doi.org/10.1108/SBM-02-2021-0013>
- Freeman, L. A. (2016). The impact of analytics utilization on team performance: Comparisons within and across the US professional sports leagues. *Journal of International Technology and Information Management*, 25(3), 137–160. <https://doi.org/10.58729/1941-6679.1322>
- Fried, G., & Mumcu, C. (Eds.). (2016). *Sport analytics: A data-driven approach to sport business and management*. Taylor & Francis. <https://doi.org/10.4324/9781315619088>
- Gardner, A., & Love, A. (2023). From the classroom to the industry: An exploration of sport management students' transitions to employment. *Sport Management Education Journal*, 18(1), 31–42. <https://doi.org/10.1123/smej.2022-0049>
- Green, F. (2021). *Winning with data in the business of sports: CRM and analytics*. Routledge. <https://doi.org/10.4324/9781003104568>

- Greene, D., Beard, N., Clegg, T., & Weight, E. (2023). The visible body and the invisible organization: Information asymmetry and college athletics data. *Big Data & Society*, 10(1), 20539517231179197.
- Hansen, K. (2008). *A foot in the door: Networking your way into the hidden job market*. Ten Speed Press.
- Hayduk, T. (2023). Business analytics in sport organizations. In M. L. Naraine, T. Hayduk III, & J.P. Doyle, *The Routledge handbook of digital sport management* (1st ed., pp. 245–254). Routledge. <https://doi.org/10.4324/9781003088899-21>
- Kim, J. (2022). Perspectives on the sports analytics revolution: An introduction to the special issue. *Journal of Applied Sport Management*, 14(4), 1–10. <https://doi.org/10.7290/jasm14eslv>
- Lewis, M. (2003). *Moneyball: The art of winning an unfair game*. W.W. Norton.
- Lindt, K., Wallrodt, S., & Thieme, L. (2024). A high-performance sports career as a signal in the job application process. *German Journal of Exercise and Sport Research*, 1–11. <https://doi.org/10.1007/s12662-024-00987-x>
- MacLean, D. (2023). *Draft day: How hockey teams pick winners or get left behind*. Simon & Schuster.
- Manley, A., & Williams, S. (2022). ‘We’re not run on numbers, we’re people, we’re emotional people’: Exploring the experiences and lived consequences of emerging technologies, organizational surveillance and control among elite professionals. *Organization*, 29(4), 692–713. <https://doi.org/10.1177/1350508419890078>
- Mathison, D., & Finney, M. I. (2009). *Unlock the hidden job market: 6 steps to a successful job search when times are tough*. FT Press.
- McHale, I. (2018). Sports business analytics: The past, the present and the future. In S. Chadwick, D. Parnell, P. Widdop, & C. Anagnostopoulos (Eds.), *Routledge handbook of football business and management* (pp. 246–257). Routledge. <https://doi.org/10.4324/9781351262804-20>
- Megdal, H. (2016). *The Cardinals way: How one team embraced tradition and Moneyball at the same time*. Macmillan.
- Melton, E. N., & MacCharles, J. D. (2021). Examining sport marketing through a rainbow lens. *Sport Management Review*, 24(3), 421–438. <https://doi.org/10.1080/14413523.2021.1880742>
- Millington, B., & Millington, R. (2015). ‘The datafication of everything’: Toward a sociology of sport and big data. *Sociology of Sport Journal*, 32(2), 140–160. <https://doi.org/10.1123/ssj.2014-0069>
- Millington, B., Naraine, M. L., Wanless, L., Safai, P., & Manley, A. (2025). Sport and the promise of artificial intelligence: Human and machine futures. *Sociology of Sport Journal*, 1–10. Advance online publication. <https://doi.org/10.1123/ssj.2024-0150>
- Mondello, M., & Kamke, C. (2014). The introduction and application of sports analytics in professional sport organizations. *Journal of Applied Sport Management*, 6(2), 1–12. <https://doi.org/10.7290/jasm06ldmv>
- Mongeon, K., Hedlund, D., & Spalding, R. (2017). Analytics in the sport industry. In P. Pedersen & L. Thibault (Eds.), *Contemporary sport management* (6th ed.) (pp. 418–441). Human Kinetics.
- Moore, K., & Khan, M. H. (2020). Signalling organizational commitment to employability through job advertisements: The communication of HRD practices to young inexperienced job seekers. *Human Resource Development International*, 23(1), 25–45. <https://doi.org/10.1080/13678868.2019.1679569>
- Morgan, G., & Magnusen, M. (2022). Sport isn’t sacred and analytics isn’t new: Challenging common notions about sports analytics. *Journal of Applied Sport Management*, 14(4), 11–15. <https://doi.org/10.7290/jasm14q8ff>

- Morgulev, E., Azar, O., & Lidor, R. (2018). Sports analytics and the big-data era. *International Journal of Data Science and Analytics*, 5(4), 213–222. <https://doi.org/10.1007/s41060-017-0093-7>
- Morrow, S., & Howieson, B. (2014). The new business of football: A study of current and aspirant football club managers. *Journal of Sport Management*, 28(5), 515–528. <https://doi.org/10.1123/jsm.2013-0134>
- Naraine, M. L., Hayduk, T., & Doyle, J. P. (2023). *Routledge handbook of digital sport management*. Routledge. <https://doi.org/10.4324/9781003088899>
- Narayanan, S., & Pifer, N. D. (2023). An xG of their own: Using expected goals to explore the analytical shortcomings of misapplied gender schemas in football. *Journal of Sport Management*, 38(2), 92–109. <https://doi.org/10.1123/jsm.2023-0022>
- O'Brien, M. W., Shivgulam, M. E., Waghorn, J., Courish, M. K., Fowles, J. R., & Nagpal, T. S. (2025). A content-analysis of job advertisements for exercise professionals in Canada: A need for clarification of qualifications. *Applied Physiology, Nutrition, and Metabolism*, 50, 1–8. <https://doi.org/10.1139/apnm-2024-0184>
- Parnell, D., Bond, A. J., Widdop, P., Groom, R., & Cockayne, D. (2023). Recruitment in elite football: A network approach. *European Sport Management Quarterly*, 23(5), 1370–1386. <https://doi.org/10.1080/16184742.2021.2011942>
- Patel, J. S., Vo, H., Nguyen, A., Dzomba, B., & Wu, H. (2022). A data-driven assessment of the US health informatics programs and job market. *Applied Clinical Informatics*, 13(2), 327–338. <https://doi.org/10.1055/s-0042-1743242>
- Ross, S. R., McCullough, B. P., & Williams, A. S. (2022). Developing a professional perspective. In P. M. Pedersen & L. Thibault, *Contemporary sport management* (7th ed.) (pp. 35–57). Human Kinetics.
- Schoenfeld, B. (2023). *Game of edges: The analytics revolution and the future of professional sports*. WW Norton & Company.
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Thibault, L. (2017). Canada: An evolving sport system. In J. Scheerder, A. Willem, & E. Claes (Eds.), *Sport policy systems and sport federations: A cross-national perspective* (pp. 65–87). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-60222-0_4
- Troilo, M., & Bouchet, A. (2022). Professional sports organizations and business analytics: Monopoly power vs debt financing. *Journal of Applied Sport Management*, 14(4), 16–21. <https://doi.org/10.7290/jasm14o8i1>
- Troilo, M., Bouchet, A., Urban, T. L., & Sutton, W. A. (2016). Perception, reality, and the adoption of business analytics: Evidence from North American professional sport organizations. *Omega*, 59, 72–83. <https://doi.org/10.1016/j.omega.2015.05.011>
- Walker, N. A., Agyemang, K. J., Washington, M., Hindman, L. C., & MacCharles, J. (2020). Getting an internship in the sport industry: The institutionalization of privilege. *Sport Management Education Journal*, 15(1), 20–33. <https://doi.org/10.1123/smej.2019-0061>
- Wallrodt, S., & Thieme, L. (2020). The role of sports volunteering as a signal in the job application process. *European Sport Management Quarterly*, 20(3), 255–275. <https://doi.org/10.1080/16184742.2019.1598457>
- Wanless, L., & Naraine, M. L. (2023). Analogous forecasting for predicting sport innovation diffusion: From business analytics to natural language processing. *Journal of Sport Management*, 37, 191–202. <https://doi.org/10.1123/jsm.2022-0026>
- Watanabe, N. M., Shapiro, S., & Drayer, J. (2021). Big data and analytics in sport management. *Journal of Sport Management*, 35(3), 197–202. <https://doi.org/10.1123/jsm.2021-0067>

- Weight, E. A., Taylor, E., Huml, M. R., & Dixon, M. A. (2021). Working in the sport industry: A classification of human capital archetypes. *Journal of Sport Management*, 35(4), 364–378. <https://doi.org/10.1123/jsm.2020-0070>
- Whetten, D. A. (1989). What constitutes a theoretical contribution? *Academy of Management Review*, 14(4), 490–495. <https://doi.org/10.5465/amr.1989.4308371>
- Winston, W. L., Nestler, S., & Pelechrinis, K. (2022). *Mathletics: How gamblers, managers, and fans use mathematics in sports*. Princeton University Press. <https://doi.org/10.2307/j.ctv1t8q8wq>
- Yin, R. K. (2018). *Case study research: Design and applications* (6th ed.). SAGE.
- Zdroik, J., & Babiak, K. (2017). Networking with a purpose: Men and women's perception of career networking in sport NGBs. *Sport, Business and Management: An International Journal*, 7(3), 234–257. <https://doi.org/10.1108/SBM-11-2015-0036>
- Zhu, J., Zerbe, E., Berdanier, C. G., & Ross, M. S. (2021, July). *The stated and hidden expectations: applying natural language processing techniques to understand postdoctoral job postings* [Conference presentation]. 2021 American Society for Engineering Education Virtual Annual Conference Content Access. <https://peer.asee.org/the-stated-and-hidden-expectations-applying-natural-language-processing-techniques-to-understand-postdoctoral-job-postings>