# Get on Board! — Where We're Going We Don't Need Mountains

## An Exploration of Municipal Snowparks for Freestyle Skiing and Snowboarding in North American Cities

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*(Thomas, 2014)*

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"Everyday is the best day of my life brotha"

Enjoy!
-Graham



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# Abstract

Skiing and snowboarding — two popular, yet notoriously expensive and often inaccessible recreational activities — have been molded over the last thirty years by skiers and snowboarders keen on exploring the creative side of these sports through freestyle. Rising in popularity concomitantly with other progression and trick-based action sports including skateboarding, freestyle scootering, and bicycle motorcross (BMX), freestyle skiing and snowboarding have matured into internationally popular sports that are accomodated by nearly all mountain resorts through construction and maintenance of snowparks and terrain parks (these terms can be used interchangeably).

Beyond expensive, inaccessible, and geographically constrained mountain resorts, freestyle skiers and snowboarders have been innovating and exploring the relationship between cities and their sports, as evidenced by the rise of informal snowparks, urban skiing and snowboarding, and freestyle competitions in municipalities. Recently this relationship has been recognized by urban actors and policymakers with the implementation of several municipally operated snowparks for freestyle skiing and snowboarding in municipal parks. Though limited to a few key case studies, these examples suggest that these facilities are possible — and could be expanded.

In this SRP I will explore freestyle skiing and snowboarding in municipal snowparks and discuss how they might contribute to physical activity, health, and community building for young people during the winter. I will then examine three specific cases of snowpark implementation in different North American municipalities to discuss the key dimensions and important considerations for the wider adoption of snowpark facilities in other locations.

This SRP is guided by two primary objectives; to cover a gap in literature pertaining to freestyle skiing and snowboarding, as their recent growth in popularity has not, to my knowledge, been meaningfully discussed in academic literature. The second aim is to provide a useful, informative, and comprehensive report that can articulate to municipal decision makers what the important considerations are for the implementation of municipal snowparks.

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# Résumé

Le ski et le snowboard - deux activités récréatives populaires mais notoirement coûteuses et souvent inaccessibles - ont été façonnés au cours des trente dernières années par des skieurs et des snowboardeurs désireux d'explorer le côté créatif de ces sports par le biais du freestyle. Le ski et le snowboard freestyle ont gagné en popularité en même temps que d'autres sports d'action basés sur la progression et les figures, comme le skateboard, la trottinette freestyle et le bike motorcross (BMX). Ils sont devenus des sports populaires à l'échelle internationale, que presque toutes les stations de ski proposent en construisant et en entretenant des snowparks (*terrains parks*) (ces termes peuvent être utilisés de manière interchangeable).

Au-delà des stations de ski coûteuses, inaccessibles et géographiquement limitées, les skieurs et snowboardeurs freestyle ont innové et exploré la relation entre les villes et leurs sports, comme en témoigne l'essor des snowparks informels, du ski et du snowboard urbains et des compétitions de freestyle dans les villes. Récemment, cette relation a été reconnue par les acteurs urbains et les décideurs politiques avec la mise en place de plusieurs snowparks gérés par les municipalités pour le ski et le snowboard freestyle dans les parcs municipaux. Bien qu'encore limités à quelques cas, ces exemples suggèrent que ces installations sont possibles et pourraient être développées.

Dans ce SRP, je vais explorer le ski acrobatique et le snowboard dans les snowparks municipaux et discuter de la manière dont ils peuvent contribuer à l'activité physique, à la santé et au renforcement de la communauté pour les jeunes pendant l'hiver. J'examinerai ensuite trois cas spécifiques d'implantation de snowparks dans différentes municipalités d'Amérique du Nord afin de discuter des dimensions clés et des considérations importantes pour l'adoption plus large d'installations de snowparks dans d'autres lieux.

Ce SRP est guidé par deux objectifs principaux : combler une lacune dans la littérature relative au ski acrobatique et au snowboard, car leur récente croissance en popularité n'a pas, à ma connaissance, été discutée de manière significative dans la littérature académique. Le second objectif est de fournir un rapport utile, informatif et complet qui puisse expliquer aux décideurs municipaux quels sont les éléments importants à prendre en compte pour la mise en place de snowparks municipaux.

# Chapter 1 : Introduction

*"You're off to Great Places! Today is your day! Your mountain is waiting. So... get on your way!"*
*Oh the Places You'll Go*
*Dr. Seuss (1990)*

## 1.1 Skiing and Snowboarding: Background

Skiing originated in the Nordic countries and central Asia centuries ago as the most efficient mode of transport across vast snowy landscapes during cold and extended winters (Sood, 2010). Skis were fixed to users' feet, allowing early skiers to easily glide across the snow without sinking in. Nordic skiing later became a popular recreational activity in Northern Europe, as equipment and technique innovations allowed for it to become a racing sport. Since it was first introduced in 1924, Nordic (globally known as cross-country skiing) skiing has been contested at every Winter Olympic Games. Today, cross-country is among the most popular winter activities in mid- and high-latitude regions, with nearly 4.5 million users in the United States (Lohr, 2022). Nordic skiing facilities are provided by a host of different actors from public organizations to private clubs. Municipal programs in many North American cities, including Montréal, Québec, Minneapolis, Minnesota, and Ottawa, Ontario, create subsidized access to this outdoor winter activity. For further discussion of cross-country skiing see section 3.3.3.

In the late 19th and early 20th centuries Nordic skiing was adapted in the European Alpes to enable skiing across more mountainous terrain. Alpine skiing (often called downhill skiing) capitalizes on steep terrain to embrace the most thrilling, highest speed, and lowest exertion aspects of Nordic skiing in aesthetically beautiful mountainous areas (Sood, 2010; Lynn, 2022a). In 1936 downhill skiing made its first appearance at the Winter Olympic Games in Germany. In that same year the first aerial ski lift was constructed in North America, marking the beginning of the growth of ski areas in the Americas (Sood, 2010). Since then, ski areas and mountain resorts, the often privately operated organizations that establish infrastructure and facilities for downhill winter sports, have proliferated around the world. In 2020/21, 470 mountain resorts operated in the United States (Snowbrains, 2022), receiving 59 million ski and snowboard visitors (National Ski Area Association, 2021).

After the early adoption of downhill skiing in North America, and its growth through the 1970s, snowboarding as a means of 'surfing' on the snow, was created and introduced in the United States (Ski Canada, 2023). Initially rejected by many as dangerous and in competition with skiing, snowboarding has grown substantially over the years and is now widely accepted and common at almost all winter resorts (Thapa, 2004). In 1998 snowboarding made its debut in the Nagano Winter Olympics, marking the introduction of the sport on the world stage. In 2021, the number of participants in snowboarding in the United States reached an all-time high just shy of 8 million, while downhill skiing captured more than 13.5 million users (Outdoor Foundation, 2022).

In recent years alpine winter sports have grown in popularity, however, this has come at the expense of economic accessibility and inclusivity. The equipment, facilities, transportation, lodging, and ancillary costs associated with these sports have continued to grow (Givens, 2022), contributing to skiing and snowboarding being accessible sports for a decreasing portion of society. This may be correlated with the increasing prevalence of large businesses, such as Alterra Mountain Company and Vail Resorts owning and operating mountain resorts and the concomitant decline of independent mountain resorts (National Ski Area Association, n.d.). The impacts of climate change including variations in snowfall, annual number of subfreezing days, and the length of winter also have significant implications for the viability and popularity of alpine skiing and snowboarding in the future. For further discussion of climate change and winter activity see section 3.2.4.

Since their early growth and development, a growing slate of activities have been developed by users within downhill skiing and snowboarding based on user preferences, experience, weather, topography, and facility levels. Among the most popular of these sub-disciplines is freestyle skiing and snowboarding, which are trick-based action sports. These sub-disciplines, like all forms of downhill skiing and snowboarding, are primarily undertaken at mountain resorts with the infrastructure and user-base to support investment in freestyle facilities. However, in some locations across the United States and Canada, municipalities operate, either independently or through partnerships, free snowparks that facilitate freestyle skiing and snowboarding within cities.

In this SRP, these facilities — municipal snowparks — will be examined as park facilities that provide valuable opportunities for physical activity, wellness, and community-building to urban residents.



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## 1.2 Freestyle Skiing and Snowboarding

Freestyle skiing as a discipline is an offshoot of aerial, mogul, and ski jumping that developed throughout the 1990s and early 2000s in concert with freestyle snowboarding. The growth of freestyle winter sports mirrors the development of other action sports like skateboarding, bicycle motorcross (BMX), and freestyle scootering. By the 2010s freestyle skiing and snowboarding had become established winter sports, accommodated for at nearly all mountain resorts through specific areas called snowparks and terrain parks. These purpose-built areas are functionally and physically akin to skateparks, the venue in which skateboarding, freestyle scootering, BMX, and rollerblading are practiced. Snowparks and terrain parks differ only in name, as they offer the same features and infrastructure, therefore for the remainder of this paper I will be referring to them simply as snowparks.

Snowparks feature specifically designed and constructed mounds of snow — both natural and artificial — shaped by snow cats, groomers, and manually into halfpipes, jumps, and landings for freestyle skiers and snowboarders to 'ride', 'air', or 'hit' (Bostwick, n.d.). Rail and jib features similarly allow freestyle skiers and snowboarders to perform maneuvers and tricks by 'sliding' or 'grinding' over their surface (Sauer, 2022). A full list of snowpark rail features can be found in Appendix A. Snowparks are usually located in demarcated areas within ski areas, have a pitch of 7-15%, and have limited access to mitigate conflict between freestyle users and others (Discover Snow, 2022).

*Skier Doing a Switch 720 with a Mute Grab (Wikimedia Commons, 2009)*

Snowboarder Doing a Backside Boardslide (Arena Snowparks, n.d.)

Freestyle tricks generally fall into two overlapping categories; jib tricks and jump tricks. Jib tricks involve the use of rails, boxes, tubes, and other purpose built pieces of wood, metal, and plastic to facilitate users grinding or sliding across their surface. Jump tricks, as their name suggests, involve users going over specifically designed and shaped jumps of snow that give the skier or snowboarder airtime to do a trick such as a grab, a spin, a flip, or some combination of the three.

At most mountain resort snowparks, signs grading the difficulty, danger, and size of jib and jump features are mandated. The signed difficulties are usually posted on or adjacent to a feature. The scale ascends from small (S), medium (M), large (L), to extra-large (XL), in Québec grades are translated as petit (P), moyen (M), grand (G), and tres-grand (TG) (Ski Safety, 2023). This scale allows users to assess the difficulty and risk associated with 'hitting' a certain feature, improving safety while fostering progression.

Freestyle skiing and snowboarding are most popular among youth and young adults (GVR, 2018; GVR 2019). There are more than 50 freestyle ski clubs offering youth coaching and lessons at ski areas in Canada (Bailey et al., 2015). The location and cost of private clubs create additional financial barriers to freestyle skiing, however professional coaching isn't required for users interested in trying these sports.

Snowparks, home to freestyle skiing and snowboarding, can be found at mountain resorts in close proximity to several North American cities, including Vancouver, British Columbia, Salt Lake City Utah, Minneapolis, Minnesota, and Québec City, Québec, among others. These snowparks provide locational accessibility to urban residents, but still present financial barriers in the form of equipment, transportation, and lift tickets. Therefore, in many cases snowparks have been created in off-mountain locations.



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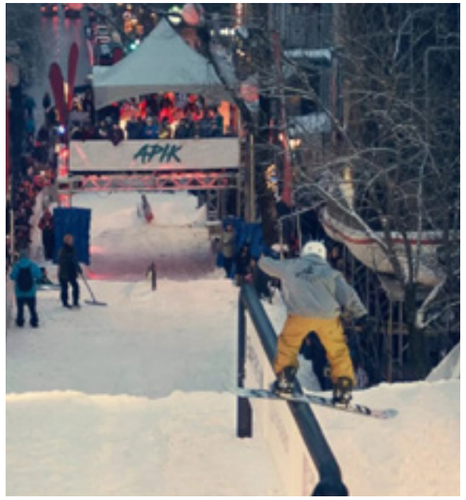
## *1.2.1 Freestyle Competitions*

Beyond the snowparks offered at most mountain resorts, freestyle skiing and snowboarding are sometimes facilitated in urban contexts through competitions. Most prominently are rail jams, so-called due to their emphasis on rail and jib features. These competitions are usually geared toward experienced and expert-level skiers and snowboarders, who attempt to impress a crowd and judges through increasingly difficult, technical, and daring tricks. These competitions are usually set up through a partnership between municipalities (who generally provide a location and some facilities) and private companies or third-party organizations (who make financial and operational contributions).




*Snowboarder Hitting an Up-Rail During Apikfest in Montréal, Québec (Daily Hive, 2023)*

Rail jams can be categorized as place-making events that cities engage in to support recreational and cultural activity while creating an exciting winter event for public enjoyment. Prominent examples of these events include Red Bull Play Streets in Gastein, Austria, Shred Festival in Salt Lake City, Utah, the APIK festival and animation in Montréal, Québec, and the Globe Rail Jam in Melbourne, Australia. Despite investment from municipal governments, rail jams are rarely open for public use and employ mostly expert-level features, therefore freestyle competitions generally do not improve access to freestyle skiing and snowboarding for urban residents.

## *1.2.2 Urban Skiing and Snowboarding*

Similar in location to urban freestyle competitions, but without an organizational structure, urban skiing and snowboarding are subdisciplines of freestyle in which users 'hit' features in an urban environment. In urban skiing and snowboarding, users create their own version of a snowpark using established municipal infrastructure like handrails, walls, and ledges. Mirroring freestyle competitions, this discipline is geared almost entirely to expert-level skiers and snowboarders due to the difficulty and degree of danger associated with many of the 'spots' where freestyle features are set up.

Urban skiing requires riders to do a substantial amount of work in transforming elements of the built environment into ridable features for skiing and snowboarding. This process involves using snow to create jumps, landings, run ins, and often requires the use of a bungee cord or motorized winch to obtain speed. Urban skiing and snowboarding have been popularized by X-Games Real Ski and Real Snow video competitions, in which riders will create a one-minute video of their urban skiing and snowboarding tricks.

*Urban Skier Hitting a Handrail*
*(Dandurand, 2019)*

Urban skiers and snowboarders appropriate public space and private infrastructure in ways that often run against dominant forms of urban power; skiers and snowboarders are regularly 'kicked out' of urban spots by police and private security. These actors frequently cite personal danger, property damage, and risk of lawsuits as reasons for removing urban riders. In conversations with security, urban skiers and snowboarders often suggest they have nowhere else to practice freestyle in the city.

The degree of danger and experience required for urban skiing and snowboarding are severely limiting to most individuals. For this reason, urban skiing and snowboarding do not considerably impact the accessibility of freestyle skiing and snowboarding to urban residents.



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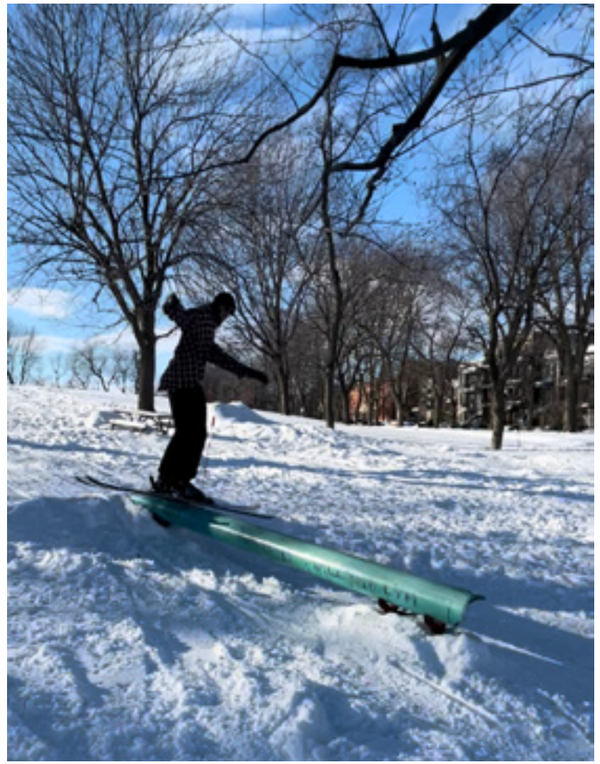
## *1.2.3 Informal Snowparks*

In lieu of convenient, inexpensive, and accessible options for freestyle skiing and snowboarding in proximity to most cities, some individuals will create their own informal snowparks. Constructed from snow and easily-sourced materials, informal snowparks built by skiers and snowboarders can be found in sloped backyards and municipal parks, contributing to a widely accessible form of freestyle skiing and snowboarding.

At informal snowparks rail and jib features are generally made out of wood, metal, or polyvinyl chloride (PVC) tubing, while jumps and landings are constructed of snow. Constructing or purchasing snowpark features can incur substantial costs but does enable great creativity and flexibility in what each snowpark can offer. This tradeoff gives informal snowpark users the ability to design and construct features that match their preferences, experience, and ability-level. However, informal snowparks by virtue of their creation by individuals with varied levels of experience, can lead to features being constructed of questionable quality, creating safety concerns.

Despite necessary labour and cost inputs, informal snowparks are highly popular forms of freestyle skiing and snowboarding that are accessible to a large proportion of residents in mid- and high-latitude areas.



*Freestyle Skier Jumping onto a PVC Tube*
*in Montréal, Québec*
*(Photo by author, 2022)*

### *1.2.4 Municipal Snowparks*

In several municipalities across North America, urban snowparks have been developed by actors in public, private, and non-governmental organizations. In contrast with informal snowparks built and maintained by volunteers and amateurs, municipal snowparks are formal, organized, and funded. In these arrangements, snowparks are implemented by a legitimate organization to ensure features are set up safely, the snowpark is well maintained, and some amenities and facilities are provided. Snowpark operation often requires partnerships between municipal governments, mountain resorts, outdoor organizations, and other groups. In these cases, municipalities often provide park land and limited operational support or amenities, while partner organizations provide features, the bulk of operations, and conduct maintenance.

Establishment of formal snowparks in cities improves accessibility to a form of winter physical activity and play to a wider number of people. These snowparks, by virtue of their formality and creation by professionals and experts, also improve safety for freestyle skiers and snowboarders. Examples of fully private, pay-to-access snowparks can be found in Rockford, Illinois, Minneapolis, Minnesota, and Trois-Rivieres, Québec, free non-municipally involved snowparks can be found in Montréal, Québec and Eau Claire, Wisconsin, and free municipally involved snowparks can be found in Portland Maine, Denver Colorado, and Granby, Québec. These three case studies of municipally funded snowparks will be discussed in detail in section 4.1.

*Snowboarder Hitting a Tube at the Parc des Railes Dillon Ojo, in Montréal, Québec (Empire, 2022)*

Municipal snowparks, funded and operated through a partnership between municipalities, private companies, and non-profit organizations, present the most promising way of providing snowparks, as an outdoor winter recreation facility, to urban residents. Therefore, throughout this paper municipal snowparks will be the principal research focus.



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## 1.3 Research Aims

This project aims to conduct primary and secondary research on the feasibility of implementing municipally funded snowparks for freestyle skiing and snowboarding in North American municipalities. Research will be conducted through exploration of several fields which are connected to the implementation and use of snowpark facilities, including physical activity, youth participation in recreation and play, winter park programming, urban skateparks, and through case study research on successful implementation of municipal snowparks. Each field under study meaningfully pertains to snowparks and will contribute to overall discussion of these facilities.

- Physical activity will be studied through academic literature highlighting the importance of engagement in recreation to create positive mental and physical health benefits while establishing community.

- Youth participation in forms of play will be explored through statistics and literature describing the importance of developing youth engagement through programming and forms of recreation that appeal to younger audiences.

- Outdoor winter park and physical activity programming will be investigated through academic and grey literature concerning success stories and opportunities for expanded winter recreation options.

- Municipal skateparks as action sports facilities, will be examined through academic and grey literature for their comparability to municipal snowparks.

- Finally, three municipal approaches to snowpark implementation will be examined through research and interviews to further understanding about lessons learned and measures of success which can be applied for future implementations.

The ultimate goal of this project is to uncover, analyze, and discuss the multiple dimensions of municipal snowparks and to outline key considerations for their implementation by municipal actors.

# Chapter 2 : Methods

Research methodology for this supervised research project can be divided into two overlapping phases. These phases included first a literature review of primary and secondary resources relevant to snowparks, this research is summarized in section 2. The literature review also generated useful information that guided key informant interviews which were conducted during the second phase of research. Key informant interviews were essential to generating a holistic understanding of municipal snowparks, from their inception and implementation to costing, operation, maintenance, and liability. These two phases were both crucial to the writing and researching of this SRP and will be explained in depth throughout this section.

In the first phase, extensive background research on municipally operated snowparks is explored through a partially systematic review of academic and grey literature. Search terms connected to municipal snowparks, in both English and French were entered into Google Scholar. Search terms include: “municipal snow park”, “municipal terrain park”, “municipal winter park”, “municipal ski hill”, “parc a neige municipale”, “snowpark municipale”, and “park des railes municipale”. Due to the few results returned from these searches on Google Scholar, this phase of research was continued with a review of ‘grey literature’ concerning municipal snowparks and similar facilities.

As a result of the limited amount of literature found through the systematic review, I proceeded to research municipal snowparks through analogy. In this part of the first phase I conducted extensive, but not systematic, research on key themes which would be important considerations during the subsequent phase of research. These themes include winter physical activity, youth recreation and play, park planning, action sports, and municipal park operations. This part of the first phase was critical as I adapted the scope of research to what was available online and allowed gaps in literature to direct key informant interviews conducted in the second phase of research.

The main goal of the first research phase was to develop a broad understanding of the rationale behind snowparks, where they have been implemented, and what organizations have implemented and operated them. Once these questions were satisfactorily answered and gaps in literature were identified, I was prepared to move on to the next phase of research.



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The second phase of research is based on key informant interviews, conducted with nine stakeholders (public, private, and third-party) from various locations in North America over the course of two months. Key informants were identified during the first phase of research, where examination of successful municipal snowparks revealed the different stakeholders involved in these projects. Key informants were also identified through the “snowballing approach,” as each interviewee pointed me – directly or indirectly – to others involved in municipal snowparks.

Interviews were conducted via Phone Call, Zoom or Google Meet and transcribed by a combination of Parrot AI — an artificial intelligence transcribing software — and me.

Research ethics were not required for interviews with these key informants, as interviews were be conducted with professionals about the factual aspects of their work and did not address personal information or opinions. The aim of this phase is to fill gaps in the literature and learn from experts how snowparks are funded, operated, and organized at the municipal level.

The nine individuals interviewed (ordered chronologically) include:

- One of the founders and Co-Owner of Conceptions Snotech, a Québec-based company that specializes in the implementation, organization, operation, and maintenance of municipal snowparks.
- The Senior Recreation Supervisor for Alternative Sports at the City of Denver, Colorado, the organizations which co-operate the Ruby Hill Railyard.
- The Director of Mountain Maintenance for Winter Park Resort in Winter Park, Colorado, a key partner for the Ruby Hill Railyard since its inception.
- A Leisure Intervention Assistant for the Borough of Ville-Marie in Montréal, Québec, where a small ad-hoc snowpark was built in 2023.
- The Director for Parks, Recreation and Facilities in Portland, Maine, where the Payson Hill Terrain Park is located.

- The Head of Events and Sport Development in Granby, Québec, where the Park Terry-Fox Snowpark is located.
- The Founder and President of Coastal Jibs, a Québec-based company that specializes in the manufacture of features for snowparks at mountain resorts and in municipalities.
- The Founder and a Board Member for Outdoormore, a non-profit organization that operates the Pinehurst Snowpark in Eau Claire, Wisconsin.
- A Special Project Manager for Burton Snowboards, an outdoor goods and snowboarding company headquartered in Burlington, Vermont.

Key informant interviews were instructed by extensive research conducted on snowparks during the first phase of research. An iteratively drafted interview guide directed the content of the interviews. The interview guide evolved throughout this phase of research, as I learned about key themes identified during the literature review and was introduced to others by key informants. The interview guide can be found in its entirety in Appendix B.

The interview guide is confirmed to be in keeping with research ethics guidelines by Prof. Richard Shearmur. The purpose of conducting key informant interviews was to uncover factual information about implementation and operation of municipal snowparks from relevant professionals.



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# Chapter 3 : Literature Review

> *"Regular physical activity helps prevent and treat noncommunicable diseases (NCDs)... It also helps prevent hypertension, overweight and obesity and can improve mental health, quality of life and well-being. Yet, much of the world is becoming less active. As countries develop economically, levels of inactivity increase. In some countries, these levels can be as high as 70%, due to changing transport patterns, increased use of technology, cultural values and urbanization."*

*The World Health Organization*
*WHO Sports and Health Programme*
*(WHO, 2023)*

## 3.1 Physical Activity

Physical activity, generally defined as muscular exertion above a basal level, has positive impacts on physical and mental health (WHO, 2023). The Public Health Agency of Canada (2018) describes, in addition to improved health, the social, environmental, educational, and economic benefits of regular physical activity. Ranging in level of exertion from light to vigorous (also referred to as passive to active), a wide array of physical activity options are available and provisioned for people at all ages and levels of mobility; from lighter activities like walking, swimming, and playing golf to more active forms of exercise like playing soccer, cycling, and running.

In efforts to support citizen's pursuit of physical activity, government actors, from the federal to municipal level, offer a myriad of different programs and facilities to promote recreation and activity among residents. Recreational facilities and programs can be found in a number of locations across a municipality, including recreation centers, athletic fields, and public parks. Support for recreational activity is not limited to hard infrastructures that provide a physical space for residents to be active; government actors often incorporate physical activity targets into policy documents and create programs that support recreation at a local level.

Policies in support of physical activity have been drafted by all levels of governance around the world. In Montréal for instance the international (World Health Organization, 2013; 2019), national (Public Health Agency of Canada, 2022), sub-national (Government of Québec, 2017), and municipal (Montréal Physiquement Active, 2019) levels, owing to the strong benefits associated with community health.

Sedentary lifestyles, in contrast with physical activity, can result in a myriad of detriments, as physical, mental, and community spheres can be impacted by residents not achieving sufficient targets of physical activity. Policies and programs are implemented to rectify these situations.

In this section physical activity will be examined as a means of improving public health, promoting good mental health and wellbeing, and fostering pro-social behavior.

### *3.1.1 Physical Health*

Engaging in physical activity, even at light to moderate levels of physical exertion, such as walking, has been shown to improve physical health and reduce the risk of noncommunicable diseases (Blacklock et al., 2006; Bedimo-Rung et al., 2005). Moderate to vigorous physical activity (MVPA) have more significant health benefits than light physical activity alone: Lee et al., (2000) found through a fifteen-year study that regular vigorous exercise significantly tracked with lower rates of all-cause mortality. Health benefits from engaging in physical activity also include improved muscular strength, bone health, sleep regulation, motor skills, and greater functional independence (PHAC, 2018).

Despite various studies and a growing discourse on the importance of being active, rates of physical activity remain below the recommended daily threshold for many in the developed world (Guthold et al., 2020; Tremblay et al., 2011). This distressing trend is partly a result of recreational time increasingly being occupied by sedentary activities (Tweng et al., 2019). Physical inactivity has been shown to cost the Canadian government $421 million annually (Yun, 2022). Therefore, governments actors from the municipal to international level have sought to increase overall participation in recreation and rates of physical activity through policy, programs, and funding streams (PHAC, 2022; GQ, 2017; MPA, 2019). These programs have been shown to be worthwhile through improving public health and reducing medical costs, while creating robust public health (OECD, 2021).

As one of the primary groups provisioning spaces and programs that promote physical activity, municipalities around the world have taken steps to address rising rates of physical inactivity through enacting policies and programs. Initiatives including expanding active transportation facilities, establishment of outdoor gyms, increases in park programming, and participatory budgeting exemplify municipal actors advancing public health by supporting physical activity (MPA, 2019). These policies go further than simply encouraging physical activity, as the benefits of public health extend beyond physical health to well-being and mental health.

## *3.1.2 Mental Health*

Mental health is described by the World Health Organization (2023) as "...a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community." Overall mental health can be improved through physical activity in a number of ways; physical activity and movement reduce the impacts of seasonal affective disorder and general depression, while building confidence and self-esteem, and improving overall wellbeing (PHAC, 2018). Physical activity improves wellbeing through increasing circulation of blood to the brain and decreasing reactivity to external stresses (Guszkowska, 2004). Aerobic exercise has also been shown to decrease levels of cortisol and adrenaline in the body (Harvard Health Publishing, 2020).

Benefits to mental health can be compounded by doing physical activities outside, as time spent in nature is shown to improve wellbeing and mood while reducing the severity of anxiety and depression (Hull et al., 1995; White et al., 2019). In cities, where access to nature and recreation can be limited and stresses can be elevated by the urban environment, opportunities for physical activity take on an increased importance. Gruebner (2017) found that rates of major mental health illnesses, including anxiety and psychotic disorders are significantly higher among urban residents, especially those who had spent the first fifteen years of their lives in urban areas (Pedersen et al., 2001). These findings suggest that parks and park programming are crucially important for urban residents, especially urban youth, as these spaces provide diverse and accessible forms of physical activity.



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## *3.1.3 Youth Physical Activity*

Research and census data have shown that across Canada, engagement in physical activity programs has been decreasing through the years, especially among youth (Allender et al., 2006; Tremblay, 2011). This trend is a result of many factors, including declining proportions of children walking to school (Buliung, 2021), decreasing numbers of youth involved in athletics (Project Play, 2022), and increasing prevalence of technology and video games in the social lives of youth (Tweng et al., 2019). Regardless of the cause at the individual level, fewer than 40% of Canadians aged 5-17 meet their daily recommended amount of physical activity (Statistics Canada, 2019).

It is especially important for youth to engage in physical activity as sedentary lifestyles are most likely to be ingrained at a young age (Telama, 2009), while Black et al., (2001) and Huotari (2011) suggest healthy, active lifestyles are similarly translated from youth into adulthood. Health risks associated with physical inactivity and a sedentary lifestyle include elevated risks of noncommunicable diseases for youth and adults including, type 2 diabetes, hypertension, obesity, and cardio-vascular diseases (Sluijs, 2021; Wyszyńska, 2020), higher levels of general depression (Kandola, 2020), and reduced social integration (Spitzer, 2013). These detriments nod to the urgent need increased participation in physical activity, recreation, and play among youth in the developed world.

*The "Learn to Snow" Zone at the Parc des Railes*
*Dillon Ojo in Montréal, Québec*
*(Kindlon, 2023)*

For school aged children, achieving at least 60-minutes of physical activity each day resulted in improved cardiometabolic markers such as cholesterol, hypertension, and insulin resistance (Poitras et al., 2016). Through a systematic review of 162 studies, Poitras et al., determined that physical activity was positively associated with physical fitness, pro-social behavior, and overall well-being among children. Evidence also suggests that uptake of sport, activity, and play in early childhood are linked to increased participation in physical activity in early adulthood (Telama, 1997; Black, 2021), suggesting that wider adoption of physical activity among youth may have positive impacts years down the line.

To obtain high rates of physical activity among youth, "A flexible and differentiated approach to the provision and promotion of physical activity seems needed to meet the changing motivational needs and preferences of this age group." (Mulvihill, 2000). In addition to stressing the need for diverse options of physical activity to meet the divergent interests of youth, Nestor & Moser (2018) found that youth uptake of physical activity was greater if the activity was perceived as a 'fun' form of play, rather than purely a form of exercise. Public provision of diverse, 'play-like' forms of physical activity is a necessary strategy to maintain high rates of youth participation, which in turn will result in improved youth physical health, mental health, and pro-social behavior.

*Youth Snowboarder Hitting a Large (Grand) Rail at the Parc Terry-Fox Snowpark, Granby, Québec (Conceptions Snotech, n.d.)*



Hauptman: Freestyle skiing
and snowboarding in the city

## 3.2 Urban Parks

*"City parks serve, day in and day out, as the primary green spaces for the majority of Americans."*

*Bruce Babbitt*
*(The Park Catalog, 2019)*

Urban parks, usually managed and operated locally by municipal parks and recreation departments, create recreational and activity opportunities for urban residents. Public parks in cities efficiently and equitably provide access to green space, playgrounds, sports fields, and places for residents to relax. Often public parks play host to organized recreational programs, supporting physical activity and public health for residents. These spaces also provide benefits in climate change adaptation and mitigation of adverse impacts, through stormwater retention and cooling urban space (Escobedo, et al., 2011; Zimmerman et al., 2016). In this section urban parks will be discussed as an important place for urban residents to gather, enjoy nature year-round, participate in recreation, and for their capacity to make cities more resilient to climate change.

### *3.2.1 Park Features*

Around the world, parks and urban forests have been established in cities as social hubs, greenspaces, and undevelopable lands devoted to natural green and blue space. Parks are celebrated for their ability to 'transport' people out of the city and into a serene natural setting; Central Park in New York, Stanley Park in Vancouver, Mount Royal Park in Montréal, and Hyde Park in London represent some of countless examples of successful city parks that support happy and healthy life for urban residents.

Urban parks usually offer a few 'passive' amenities such as pleasant trails for ambling, benches for resting, grass for picnics, and greenery for natural enjoyment. Larger urban parks often provide a diversity of open spaces, water features, cultural amenities, and interesting topographic landscapes, that facilitate both passive and active uses. These features more equitably provide areas within cities in which residents can enjoy a natural environment without needing to travel far from their homes. Proximity of urban residents to parks and urban forests has been shown to be positively correlated with mental health (Sturm et al. 2014), underscoring their importance in cities.

Urban parks offer a range of environmental assets. These ecosystem services (also called nature-based solutions) are features that improve environmental quality and as a result, quality of life for urban residents (Escobedo et al., 2011). Trees and greenery reduce the urban heat island effect and cool urban landscapes through their high albedo, by providing shade from their canopies, and through evapotranspiration (Peng, 2021; Akbari et al., 1997). Park features like ponds, wetlands, and tiny 'Miyawaki Forests' provide stormwater retention and reduce risks from local flooding (Zimmerman et al., 2016). Overall, parks provide a wealth of ecosystem services by providing an urban home for plants and animals, moderating the local climate, and reducing the potential impacts of flood events.

Access to urban parks and green spaces also provides strong social and individual benefits, as discussed in section 3.1.2 spending time in nature is shown to reduce the prevalence of general anxiety and depression (Maas et al., 2009). Urban parks and public spaces also create communal gathering places and social hubs, improving overall social cohesion in cities (Peters, 2010). These spaces are also home to various forms of recreational infrastructure, taking the form of play structures, sports fields, skateparks, and outdoor gyms. The presence of urban recreational facilities has been shown by Davidson et al., (2006) to be especially impactful on youth participation in physical activity.

*Central Park in New York City*
*(National Association for Olmsted Parks, n.d.)*

The environmental, social, and individual benefits associated with green spaces have led many cities to create extensive park systems replete with diverse recreational facilities that support a variety of forms of physical activity. Some common forms of these, across the spectrum of physical exertion, include swimming, hiking, soccer, skating, cross-country skiing, volleyball, pétanque, tennis, and more. Urban parks provide central locations for passive and active forms of physical activity, enabling residents of different ages and physical abilities to enjoy the full suite of forms of relaxation, recreation, and play.



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and snowboarding in the city

## *3.2.2 Park Programming*

In addition to providing space, amenities, and facilities at urban parks, municipalities usually provide a diversity of recreational programs to support park-use, social cohesion, recreation, and physical activity among residents.

Municipal park programs range seasonally, appeal to differing audiences, offer a range of intensity levels, and have varied costs, but often take the form of wellness courses, learn-to-play programs, nature tours, sports leagues, and outdoor educational programs. Henderson (2001) found that municipalities offering a range of facilities, programs, and educational materials about park programming were more successful in increasing uptake of physical activity among urban residents of all age groups.

An American study of 174 neighbourhood parks found that programming in municipal parks was associated with a 37% increase in the number of hours spent on moderate to vigorous physical activity (Cohen et al., 2016). These findings underscore the importance of park programming in municipal parks and suggest that further provision of programs could help a larger proportion of urban residents meet their physical activity targets. Most municipalities publish seasonal parks and recreation guides that detail (often with multiple translations available) programs on offer and how residents can get involved.

*Winterlude on the Rideau Canal, Ottawa, Ontario*
*(Capital Experience, 2022)*

Useful for those who are able to find them, municipal program guides are unlikely to reach all urban residents, especially those without access to a computer or who face language and accessibility barriers. Therefore, a diversity of measures should be taken to marketing park programs. Cohen et al., (2016) found that marketing was significantly correlated with uptake of park programs and associated participation in physical activity. Embrace of social media as a tool for outreach and marketing is likely to improve engagement with park programming, however, as discussed by Gibson et al., (2019), a gap in literature exists about the extent to which this may impact participation and physical activity levels.

Despite many forms of park programming offered by municipalities, gaps in some forms of recreation and activity are filled by community groups and third parties. These groups can include sports associations, equipment rental programs, exercise courses, and other programs geared towards certain activities. In many cases, municipal budgets will allocate land, operational budgets, and maintenance for recreation, while community groups and third parties will conduct outreach and organize programs for residents to participate in. Despite inherent limitations in funding, location, and capacity, municipal park programming remains a crucial avenue for providing opportunities to participate in recreation and physical activity for many urban residents.


*Recreation Program Guides from Denver, Colorado, Edmonton, Alberta, and Portland, Maine (Denver Parks and Recreation, 2023; The City of Edmonton, 2014; Portland Parks, Recreation & Facilities, 2022 )*



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## *3.2.3 Seasonality and Parks*

In mid- and high-latitude municipalities that experience seasonal variation and subfreezing temperatures in winter months, municipal park programming must adapt to provide seasonally appropriate forms of activity and recreation.

In these locales, many dominant forms of recreation are constrained in parks due to cold and snowy winters, limiting the amount of physical activity some residents — particularly adolescents — achieve during the winter (Bélanger, 2009). A year-long study of parks in Grand Forks, North Dakota found that park visitation was lowest during the winter months, owing to most residents wanting to remain inside during the harsher winter weather (Roemmich et al., 2014). Despite the declining use of parks during the winter months in mid- and high-latitude municipalities, park programming remains an important avenue for encouraging urban residents to be active.

The same North Dakota study found that rates of moderate to vigorous exertion were highest among winter park users, likely due to the prevalence of outdoor ice hockey and skating facilities (ibid). Declining rates of exertion during non-winter months is attributed to the seasonality of activity, as lower intensity sports like Baseball are popular in the Spring and Summer. Subfreezing temperatures during the winter also encourage higher exertion, as participants work harder to stay warm. Seasonality represents a significant factor in park visitation and physical activity; however, the presence of recreational facilities (such as outdoor skating rinks) and park programming are likely as important in determining if urban residents reach physical activity targets

*Summer and Winter in Theodore Wirth Park, Minneapolis Minnesota (McLernon, 2019; Yang, n.d.)*

A study in Southern California, where seasonal temperature and weather are considerably less variable, found that seasonal differences in park visitation "may be partly attributable to differences in the number and types of programs offered seasonally" (Cohen et al., 2010). Suggesting that irrespective of seasonality and weather, park programming is a crucial determinant of visitation and physical activity in urban parks. Despite these findings, there exists a strong bias toward park programming in non-winter months, as many forms of recreation become difficult or are impossible due to snow coverage, loss of daylight hours, and inclement weather during winter months.

Seasonal differences in opportunities for outdoor activity also disproportionately impact lower-income groups, as memberships and fees associated with indoor recreational facilities can be cost-prohibitive. To overcome this inequality, municipal actors should seek to increase the diversity of options and access to free, outdoor forms of winter recreation and winter park programming. These measures could improve activity rates, physical health, and wellbeing among lower-income urban residents.

*Covered Picnic Benches for Outdoor Winter Activity in Whistler, British Columbia*
*(Resort Municipality of Whistler, n.d.)*



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## *3.2.4 Threats of Climate Change*

Climate change is likely to disrupt outdoor winter recreational opportunities over the next century, through reducing the number of subfreezing days and snowfall in many mid- and high-latitude municipalities. Skating, sledding, cross-country skiing, and alpine skiing (discussed further in section 3.3) are popular forms of outdoor winter undertaken in urban parks and are significantly under threat from climate change in the future.

To track and measure changes in the number and intensity of subfreezing days each year the Canadian Government uses freezing degree days (FDD) as an indicator. An annual FDD value can proxy the duration and intensity of winter, and by extension, how well suited each location is for outdoor winter recreation. In Montréal, the projected change in mean FDD over a thirty-year period is -257.5, a reduction of nearly 30% (Climate Atlas, n.d.). Similar trends can be seen in municipalities across North America.

Two other metrics; average annual snowfall and outdoor skating season, are key to understanding the impacts of reduced FDD on opportunities for outdoor winter recreation. In Montréal, annual snowfall and average snow cover has been declining for the past few decades (Shiab, 2019). These trends are mirrored in the reduced length of the outdoor skating season (OSS) as a result of fewer days each winter at temperatures below -5C (Oduro, 2023; Damyanov et al., 2012). In 2023, Ottawa's Rideau Canal was unable to open for the first time in its existence (Kenny, 2023), and outdoor rinks in Montréal were open significantly less than in previous years (Oduro, 2023).

Responding to these distressing trends, municipalities and other actors have begun taking action to continue providing outdoor winter activities in public spaces despite winters declining in length and intensity. In Montréal, refrigerated rinks have been established in parks throughout the city to overcome mild winters (Oduro, 2023), the City of Dorval, Québec has invested $8 million in a covered ice rink that can operate regardless of fluctuating temperatures (Meagher, 2023). Meanwhile the City of Ottawa has piloted a number of technical strategies to promote ice growth on the Rideau Canal, including using snowmachines and thermal heat exchangers (Kenny, 2023). Beginning in 2020, artificial snowmaking operations have been conducted each winter to create a sledding hill at King George Park in Westmount, Québec, at a cost of around $30,000 annually (Jelowicki, 2020). These investments exemplify municipalities' willingness to ensure that despite winters with more erratic snowfall and shortened outdoor skating seasons, outdoor recreation in urban parks is important and worthwhile.

## 3.3 Outdoor Winter Activities

In many North American cities, winter months bring cold temperatures and snow, preventing many forms of sport and recreation from occurring on outdoor grass and park facilities. Prohibitive in some ways, this seasonal change also presents an opportunity for different, climate-specific forms of recreation and physical activity. In many cases these activities, unique for their popularity in mid- and high-latitude areas, become culturally important forms of recreation for the local population.

As discussed in section 3.2.2 and 3.2.3, opportunities for outdoor physical activity are more limited during the winters experienced in many mid- and high-latitude cities, contributing to inactivity and associated detriments to physical and mental health (Bélanger et al., 2009). Due to a reduced number of options for winter physical activity, each form of park programming has a greater opportunity to impact the lives of local residents. In these locations, programs and facilities generally support three dominant forms of outdoor winter activity: sledding, skating, and cross-country skiing.

Though these three sports do not encompass the full suite of outdoor winter activities offered in mid- and high- latitude areas, their prevalence in North American winter park programming across suggests that their study demands the most attention.

*Sledding, Skating, and Cross-Country Skiing in Mount Royal Park, Montréal, Québec*
*(Ville de Montréal, 2022)*



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### *3.3.1 Sledding*

Sledding, sometimes called sledging and tobogganing, is a winter activity wherein users will walk up a hill or a segment of sloped terrain with a smooth-bottomed sled, often made of wood, plastic or metal, and slide down the hill. Usually sledders make many ‘runs’ in a single day. Sledding generally appeals to young children and families but is a popular activity for many in snowy cities across North America and parts of Europe.

In Montréal, some boroughs provide formalized sled runs on the city’s many hills by erecting protective barriers at the base of sledding runs and grooming sledding tracks for safety and to mitigate collisions. At some locations the city conducts snowmaking operations to ensure an even snow base allows sledding in warmer and less-snowy winters. As discussed in section 3.2.4 snowmaking operations at King George Park in Westmount, Québec cost the municipal government around $30,000 each year (Jelowicki, 2020). In other locations, sledders will make informal use of hills and valleys, however these activities, without protective features, can be unsafe.

As a form of recreation being undertaken outside during the winter, and one where users must walk uphill in order to sled down, sledding is associated with a moderate to high level of physical exertion. Meaning youth sledders are able to meet their daily requirements for physical activity with one-hour of sledding (CDC, 2022; PHAC, 2019). In terms of cost, sledding is perhaps the most accessible outdoor winter sport, as the only capital costs are warm outerwear and sleds. Sleds can be purchased new for as little as $5 or as much as $200 depending on quality and design specifications.

*Sledding in Riverdale Park, Toronto, Ontario*
*(dstuff9, 2013)*

Widely approachable due to the minimal cost, infrastructural, and geographic requirements, sledding is also considered to be a joyous and quintessential winter activity which is strongly associated with fun times and social behavior, particularly with youth. Municipalities that provide, operate, and maintain formalized sledding facilities support a form of playful outdoor winter activity that creates health benefits for urban residents.

## *3.3.2 Ice Skating*

Ice skating is an outdoor winter activity involving striding and gliding on smoothed ice with specialized steel skates across constructed outdoor ice rinks or naturally occurring bodies of frozen water. Skating can be done recreationally by many individuals, as the motor function required is similar to walking. This activity ranges in intensity from low- to high-exertion, based on the desired type of skating by users. Populations of all ages may enjoy leisurely skating on an outdoor pond, skating trail, or outdoor skating rink (OSR) in a city park, while younger populations often enjoy higher-exertion forms of ice skating including, learning to skate, figure skating, and playing ice hockey.

Ice hockey is the national winter sport of Canada, and throughout the winter municipalities across Canada endeavor to provide urban residents with the opportunity to play ice hockey for free at outdoor rinks (ODRs) in municipal parks. Each winter these facilities are constructed, replete with boards and nets with more significant amenities like warming huts and flood lights offered occasionally. When the ice melts ODRs are deconstructed and their parts are stored until the following winter.

*A Refrigerated Outdoor Skating Rink at Olympic Plaza in Calgary, Alberta (Walter, 2020)*

Investment in ODRs from Canadian municipalities has made hockey, which is otherwise one of the most expensive team sports, more affordable and accessible to low-income individuals and families. Though, as discussed in section 3.2.4, further municipal investment is required to refrigerate OSRs and ensure the sustainability of outdoor skating and free-to-access skating facilities in Canada. The wide provision of OSRs in many North American cities has removed financial and locational barriers to physical activity through skating, removing all costs but appropriate outerwear and ice skates, which can range in price from $50 to more than $200.



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In some specific locations, like Beaver Lake in Montréal and on the Rideau Canal in Ottawa prospective skaters are able to rent ice skates, further improving accessibility to skating in these two cities. Outdoor skating is also provisioned for in many northern American cities, however, the scale of OSRs and ODRs established in Canadian cities far exceeds their prevalence in the US.

The city of Montréal operates more than 225 public skating rinks during the winter, providing enthusiasts across the city with opportunities to skate at a nearby ice rink (Ville de Montréal, 2023). The rinks are made visible online and categorized based on three main types of outdoor skating rink: landscaped rink, team sports rink, and open skate rinks. These distinctions enable skaters to choose an environment and skating type that best suits their individual needs (Patiner Montréal, 2023). Operational inputs to outdoor rinks can range from occasional use of water hoses and fire hydrants to reflood the rink to more complex maintenance in resurfacing and smoothing the ice. These complex operational procedures require specific equipment, personnel, and know-how.

In OSRs across the city of Montréal, ice maintenance is conducted through plowing surfaces when fresh snow falls, using zambonis converted from tractors, and flooding ice rinks to create a smooth surface layer. At some specific locations, including the Esplanade Tranquil in the Quartier des Spectacles, refrigerated outdoor rinks are created to enable skating when the temperature is too warm or erratic to facilitate purely natural ice (as discussed in section 3.2.4). In addition to upfront costs of around $9 million (Olson, 2019[a]), outdoor refrigerated rinks have substantial operating costs. One such rink in Rosemont-La Petite-Patrie costs the borough $100,000 each season to open and operate (Olson, 2019b).

Many outdoor skating rinks also offer amenity facilities for users, including washrooms, warming huts, fire pits, and commercial spaces for skaters to purchase warm beverages and treats. Skating facilities are geared towards all demographics, often running programs and lessons to appeal to a wider group of residents. As one of Canada's great winter pastimes, outdoor skating and hockey are critical forms of outdoor winter activity that are supported at the municipal level across the country.

## *3.3.3 Cross-Country Skiing*

Cross-country, also commonly called Nordic skiing, is a form of skiing wherein participants stride, skate, and step over compacted snow on two thin skis that attach to the toe of purpose-built ski boots. Unlike alpine skis, cross-country skis are unattached to the heel of the boot, enabling users to step, push, and glide in parks and along trails that are designed specifically for this activity.

Cross-country skiing generally appeals to active individuals of all ages and is very popular in northern countries receiving snow. Municipal budgets provision for cross-country skiing urban parks in cities including Oslo, Norway, Montréal, Québec, Minneapolis, Minnesota, and Salt Lake City, Utah among many others.

Youth involvement in cross-country skiing is supported by different programs and educational groups. In Montréal, Les Amis de la Montagne runs a successful youth cross-country ski program for children aged four to fourteen. The introductory courses offered by this community organization help participants learn to cross-country ski on trails in Mont-Royal Park in the heart of Montréal (Les Amis de la Montagne, n.d.). Rental skis and equipment are available on-site for users, with youth rentals offered for free (ibid).

*A Tiller Used to Groom Cross-Country Ski Trails in Montréal, Québec (Photo by author, 2023)*

Trails for cross-country skiing can be made in two styles; free skate, which requires a compacted track about 1.8 meters across, and classic, which uses two parallel tracks to be carved about 3 cm deep and 25 cm apart (United States Ski & Snowboard Association, 2004). Cross country skiing involves moderate- to high-levels of physical exertion, presenting an excellent way for urban residents to achieve their recommended amount of daily physical activity. Nordic ski trails also have the benefit of being implementable on existent park lands with minimal infrastrucural requirements. The equipment, mechanical, and operational capacity necessary to create and upkeep cross country ski trails is substantial.



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Both varieties of cross-country ski trails must be groomed and reformed frequently — at a minimum after each instance of new snowfall — and the staff necessary to upkeep these tasks must be able to operate light machinery. Cross-country skiing, unlike sledding and outdoor skating, relies significantly on the prevalence of snow and cold temperatures to remain viable during the winter. Due to the necessity for continuous trails that extend for kilometers, cross-country skiing cannot easily or inexpensively be facilitated through snowmaking or refrigeration and must rely almost exclusively on natural snow. Lighting can be found along many cross-country ski tracks, enabling skiers to continue during winter nights. The city of Montréal grooms and maintains more than 200 kilometers of cross-country skiing trails during the winter, with many of the city's large parks and greenspaces supporting loops and networks of trails at various difficulties (Ville de Montréal, 2022a).

Cross-country skiing can be a costly winter sport, requiring purpose built equipment including skis, boots, poles, and comfortable outer wear; however, it is made considerably less expensive and more accessible through municipally operated cross-country ski trails in urban parks. These facilities provide urban residents with a free, moderate- to high-level of exertion form of outdoor physical activity.

*Cross Country Skiing Tracks and an Outdoor Hockey Rink in Montréal, Québec (Ville de Montréal, 2023)*

## *3.3.4 Summary of Winter Activities*

These three forms of outdoor winter activity all require input from municipal actors, and are facilities that urban residents in many cities have come to expect each winter. Rising to meet this demand, urban actors provide or subcontract the various features, amenities, maintenance activities, and staffing required to operate sledding, skating, and cross-country skiing facilities. Taken together they demonstrate that municipalities are willing to invest — sometimes significantly — to create opportunities for outdoor winter recreation. Municipal snowparks, compared to these three outdoor winter activities in Figure 1 below, represent another opportunity for municipalities to create facilities that support residents' enagagement with sport, recreation, and play.

**Figure 1 — Comparison of Outdoor Winter Activities with Snowparks**

| Sledding | Skating | Cross-Country Skiing |
|---|---|---|
| • Younger audience<br>• Safety concerns<br>• Lack of control<br>• Limited creativity | • Family-oriented<br>• Requires flat surface<br>• Minimal outerwear | • Older audience<br>• Requires large area<br>• Limited creativity<br>• Progression-based |
| **Snowpark Similarities** | | |
| • Topography needed<br>• Length of pitch<br>• Hiking uphill<br>• Snowmaking<br>• Maintenance needs<br>• Liability signage<br>• Minimal equipment needed | • Young audience<br>• Input and operations<br>• High exertion<br>• Physical infrastructure<br>• Demarcated space<br>• Maintenance needs<br>• Lighting | • Grooming and upkeep<br>• Economic accessibility<br>• On-site rentals<br>• Programs and events<br>• Lighting<br>• Mechanical equipment |



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## *3.3.5 Alternative Winter Activities*

In addition to the three dominant forms of outdoor winter activity summarized in section 2.3.1 - 2.3.4, other 'alternative' and 'action' forms of winter sport have been growing in popularity in recent years. Some municipalities have began providing infrastructure for these non-dominant activities and will likely continue doing so as residents' preferences change over time. Examples of these activities include:

### Snowskating

Snowskating is a snow-based hybrid between snowboarding and skateboarding which has been gaining popularity in recent years. Snowskating, like skateboarding, presents a very low cost to entry as winter outerwear and a snowskate are all thats required. Snowskaters make use of all the same venues as freestyle skiers and snowboarders, including urban settings, in informal snowparks, at mountain resorts, and in urban snowparks. Though freestyle skiing and snowboarding are more popular and widespread, snowskaters should be considered a target audience for municipal snowparks.

*Urban Snowskating in Montréal, Québec (Ambition Snowskates, n.d.)*

### Fat Tire Biking

Fat tire bikes are similar in design and function to mountain bikes, but make use of large treaded tires that allow riders to bike on snow. Fat tire biking can be done in any location that traditional biking is done, but also enables users to ride downhill during snowy winters. When wide enough to avoid conflicts between different users, cross-country ski trails are an ideal venue for fat tire biking. Though a viable mode of transportation and a good way to get high-exertion exercise during the winter, fat tire bikes are expensive, limiting their uptake among urban residents.

## *3.3.6 Winter Activity Programs*

In mid- and high-latitude places where residents experience significant winters many forms of recreational programs are made available to residents — particularly youth — to subsidize and support their involvement in winter activities. Cost offsets can take many forms, with some organizations providing discounted equipment rentals, classes and programs for youth, subsidized transportation, or free tickets to mountain resorts.

Some of these programs, mentioned earlier with the case of Les Amis de la Montagne in Montréal, provide programming that offsets the cost of learning to do a sport for the first time. This allows residents to try new things without financially committing to them. This is especially important for winter sports like skiing and snowboarding, as these sports require specific equipment that can be expensive to purchase outright.

Other winter programs provide discounted lessons and tickets that encourage participation in winter activities for lower income families, allowing youth to get involved at subsidized rates. In Maine, Winter Kids is a non-profit organization that focuses on "increasing outdoor physical activity in children and families during [the winter]" (Winter Kids, n.d.). Winter Kids provides rentals, equipment loans, school trips, online resources, and funding to youth throughout Maine and New Hampshire, impacting nearly 300,000 students, teachers, and families since 2010 (ibid).

*Youth Cross-Country Ski Programming in Farmington, Maine (Fleming, 2022)*

Winter activity programs support greater uptake of winter sports among residents who may otherwise have difficulty funding participation for themselves and their families. Programs, classes, rentals, and other initiatives foster inclusivity and help urban residents surmount barriers to involvement in winter activity.



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## *3.3.7 Equity and Inclusivity*

As discussed throughout section 3, provision of opportunities to participate in physical activity are vital to uptake and achievement of associated health targets. These discussions extend to winter physical activity, where opportunities are more limited, and costs are greater. Ingraham (2018) found that household income is the best predictor of physical fitness and activity, suggesting the importance of subsidized forms of winter physical activity. Municipal involvement can make a significant difference in reducing the financial cost of winter recreation through providing free infrastructure and facilities. As discussed by Johnson & Ali (2015), outdoor hockey rinks (ODRs) have great importance in Canada as inclusive, equity-advancing winter recreational facilities that are free for all users.

Moore et al., (2008) found that the presence of recreational facilities and opportunities for physical activity is significantly determined by the demographics and socioeconomic status of residents in the surrounding neighbourhood. Minority (predominately Black and Hispanic) neighbourhoods in the United States are more likely than predominately white neighbourhoods to not have access to recreational facilities (ibid). One of the key findings of this paper is that parks are relatively evenly distributed, but programming remains insufficient and inequal across demographic divides. An increase in provisioning of park programming and resources within parks is likely to increase physical activity and improve individual health in these areas.

A study conducted by the National Recreation and Park Association (2021) found that only 38% of park and recreation agencies have established diversity, equity, and inclusion (DEI) strategies pertaining to recreational programming. This underscores the findings of Moore et al., (2008), and suggests the importance of a focus on creating recreational programming opportunities that improve equity of access for marginalized communities.

One sport which has been successful in providing access to lower-income and marginalized communities has been skateboarding. As economic access, a lack of locational needs, and wide provision of municipal skateparks in many places has eliminated barriers to entry and enabled the growth of skateboarding into a globally recognized sport.

## 3.4 Skateboarding

Skateboarding culture has a close relationship with cities and urban infrastructure. Originating at a time when formal skateparks hadn't been conceived of, modern skateboarding's beginnings came from practicing tricks in informal spaces on appropriated infrastructure, much like urban skiing and snowboarding. To this day, the skateboarding discipline which makes use of urban plazas, benches, handrails, stair sets, planters, and other features is named street skating, an homage to its origins in urban space. Requiring just a skateboard, a helmet, and open space to get started, street skating requires few inputs and remains an affordable form of physical activity.

Skateboarding can aptly be likened to freestyle skiing and snowboarding as 'alternative' or 'action' sports. These sports have similar trick typologies, participant demographics, involve similar bodily movements, and as is the case in Denver, Colorado, are overseen by the same arm of the parks and recreation department. Examining the rising role of municipalities in operating skatepark facilities provides a useful comparison to how snowparks could be implemented and organized in municipal parks.

### *3.4.1 Skateparks and Snowparks*

*Jefferson Skatepark in Seattle, Washington (Coughlin-Bogue, 2018)*

Outside of the urban environment skateboarding is often practiced at skateparks, which can take the form of private, often indoor facilities, or public, typically outdoor skateparks. In the last few decades public skateparks have flourished across North America. Today, nearly all cities offer municipally operated skateparks of differing sizes, with some having formal skatepark planning documents and processes (City of Calgary, 2011). Requiring little equipment or facilities, skateboarding presents a geographically and economically accessible form of physical activity, recreation, and play.



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Snowparks serve users essentially the same purpose as skateparks, offering a space to do a sport which is otherwise limited by constraints of requiring specific infrastructure and private space. Skateparks, unlike snowparks, are permanent installations, requiring full dedication of park land and expensive construction. Skateparks provide a communal space for skateboarders to gather, practice, share, and learn from each other. Wood (2014) showed skateparks in Australia were associated with pro-social behavior and offered a vital congregation space for an otherwise diffuse form of physical activity.

Municipal provision of snowparks has the opportunity to achieve the same benefits associated with municipal skateparks, by activating urban park space, promoting physical activity, providing a community hub, and increasing accessibility to sport.

*Freestyle Skier at the Van Horne Skatepark, Montréal, Québec (Photo by Author, 2022)*

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## *3.4.2 Skateparks and Liability*

Skateparks, like snowparks, are facilities which encourage participation in action sports and present inherent risks of personal injury to users. From the onset of municipal skateparks, liability, insurance, and injury have been key considerations to municipal actors, risk assessors, and insurance providers (Whitley, 2014). In some cases, these facilities were rejected by city councilors based on flawed assumptions of injury liability and negative perceptions of skatepark users (Kahne, 2004; Vivoni, 2009).

Recognizing these risks and fearing establishment of a municipal skatepark may expose cities to liability and lawsuits, there was, in many cases, significant pushback against municipal skateparks in the early 2000s (Kahne, 2004). In the years since, as skateparks have flourished across the United States, the issue of liability has become clearer and more familiar to all involved parties. The consensus, as written by Kozlowski (2009), has been “Despite jurisdictional variations, these state laws are quite similar in that they generally preclude any governmental liability for injuries arising out of the inherent risks associated with participation in skateboarding.”

In Canada, where skateboarding at outdoor municipal skateparks is popular, though constrained by snowy winters, the story of liability differs. Statutes protecting municipalities from liability in the event of resident injury while participating in ‘hazardous’ recreational activities are not as clearly outlined in Canada (Intact Public Entities, 2019). It is clear that in Canada skateparks are generally added as items in a municipality’s insurance policy, though these premiums are said to be similar in cost to insuring a baseball diamond (Moore, 2006). Despite potentially increased costs for insurance on skateparks in Canadian municipalities, their prevalence across the country shows that these barriers are surmountable given the demand for skateboarding facilities.

Though significantly less prevalent than skateparks, snowparks have been viewed similarly from a liability and insurance perspective in the past. For further discussion liability and insurance at snowparks see the liability subsections for the case studies in section 4.1.

# Chapter 4 : Results

An extensive literature review and the contributions made by nine key informant interviews comprise the bulk of research on the implementation of snowparks and the role played by municipalities in supporting these facilities. The results section of this SRP will first examine three approaches to snowpark implementation that involve medium to high levels of municipal involvement. Then four cases in which municipalities have played reduced roles in the implementation of snowparks will be discussed in brief. In the final chapters of this SRP case studies of successful snowpark implementations will be discussed as they present valuable learnings to be incorporated by municipal actors introducing snowparks in the future.

## 4.1 Municipal Snowparks: Three Case Studies

Subsections 4.1.1 – 4.1.3 will discuss three approaches municipalities have taken to implementing snowparks in North America. The section will examine snowparks holistically based on a review of primary and secondary literature and key informant interviews conducted with relevant actors. The three snowparks, found in Portland, Maine, Denver, Colorado, and Granby, Québec, do not represent the only approaches to snowpark implementation (see section 4.2 for further implementation strategies), but represent municipally integrated approaches to the design, operation, and programming of these facilities.

Importantly, the specific vocabulary surrounding snowparks remains inconsistent in the literature and throughout the key informant interviews; some call these facilities snowparks, others label them as terrain parks or railyards, in much of Québec they are referred to as parc à neige. In this discussion I will primarily be referring to the facilities by name, but for simplicity will also be using the phrasing ‘snowparks’ to describe these facilities broadly.



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### *4.1.1 Ruby Hill Railyard, Denver, Colorado*

#### Snowpark Overview

Information regarding Ruby Hill Railyard was gleaned first through secondary research of news articles and City of Denver documentation. Then, through the City of Denver’s Parks and Recreation website I was able to contact and interview the Senior Recreation Supervisor for Alternative Sports and the Director of Mountain Maintenance for Winter Park Resort who is one of the founders of the Ruby Hill Railyard.

Ruby Hill Railyard is a snowpark roughly 75 meters in length located on a northeast facing hill in Ruby Hill Park, a municipal park seven kilometers south of downtown Denver, Colorado. Ruby Hill Park is located at the eastern edge of the Ruby Hill neighbourhood, which is characterized by medium-density single family detached homes. The slope of Ruby Hill Park leads directly to the South Platte River, which continues north through downtown Denver. Ruby Hill Park is comprised of an area of approximately thirty-five hectares and includes several amenities including a dog park, riverside areas, various sports fields, a bike park, and during the winter Ruby Hill is groomed for sledding and the snowpark.

Ruby Hill Railyard is currently operated by the City of Denver’s Parks and Recreation Department in concert with Winter Park Resort, and an affiliated group of local volunteers.

*The Slope, Features, and Users at Ruby Hill Railyard, Denver, Colorado*
*(Cook, 2023)*

## Implementation and Operation

The Ruby Hill Railyard was first implemented in 2007 when Winter Park Resort, a City of Denver owned (but privately operated) mountain resort, proposed the creation of a semi-permanent snowpark at Ruby Hill Park to the City of Denver. Under the agreement, Winter Park Resort organized, operated, and paid for the facility, while the City of Denver provided space in the Ruby Hill Park during the winter and offered limited operational support. The benefits for Winter Park Resort, which is owned by the City of Denver, were mainly marketing and visibility generated through Ruby Hill Railyard, while the City of Denver received a snowpark, enabling new forms of winter physical activity for residents.

Currently, the City of Denver takes on a greater role in the operations and maintenance at Ruby Hill Railyard. Each fall the City of Denver organizes a group of nearly thirty local volunteers to help with maintenance and winter operations at the snowpark. Winter Park Resort staff train volunteers on how to build features, how to use a shovel and snow rake to construct and groom snowpark features, and in some cases how to operate snowmaking equipment. They also provide technical assistance, grooming equipment in the form of snowcats, snowmaking machines, snow rakes and shovels, assist in designing the snowpark, and offer other operational support.

*Youth Snowboarding at Ruby Hill Railyard (Siebrase, 2017).*

The City of Denver has also supported Ruby Hill Railyard through installing permanent electrical power and water infrastructure to facilitate snowmaking operations at the snowpark and sledding hill. Early each season, Denver Parks and Recreation staff work alongside Winter Park Resort Mountain Maintenance staff to conduct snowmaking operations. An artificial snow base allows the snowpark to operate independent of natural snowfall. Snowmaking capacity is limited by the amount of water the City of Denver allocates for the park (about 1 million gallons in 2023); a measure implemented to reduce the environmental impacts of conspicuous water use.



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Once enough artificial snow has been created, snowcats loaned from Winter Park Resort are used to level the slope into an even snow base, to push and ‘blade’ snow into shape, and to bring features into position. Then volunteers and staff will use shovels to dig trenches and bury the base of features in snow to ensure stability. Jumps are then constructed of snow uphill of the features to make them usable by skiers and snowboarders. Finally, the area surrounding the feature and the jump are groomed with snow rakes to make their surfaces even and ridable for skiers and snowboarders.

Throughout the season, the City of Denver relies on a team of approximately thirty volunteers to conduct winter maintenance on the features at Ruby Hill Railyard. These maintenance operations are both manual and mechanical. Manual labor is done in the form of shoveling and raking, while mechanical power is conducted with a snowcat. Working together, these operations are employed to maintain the snowpark to a high standard of quality and safety. Snowcat operations are conducted on a weekly basis along with more regular maintenance conducted manually with snow rakes and shovels by volunteers. In the event of significant snowfall, both manual and mechanical maintenance will be conducted to smooth and pack down the snow surface so the snowpark can be reopened.

Ruby Hill Railyard, complete with equipment and machinery loaned from Winter Park Resort and regular maintenance from professionally trained volunteers, can be characterized by a high level of snowpark facilities.

*Snowmaking at Ruby Hill Railyard (Visit Denver, 2018)*

*Snowcat Operations at Ruby Hill Railyard (Kenney, 2017)*

## Staffing and Amenities

Ruby Hill Railyard is cordoned off on three sides by a plastic fence, creating separation from an adjacent sledding hill and other nearby uses in Ruby Hill Park. There are picnic tables and a gazebo at the top of the slope, enabling visitors and users to gather while offering some protection from the elements. Ruby Hill Railyard is equipped with floodlights, enabling the park to be open past sundown, improving the hours in which the snowpark is usable throughout the winter.

In 2023 free snowboard and boot rentals were introduced for the first time at Ruby Hill Railyard. Available to users on Thursdays and Saturdays, the rental program was made possible by donations from Burton Snowboards (Yahoo, 2023).

*Safety Netting at Ruby Hill Railyard (Hurst, 2022)*

Municipal staff are only present at the snowpark when special events, including rail jams are held at the Ruby Hill Railyard; these events happen a few times each winter. Otherwise, the snowpark is not regularly staffed, and therefore the City of Denver does not measure the number of skiers, snowboarders, and sledders at Ruby Hill Park during the winter. However, the snowpark and sledding hill are purportedly very busy during most weekends and nights.



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## Transportation

Public transportation options from the Ruby Hill Railyard, and Ruby Hill Park as a whole, are fairly limited. The nearest bus stop is 1.3 kilometers away at the intersection of West Evans Ave and South Pecos Street. The 21 bus is a half-hourly service that runs across Denver from Union Square in the Western suburb of Lakewood to the City Center of Aurora in the East. Along its route the 21 bus connects to several of Denver's LRT lines, including at Evan's Station which is 2.5 kilometers from the Ruby Hill Railyard.

Ruby Hill Park has several small parking lots located adjacent to amenities throughout the park, with a small parking lot located at both the top and the bottom of the Ruby Hill Railyard.

**Figure 2 — Context Map and Transportation Options Surrounding Ruby Hill Railyard**

## Costs and Funding

Implementation and operation of the Ruby Hill Railyard includes capital costs like maintenance equipment and snowpark features and operational costs like snowmaking, lighting, and maintenance — both manual and mechanical. As much of the operation and maintenance at Ruby Hill are conducted by volunteers, significant labor costs are saved.

In the past features at Ruby Hill Railyard have been provided for free by partner organization Winter Park Resort. In advance of the 2023/24 winter ten new features will be bought at an estimated cost of $20,000 dollars.

Snowmaking and slope maintenance operations at Ruby Hill Railyard are conducted mainly by volunteers. Snowmaking equipment is used for roughly 100 hours early in the season, by the end of this process, large mounds of snow are pushed by a snowcat into a smooth slope. Snowcat operations, primarily in the form of labour, costs around $1,500 to build and maintain the park annually.

Costs associated with lighting and electricity to operate snowmaking equipment are not available for Ruby Hill Railyard.

## Liability


*Risk Signage at Ruby Hill Railyard (Wood, 2022)*

State of Colorado statutes protect municipalities from being sued in the event of an injury occurring on municipal park land, provided negligence is not the cause of injury. Liability at the Ruby Hill Railyard is covered under the City of Denver's insurance policy in the same manner as municipal skateparks. The City of Denver posts information on their website and on posted signs at Ruby Hill Railyard to inform snowpark users of the potential risks associated with freestyle ski and snowboard activities.



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# *4.1.2 Park Terry-Fox Snowpark, Granby, Québec*

## Snowpark Overview

Initial research about Park Terry-Fox Snowpark was gleaned through the City of Granby's online physical activity portal, Granby Multi-Sports. Through the Granby Multi-Sports website, I contacted and interviewed the Head of Events and Sport Development. I was also able to connect via Instagram with one of the founders and co-owners of Conceptions Snotech, a Québec-based company "specializing in the design, construction and maintenance of urban winter installations" (Conceptions Snotech, n.d.). Since 2017 Conceptions Snotech has been the City of Granby's partner in implementation, operation, and event organization of the Park Terry-Fox Snowpark.

The Park Terry-Fox Snowpark is about 100 meters long and situated on a north-facing hill in Park Terry-Fox, around two kilometers north of downtown Granby, Québec. Approximately thirty hectares in size, Park Terry-Fox contains several soccer fields and a large forest with hiking and cross-country skiing trails. During the winter a sledding hill and snowpark are constructed. The area surrounding the park is characterized by a mix of single-family detached residential buildings, multi-unit detached dwellings, and multi-unit apartment buildings.

The Park Terry-Fox Snowpark is a partnership between the City of Granby and Conceptions Snotech, who operate six other snowparks throughout southern Québec. A full list of those snowparks can be found in Appendix C.

*The Park Terry-Fox Snowpark and Sledding Hill, Granby, Québec (Conceptions Snotech, n.d.)*

## Implementation and Operation

The Park Terry-Fox Snowpark was formalized in the winter of 2017-18 after a local youth ambassadors' group (le comité des Jeunes ambassadeurs de Granby) voted to implement a snowpark (Letourneau, 2018). Responding to this request, the City of Granby sought a private contractor to implement and operate the facility, including snowmaking, snowpark operations, introductory lessons, and creation of events (ibid).

Two Granby locals, who later became the founders of Conceptions Snotech, working in the snowpark at Ski Bromont at the time responded to the city's request and were awarded the contract. This began the process of implementing their first snowpark in Park Terry Fox and the founding of Conceptions Snotech.

Due to the involvement of various subcontractors and the active presence of Granby Multi-Sports, the organizational structure of the Park Terry-Fox Snowpark is relatively formal compared to other snowparks. Winter operations, including snowmaking, trail grooming, feature implementation, event coordination, and regular maintenance are contracted out by Granby Multi-Sports to Conceptions Snotech.

Early in the season Conceptions Snotech subcontracts snowmaking operations to HKD Snowmakers, to conduct artificial snowmaking that will create enough snow for the winter. After snowmaking is complete Conceptions Snotech uses a snowcat on site to level the large mounds of snow into an even base. Once a level base of snow is established, the snowpark can be built out.

*Looking Uphill at Users of the Park Terry-Fox Snowpark (Granby Multi-Sports, n.d.)*



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The process for constructing Conceptions Snotech snowparks begins with a snowcat or other machinery delivering the features into position. Conceptions Snotech uses features, either bought or rented, from Québec-based snowpark feature manufacturer Coastal Jibs. After the features are brought to their desired location, a small team uses shovels to dig a trench for the feet, to build a jump, and to shape a landing if necessary. Then the features are installed by hand, and their bases are buried in snow to provide stability. Finally, snow rakes are used to create an even 'corduroy' surface on the shaped snow that skiers and snowboarders can ride on.

After the early season building phase, the snowcat is used about once a week to groom and maintain the snowpark in Granby. At the other six parks operated by Conceptions Snotech, an all-terrain vehicle (ATV) with a shovel in the front and a mechanical tiller in the rear is used to groom the slopes of the snowparks and adjacent sledding hills if present. At all Conceptions Snotech snowparks maintenance for takeoffs and jumps is conducted manually with a snow rake and shovel, as these require more precision and care to maintain. Feature maintenance is carried out weekly at all seven of the snowparks operated by Conceptions Snotech staff and their subcontractors. If there is significant snowfall, the snowcat or ATV, snow rakes, and shovels will be used to smooth the base so the snowpark can reopen.

The regular maintenance schedule, use of machinery and snowmaking equipment, and expertise in snowpark operation makes the Park Terry-Fox Snowpark a reliably high-level snowpark facility throughout the winter.

*Snowcat and Manual Maintenance at Park Terry-Fox Snowpark (Conceptions Snotech, n.d.)*

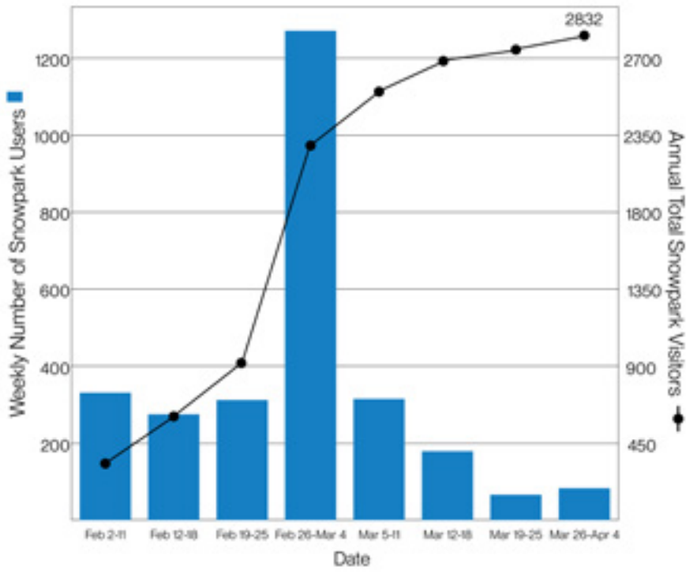
## Staffing and Amenities

The Park Terry-Fox Snowpark is located next to a sledding hill which is separated by a plastic fence. The sledding hill is also maintained by Conceptions Snotech. At the base of the snowpark is the Pavilion Norbert-Talbot, a municipal building and the hub of prgramming in Park Terry-Fox which offers washrooms and rentals for snowpark users.

Flood lights enable use of the snowpark and sledding hill at night during the winter. A surface lift, likely in the form of a rope tow, is currently being considered by Granby Multi-Sports as a way to improve the user experience at the Terry-Fox Snowpark, however this comes with the tradeoff of reducing the physical activity for users.

Granby-Multi Sports employs one staff member onsite at the Park Terry-Fox Snowpark throughout the winter to organize and provide rental equipment to users. All necessary equipment for snowpark use including snowboards, boots, helmets, and snowskates are available for free at the Pavilion Norbert-Talbot. Granby-Multi Sports also counts annual snowpark users, data for the 2023 season is summarized below.

**Figure 3 — Visitors to the Park Terry Fox Snowpark in Winter 2023**




In collaboration with Conceptions Snotech and freestyle ski and snowboard industry brands, Granby Multi-Sports hosts around fifteen animations each winter. Events are offered with a range of structures, often including a musical element, open pit fires, concessions, friendly competitions, and sponsored gear giveaways. Events held at Park Terry-Fox create additional interest surrounding the snowpark, give local residents an exciting event to attend, and further encourage participation at the snowpark and sledding hill.



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## Transportation

The closest public transportation stop to the Park Terry-Fox Snowpark is 350 meters away at the intersection of Boulevard-Leclerc Est and Rue Saint-Andre Est. The Circuit Nord bus route is a half-hourly service travelling between downtown Granby and the Galeries de Granby in the West.

Park Terry-Fox has ample space for automobile parking, with a large parking lot located directly South across Rue Gerard-Goulet from the snowpark and a smaller lot at the base of the snowpark in front of the Pavilion Norbert-Talbot.

**Figure 4 — Context Map and Transportation Options Surrounding The Park Terry-Fox Snowpark**

## Costs and Funding

Costs associated with the implementation and operation of the Park Terry-Fox Snowpark include capital costs like maintenance equipment and snowpark features and operational costs like snowmaking, lighting, staffing, and maintenance — both manual and mechanical. Features and equipment at Conceptions Snotech snowparks are mainly constructed by industry leading feature manufacturer and Québec-based company Coastal Jibs. Procurement typically costs around $10,000 for four or five features. Snowpark features can also be leased, with contracts requiring a minimum of three years, reducing the upfront cost of implementation, and allowing snowparks to install different features over time. Purpose built snow rakes and shovels cost around $250 each (Coastal Jibs, n.d.).

One of the founders and co-owners of Conceptions Snotech estimates that the average cost of each snowpark is around $25,000 dollars each season, with costs decreasing annually when equipment and features are purchased upfront rather than leased. Subcontracting snowmaking operations and renting aging snow cats from local mountain resorts (in the case of Park Terry-Fox these came from Ski Bromont in Bromont, Québec) also reduces the operational and maintenance costs associated with snowparks.

## Liability

Municipalities in Canada are not as well protected as American cities by sub-national and federal statutes against injury liability and threat of lawsuits in municipal parks. Municipalities in both countries have insurance policies, though according to discussions with key informants, these policies are more expensive and therefore present an additional barrier to establishing snowparks in Canadian municipalities.

In Granby, the Park Terry-Fox Snowpark is covered by insurance policies from both the municipality and from the private operator Conceptions Snotech. Granby-Multi Sports does not post information on their website about the risks associated with freestyle ski and snowboard activities, however this information is signposted on-site.



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# *4.1.3 Payson Hill Terrain Park, Portland, Maine*

## Snowpark Overview

Information regarding Payson Hill Terrain Park was first gleaned through many visits to this snowpark during the winters I spent in Southern Maine between 2010 and 2016. For the purpose of this project, I conducted secondary research via local news articles and posts in an online freestyle skiing forum called Newschoolers. This research was furthered by a key informant interview with the Director for Parks, Recreation and Facilities in Portland, Maine.

Payson Hill Terrain Park is located on a southeast facing hill approximately 50 meters long in Edward Payson Park, three kilometers northwest of downtown Portland, Maine. Payson Park is located in the Back Cove neighbourhood of Portland, characterized by low-density, single-family residential housing, and its close proximity to Back Cove and the Atlantic Ocean.

Payson Park has an area of approximately twenty-five hectares and features several baseball diamonds, tennis courts, an arboretum, a playground, an outdoor ice rink, and a hill which hosts a sledding hill and snowpark during the winter. The Payson Hill Terrain Park is one of two free, municipally implemented and operated snowparks in the United States and has been running each winter since 2007.


*Entrance to the Payson Hill Terrain Park, Portland, Maine (Zeli, 2015)*

## Implementation and Operation

Payson Hill Terrain Park was formalized by the City of Portland in 2007, after staff for the Parks and Recreation Department observed local youth constructing an informal snowpark on the hill. The Parks and Recreation Department sought to formalize the snowpark through city funding and leveraging partnerships with local ski resorts. Early on, the City of Portland collaborated with Sunday River Ski Resort and Saddleback Mountain Ski Resort to acquire features for the Payson Hill Terrain Park. Today, the Parks and Recreation Department works with the Playgrounds and Forestry Divisions to construct features of their own for the snowpark.

The organizational structure for the Payson Hill Terrain Park is relatively informal, as City of Portland staff play a limited role in the operation of the park during the winter and do not subcontract to any partner organizations for maintenance. Therefore, winter operations and maintenance are carried out in an ad-hoc manner by local volunteers and snowparks users.

Early in the winter and before the first snowfall, the City of Portland's Forestry Team will come to the park with their log truck and place the features in desired locations on the hill and create a plastic fence barricade around the snowpark. Once the features and fence are in place, City of Portland staff will not conduct any further construction or maintenance unless a feature is reported to be damaged or defective.

After the first snowfall, features in the Payson Hill Terrain Park will be open, with the responsibility for shaping, constructing, and maintaining jumps and rail features resting on users and informal volunteers. Tools and equipment are not provided by the city, volunteers must bring their own shovels and snow rakes. Machinery to create artificial snow, groom the slope, or maintain an even snow base is not present currently at Payson Hill Terrain Park, though snowmaking was at one time part of normal winter operations.

Payson Hill Terrain Park can be characterized by a lack of support from the City of Portland, a low level of maintenance, and an informal organizational structure, leading to a lower overall standard of quality for the slopes and features at this snowpark.



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## Staffing and Amenities

The Payson Hill Terrain Park is situated adjacent to a sledding hill and is separated by a plastic fence to mitigate conflicts between users. At the base of the hill a barrier is constructed from hay bales to prevent sledders, skiers, and snowboarders from overshooting the area demarcated for the snowpark.

Picnic tables can be found at the top of the Payson Hill Terrain Park, otherwise there are limited amenities in the vicinity of the snowpark. The absence of flood lights precludes use of the snowpark past sunset. The lack of lights also precludes the City of Portland from hosting any nighttime events or animations at the Payson Hill Terrain Park during the Winter. Events are held sporadically at the Payson Hill Terrain Park through partnership with local organizations like Winter Kids'.

Payson Hill Terrain Park is not staffed, and rentals are not available on-site, however, third-party organizations like Winter Kids offer ski and snowboard rentals in the Portland area, allowing first time users to get involved (Winter Kids, n.d.). A lack of staff at the snowpark means that attendance figures are not kept by the City of Portland, but Payson Park is said to be "jam-packed" with sledders and snowpark users on most winter weekends.

*Winter Kids' Winter Festival 2018 at Payson Hill Terrain Park (Hayes, 2018)*

## Transportation

The nearest public transportation stop to the Payson Hill Terrain Park is 400 meters away at the intersection of Washington Avenue and Ocean Avenue. The 9A and 9B buses are half-hourly (quarter-hourly on peak) services that runs between downtown Portland and the Northern suburbs of Deering and Falmouth.

Payson Park has a limited number of parking spaces, with a small parking lot located directly at the bottom of the Payson Hill Terrain Park and other small lots located throughout the park.

**Figure 5 — Context Map and Transportation Options Surrounding The Payson Hill Terrain Park**




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## Costs and Funding

Information on the cost associated with this park is not available. However, due to the low intensity of the operations, maintenance, facilities, and amenities at Payson Hill Terrain Park, costs are likely to be significantly less than at other parks under study.

## Liability

State statues in Maine protect municipalities from being sued in the event of an injury occurring on municipal park land, provided negligence is not the cause of injury. The City of Portland is also self-insured, with both Payson Hill Terrain Park and the Dougherty Field Skate Park being protected under their coverage. The City of Portland does not publish or post any information or signage about liability and risk of injury associated with the use of Payson Hill Terrain Park.

*Looking Uphill at Users of the Payson Hill Terrain Park and Sledding Hill (News Center Maine, 2023)*

# 4.2 Other Snowparks in North America

In addition to the three case studies detailed in section 4.1, snowparks have emerged in a variety of other forms, ranging in organizational structure from public to private to third-party organizations. The cases discussed in section 4.1 are those in which public sector actors and municipalities play a significant role in the implementation, management, and operation of the snowpark. In other cases, municipal actors have more limited involvement with the snowparks, in these situations private and third-party organizations take on a greater role in creating snowparks. In this section, four such cases — Pinehurst Park in Eau Claire, Wisconsin, Dillon Ojo Park in Montréal, Québec, the LaSalle Borough Hall Snowpark in Montréal, Québec, and Park de la Nature in Laval, Québec — will be introduced to discuss the varied forms snowparks can take. Further examples of Snowparks in North America can be found in Appendix C.

## Pinehurst Park Terrain Park, Eau Claire, Wisconsin

Pinehurst Park Terrain Park is a project developed by Outdoormore, a non-profit organization working in collaboration with the City of Eau Claire, Wisconsin. Formed in 2012 by community members, Outdoormore has the goal of providing opportunities for year round outdoor activity, including mountain bike trails, an ice hockey rink, a disc golf course, cross-country skiing trails, and a ski and snowboard snowpark in municipally owned Pinehurst Park.


*Snowboarder Hitting a Rail at Pinehurst Park Terrain Park (Eau Claire Public Schools Foundation, n.d.)*

Unlike municipal snowparks in cities like Granby, Pinehurst Park Terrain Park is run almost entirely by an organized group of volunteers and funded principally by donations. Despite limited funding from the City of Eau Claire, this snowpark is the largest under study, with approximately fifteen features over a 300 meter slope. During the Summer of 2023 Outdoormore plans to construct a surface lift at Pinehurst Park Terrain Park.



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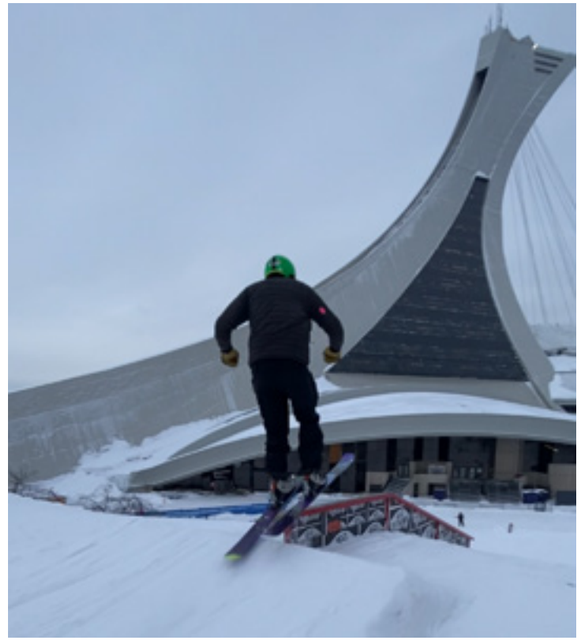
From an operational perspective, Pinehurst Park Terrain Park relies on a combination of mechanical equipment and manual labor. Volunteers are trained in operating a snowmobile with a shovel and tiller to groom the sledding hill and snowpark, a method similar to that used by Conceptions Snotech at most of their Québec snowparks. While features and jumps are maintained manually, as they are shaped by shovels and groomed with snow rakes for added precision.

Pinehurst Park, run by Outdoormore, represents a grassroots and volunteer-based approach to implementing opportunities for outdoor recreation and operates a snowpark with a relatively high level of facilities.

## Parc des Railes Dillon Ojo, Montréal, Québec

Dillon Ojo Park (Parc des Railes Dillon Ojo, in French) is a snowpark developed through a partnership between several private, public, and third-party organizations at the Olympic Park in Montréal, Québec. Formed in 2021 by private skateboard and snowboard company Vans, the Montréal Olympic Park, and non-profit organization the Dillon Ojo Lifeline Foundation. The highly integrated organizational structure found at Dillon Ojo Park goes beyond the traditional public-private partnership which is responsible for the delivery of snowparks in Granby and Denver.



*Skier Hitting a Flat-Down Rail at Dillon Ojo Park, Montréal, Québec (Photo by author, 2023)*

Dillon Ojo Park is operated by private companies Dizzle Entertainment and Today's Parks, which handle design, creation, and maintenance of the snowpark. Today's Park makes use of snowmaking equipment and snowcats to push and even the snow surface into jumps and landings, and professionally trained staff are employed to shovel, rake, and maintain features. Dillon Ojo Park is closed during the day once each week to facilitate the maintenance operations.

Due to its location within the Mercier-Hochelaga-Maisonneuve borough of Montréal, Dillon Ojo Park is in close proximity to high-quality, frequent transit service via the Montréal Metro Green Line and the Pie-IX Bus Rapid Transit. These transit options make Dillon Ojo Park the most accessible snowpark under study.

This snowpark represents a formal approach to snowpark design that requires significant contributions from a wide range of partner organizations. Dillon Ojo Park therefore has a very high quality of facilities.

## LaSalle Borough Hall Snowpark, Montréal, Québec

*Snowskater Hitting a Box at the LaSalle Borough Hall Snowpark (Ville de Montréal, 2023)*

The LaSalle Borough Hall Snowpark was developed in 2023 at Borough Hall Park in the Lasalle borough of Montréal. This snowpark was introduced after a local participatory budget vote where almost 45% of voters were in support of the establishment of a municipal snowpark. The vote allocated $30,000 dollars to create the snowpark, and an additional $8,000 for an adjacent program to rent winter sports gear for youth and create demonstrations by professionals (Making Montréal, 2022).



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As the LaSalle Borough Hall Snowpark was opened for the first time in 2023, little information is available about the implementation, maintenance operations, facilities, and rental programs online. This project represents a citizen-led snowpark which, through the participatory budgeting process in Montréal, was funded and introduced by the borough of LaSalle for the first time in the winter of 2023.

## Centre de la Nature Snowpark, Laval, Québec

The snowpark in Park de la Nature was developed by the City of Laval in concert with Québec-based snowpark construction company Today's Park. Today's Park specializes in snowpark installation at mountain resorts, including Ski Bromont and Stoneham Mountain Resort and snowpark installations for specific events, including the 2023 rendition of Apik Fest in Montréal. In the winter of 2022/23, the Park de la Centre Nature did not open, but is expected to return in 2023/24 when the involved parties can agree on an organizational structure.

*Looking Uphill at the Centre de la Nature Snowpark, Laval, Québec (Bee, 2022)*

# Chapter 5 : Findings & Discussion

The three examples detailed throughout section 4.1 — in concert with the four snowparks introduced in section 4.2 — illuminate some of the key aspects and forms taken by municipal snowparks. These case studies illustrate the range of differences found at municipal snowparks; aside from a shared need for snow, a slope, and features, each snowpark is unique.

In this chapter, I identify some of the essential characteristics of the snowparks under study and use them to provide useful information on what municipal actors should consider when they plan to implement a snowpark. This chapter is composed of two subsections, first I will introduce seven dimensions that characterize snowparks, then I will discuss three key considerations that should impact how a municipality conceptualizes a planned snowpark.

## 5.1 Dimensions of Snowparks

These seven dimensions that characterize snowparks were uncovered through literature review and key informant interviews. The dimensions articulate axes of difference for snowparks. The dimensions can be used as both a means of comparison between snowparks, and as a way of examining snowpark 'performance' across seven key dimensions. The seven dimensions that will be discussed in this section include:

- Accessibility – How accessible is the park to local residents?
- Inclusivity – Do the location and facilities at the snowpark account for socioeconomic differences?
- Operations – What is the level of maintenance and operations at the snowpark?
- Facilities – What kinds of non-snowpark facilities are offered at the snowpark?
- Amenities – What amenities are offered at the snowpark?
- Size – How big is the snowpark? How many features can be set up?
- Formality – How formalized and structured is the snowpark?



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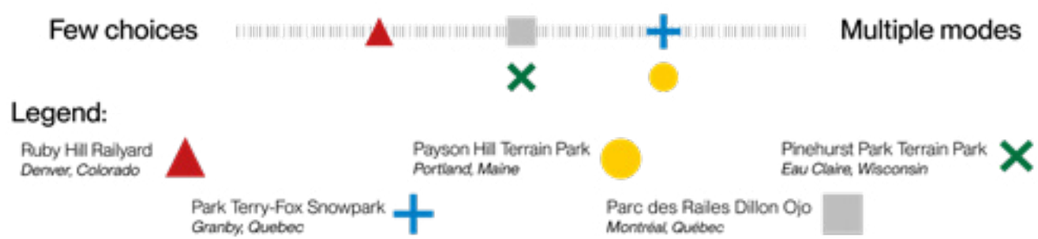
The dimensions are scored numerically based on indicators which aim to illuminate how each snowpark performs relative to others in important areas. Each individual indicator is scored on an scale of 0-2, with 0, 1, and 2 representing 'poor', 'ok', and 'good' respectively, or with a 0 indicating 'not-present' and a 2 indicating 'present'. The dimensions should be understood as a relative comparison of the five snowparks under study. The full table of Dimensions of Snowparks can be found in Appendix D.

### Accessibility

Municipal snowparks can be located more or less anywhere within a municipality. Unlike downhill skiing and cross-country skiing, a large swath of mountainous territory is not necessary for a snowpark to be successful. A key dimension for snowparks is therefore the physical accessibility of their location. Accessibility is important to users arriving at a snowpark, and therefore the availability of choice between modes of transport is an important factor to accessibility.

'Accessibility' is measured by two indicators: Proximity of the snowpark to transit and availability of parking.

**Figure 6 — The Accessibility Dimension**

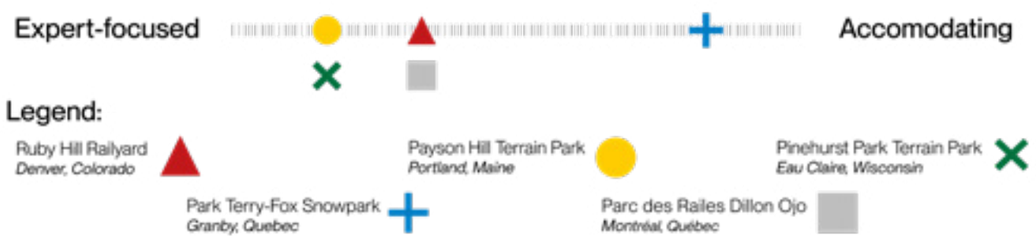


## Inclusivity

Inclusivity is the level at which snowparks, through offsetting costs or other levers, accommodate socioeconomic differences and support uptake of freestyle skiing and snowboarding. Provision of infrastructure targeting new users — like rentals and lessons — improves economic accessibility and supports uptake of freestyle skiing and snowboarding. Siting snowparks in central, accessible locations reduces transportation costs and time spent associated with their use. In every case under study the facilities are free to use, however location of the snowpark and availability of programming have significant impacts on how inclusive snowpark is.

'Inclusivity' is measured by three indicators: Provision of rental equipment, availability of introductory lessons, and centrality of the snowpark.

**Figure 7 — The Inclusivity Dimension**








## Operations

Operations are the activities — daily to seasonal — that enable a snowpark to offer high-quality winter physical activity to local users. Frequency of maintenance makes a significant difference to the quality of a snowpark, as a lack of raking and smoothing allows ice and carved tracks to form. Use of machinery reduces the time spent on these activities, while enabling more exciting features to be constructed. Artificial snowmaking creates more consistent, longstanding snowparks that rely less on natural snow and cold temperatures to remain open. Features are also an important factor for snowpark users, as purpose-built manufactured features will be of higher quality, longevity, and safety than homemade features. The range of operational equipment and techniques employed at municipal snowparks, coupled with the frequency of maintenance, are key to the on-snow user-experience of a snowpark.

'Operations' is measured by four indicators: Frequency of maintenance, use of mechanical equipment, snowmaking capacity, and overall quality of snowpark features.

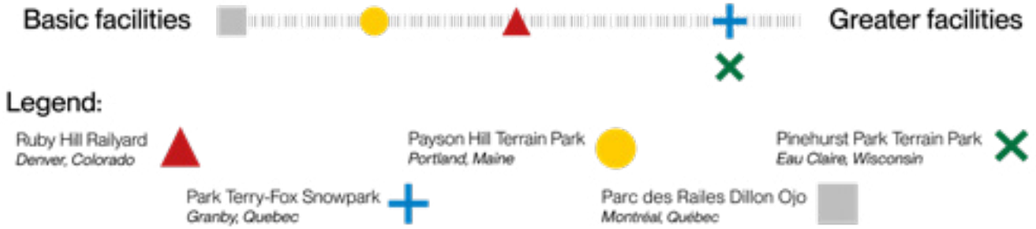
**Figure 8 — The Operations Dimension**

## Facilities

Facilities are the external physical infrastructures that improve usability and quality of a snowpark. Infrastructure like floodlights enable nighttime use of a snowpark, expanding access to users who work during th day. Surface lifts provide uphill access, reducing physical exertion requirements associated with freestyle skiing and snowboarding. While non-snowpark facilities like a sledding hill or other activity facilities enable more people to make use of the park and enjoy outdoor winter activity. The level of facilities is comprised of both the on-snow experience and usability of snowparks and the availability of park space for non-snowpark winter activities.

'Facilities' is measured by four factors: Lighting for night riding, uphill access via a surface lift, presence of a sledding hill, and presence of other winter physical activities.

**Figure 9 — The Facilities Dimension**



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## Amenities

Amenity features are services and infrastructures that support and improve the off-snow experience at snowparks for users and non-users alike. Amenities like washrooms allow users to stay longer and remove gender barriers. While outdoor spaces like pit-fires, picnic tables, covered spaces, and viewing areas animate and create an enjoyable atmosphere around a snowpark. Events and organized competitions can also invite new users to a snowpark, while generating interest in freestyle skiing and snowboarding. Amenities found at snowparks are perhaps the least important to the quality of on-snow features, but play a very significant role in the overall enjoyment and use of a snowpark, by freestyle users and spectators alike.

'Amenities' is measured by three indicators: Presence of on-site washrooms, animated spaces like fire pits and picnic tables, and occurrence of events at the snowpark.

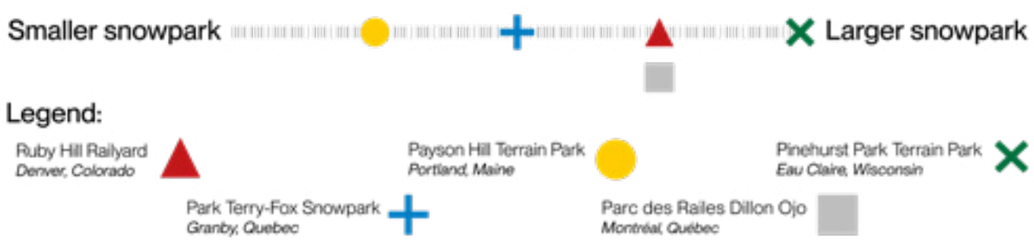
**Figure 10 — The Amenities Dimension**

## Size

The size of a snowpark determines how many users can be active at one time and directly impacts the diversity and difficulty of snowpark features. Municipal snowparks under study range in size from ~40m to ~300m in length, while widths range from ~15m to ~50m. The number of features also varies, impacting the longevity of snowpark use as diversity creates more options and enjoyment. Snowpark size has a significant relationship with snowpark users and influences the distance skiers and snowboarders may be willing to travel to visit a snowpark.

'Size' is measured by two indicators: Length of the snowpark and number of features.

**Figure 11 — The Size Dimension**



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## Formality

All snowparks under study differ substantially in organization structure, including predominately municipal organization, public-private partnerships, grassroots approaches, and third-party organizations being primary operators. Though organizational structures differ, none are inherently better or worse. The formality of an organization's approach is more important, as these can differ from laissez faire to heavily involved in operation, maintenance, and provision of amenities and facilities.

Organizational structure and formality determine the capacity to staff a snowpark, which can support rental programs, lessons, and monitoring. Municipal involvement and higher levels of formality also enable more integrated processes like pages on municipal websites and social media accounts to publicize snowparks. This dimension measures each snowparks' level of formality, an important indicator which highlights the level of capacity and commitment snowpark organizers have for their facilities.

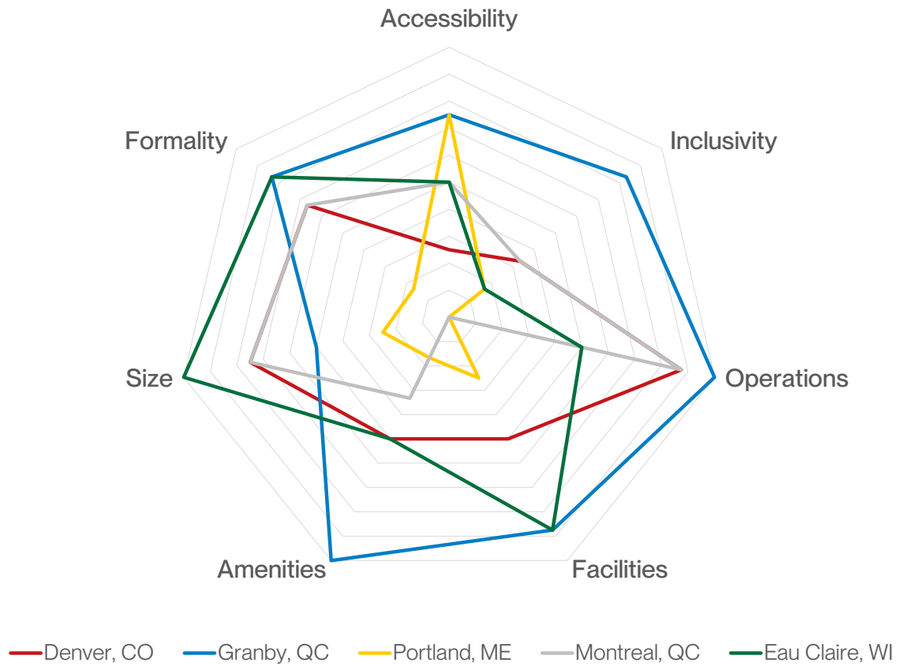
'Formality' is measured by three indicators: the level of organizational formality of operations in the snowpark, the presence of staff on-site at the snowpark, and the online presence of each snowpark.

**Figure 12 — The Formality Dimension**

## Dimensions Summary — Funding and Capacity

The differences between each snowpark demonstrated in Figure 13 can be characterized by two key variations, funding and capacity. Funding represents the amount of money a municipality and partner organizations have to spend on a snowpark, while capacity refers to the level of organizational formality, operational person-hours, and level of commitment that exists behind each snowpark. These two spheres are the crucial descriptive factors of municipal snowparks, as they are the fundamental distinctions which influence the way snowparks are implemented and run. For further discussion of the seven dimensions of snowparks, see the table in Appendix D.

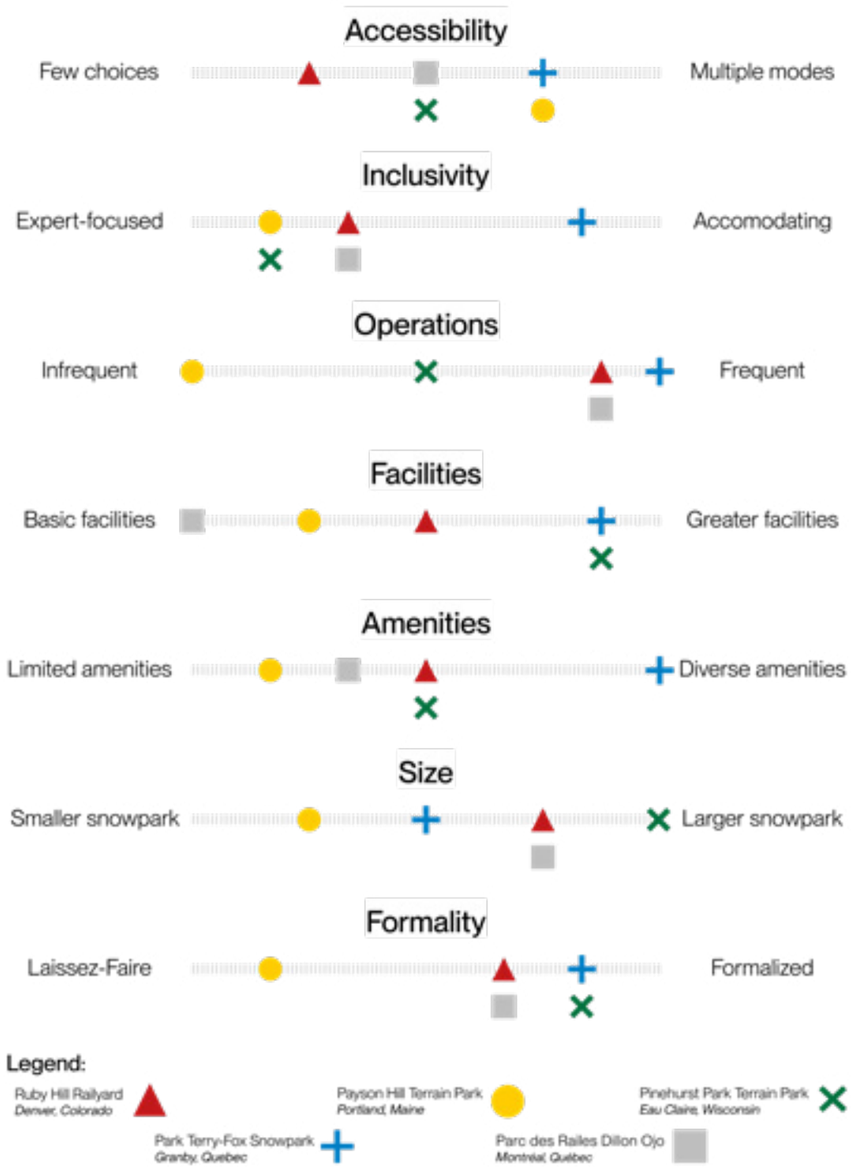
### Figure 13 — Radar Chart Summarizing Snowpark Dimensions








### Figure 14 — All Dimensions of Snowparks Under Study



The seven dimensions are not meant to be analyzed numerically, rather they serve as a scorecard that municipal actors can use to understand how their snowpark — current or future — preforms compared to others. This section also aims to highlight areas that deserve the most attention and could be improved.

When looking at how the snowparks under study perform across the seven dimensions, a few summary points are illuminated:

- None of the snowparks offer everything and none of the snowparks perform the worst across all the dimensions.
- Formality and capacity are crucial. When these two factors are not present, several dimensions suffer.
- Most municipal snowpark operators could do much more to improve equity of access and inclusivity of their snowpark.
- A snowpark that is great for freestyle skiing and snowboarding may not necessarily be the best for other users and the broader community.
- Tracking the number of users at municipal snowparks would enable a greater discussion about comparitive advantages of some snowparks over others.
- Volunteers and community organizations can do an excellent job of operating snowparks, but they need to be given tools and organized to succeed.

In municipalities that have yet to establish a snowpark, these dimensions may serve as guides and points of comparison for what other municipal snowparks offer during the planning phase. Municipal actors should understand the seven dimensions alongside three key considerations, siting, organization, and scope, which determine how snowparks should be implemented.



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## 5.2 Key Considerations

### Siting

'Siting' or location selection for a snowpark is perhaps the most important consideration for municipal actors. In some cases, based on topographic constraints, available space, and capacity, few sites will be viable for a snowpark in a given municipality, but in situations with greater flexibility, the following dimensions should be considered as part of the decision-making process for snowpark siting:

- Accessibility — snowpark users will, in most cases, be bringing their own equipment each time they visit a snowpark, therefore the distance between the snowpark and public transportation and availability of parking are important considerations. Siting a snowpark in proximity to a school also increases accessibility for youth.
- Inclusivity — municipal snowparks aim to provide equity of access to freestyle skiing and snowboarding, and therefore siting these facilities in middle- and high-income neighbourhoods does not improve equity of access as much as siting them in low- and middle-income neighbourhoods.
- Size of location — a snowpark that is established in a park with ample space can expand over time, incorporate a sledding hill, offer alternative forms of recreation, and become a local hub for animations, amenities, and events. Larger snowparks with more features become destinations for skiers and snowboarders, increasing the distance people may be willing to travel to use them, and making them more enjoyable for regular users.
- Operations, facilities, and amenities — siting a snowpark in an area of a park that already has infrastructure, for instance a structure for tools and equipment, a covered storage area for snowpark features, and electrical and water infrastructure for snowmaking will reduce future costs and improve the quality of the snowpark while reducing the need for costly infrastructural retrofits.

Though snowpark siting is crucial from the onset, over the long term siting can be adaptable, and snowparks can be moved according to needs, constraints, and growth.

## Organization

The organization of a snowpark is crucial to the experiential qualities of skiing and snowboarding in a snowpark. Whether users are learning to ski and snowboard, enjoying snowpark amenities, or participating in another form of winter physical activity in proximity to the snowpark, organization plays a significant role in who can use and enjoy the snowpark. When considering organization, municipal actors and snowpark operators should consider the following factors:

- Inclusivity — through partnering and incorporating local winter activity programs or directly offering services like rentals and lessons, snowparks can be made more accommodating and inclusive to new users and beginners. The organization of the snowpark to facilitate these activities, with the necessary capacity in the form of staff, volunteers, and equipment is essential to introducing snowparks to new users.
- Operations — the method and schedule for how operations and maintenance activities are carried out is predominately determined by organizational capacity. Higher levels of organizational formality and capacity enable more regular maintenance and a higher standard for the snowpark overall.
- Amenities — the frequency of events and animations that draw users, new and experienced, to a snowpark is determined by the organizational capacity of the groups operating the facility. Amenities like fire pits, warming huts, picnic tables, and so on can bring other residents to the snowpark and create a convivial atmosphere. These amenities rely on organization to be provisioned effectively, if at all.
- Formality — through creating and maintaining an online presence and staffing their snowparks, municipalities and other organizations can improve user safety, regularly offer rental equipment, provide up to date snowpark information and conditions, and more easily partner with other organizations. The level of formality municipalities and other actors bring to organization has a great impact on reliability and quality of features in a snowpark.

Organization of a snowpark is important to the user experience of a snowpark, however if lacking from the onset, organizational capacity and formality can be developed over time. Municipal actors aiming to introduce snowparks will likely benefit from partnerships with local organizations and snow sports companies, as their expertise and shared interest may contribute capacity and funding, resulting in better snowpark organization.



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## Scope

The scope of a snowpark — encompassing the goals of the municipality implementing the facility, the size of the local population, the number of features at the snowpark, and other organizational aspects — is an essential factor to determine during the decision-making phase. The scope of a snowpark can be determined by the following two factors:

- Funding — given a certain amount of funding, municipal actors should first aim to provide the bare essentials of a snowpark, beginning with features, installation, maintenance, and basic amenities. After these necessities have been provided, the scope of the snowpark can be expanded based on the operating organizations' goals and use of the snowpark. If funding is lacking from the start, grants, volunteers, and partnerships should be explored as avenues to generate funding.
- Capacity — some municipalities may prefer to implement snowparks without the obligation to have their own staff conduct operations, maintenance, and event-planning work, as these amount to significant capacity requirements. In these cases, a municipality may encourage or foster volunteer groups to conduct the bulk of snowpark maintenance and operation independently, alleviating capacity requirements from the municipality. Partnerships and subcontractors may also be useful in alleviating requirements from a municipality. In either case, being substantially involved or allowing others to helm operations, municipalities which understand and work within their capacity constraints will be successful.

Municipal actors that have a realistic understanding of available funding and capacity are better equipped to implement a successful snowpark, regardless of the facility's scope. Though funding and capacity are influential to the scope, success comes from effective use of funds, clear organization, improved inclusion and equity, youth engagement in physical activity, and longevity. Municipal actors keen to implement a snowpark should recognize the potential benefits associated with these facilities can be reached without a grand facility and expanded capacity, smaller facilities can be successful, create happiness and play, and grow over time.

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# Chapter 6 : Conclusion

Throughout this SRP we have discussed how municipal snowparks provide access to a non-dominant, inaccessible form of outdoor winter physical activity and recreation in an inexpensive, urban venue. Relative to other forms of freestyle skiing and snowboarding, municipal snowparks are significantly more affordable, approachable, accessible, and inclusive. These facilities, though rare in most of North America, exhibit great potential to improve access to skiing and snowboarding, both for newcomers and experienced freestyle users.

Municipal snowparks present a relatively new form of municipal parks and recreation programming, one that targets outdoor recreation for youth during the winter. Engaging in these activities gets users active, creating physical and mental health benefits while generating community around play in existing park spaces. Municipal parks — already community hubs for a wide range of recreational activities during the winter — struggle to provide exciting forms of recreation and play for youth, who increasingly do not meet recommended physical activity guidelines. Municipal snowparks have an opportunity to change this, while also creating a more inclusive and accessible form of skiing and snowboarding in cities.

Snowparks, for a relatively low cost, can allow municipalities to provide a novel form of physical activity in otherwise largely unused city parks during the winter. The requirements for municipalities to implement these facilities successfully are not insignificant, however the path has been laid out by case studies in cities of variable size across North America. Following the template laid out by these examples, municipal actors can support the health and wellbeing of urban residents through providing a way to meet physical activity targets, a space to gather communally around a shared interest, and improve economic accessibility to an otherwise expensive form of winter recreation. Municipal snowparks have the potential to address a lack of diversity, equity, and inclusion which exists in winter sports through creating free, accessible spaces for all users to enjoy.

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# Appendix A : Freestyle Sliding Surfaces

Sliding Surface Options for Rail and Jib Features Made by Coastal Jibs

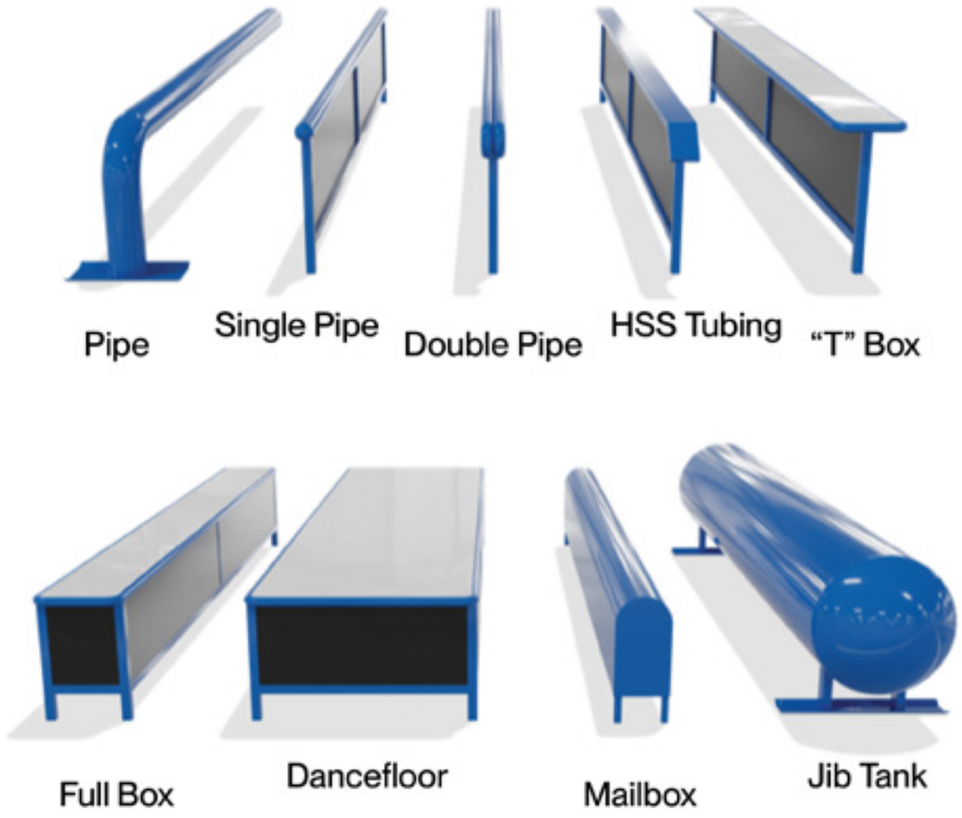


*Image Used with Permission from Coastal Jibs (2022)*



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# Appendix B : Interview Guide

1. Basic Information about origins and actors involved
    - What year was this snowpark first introduced?
    - What department is in charge of snowparks?
    - How did the city approach the design of these facilities?
        - Did the city look at case studies?
        - Were actors pushing for these facilities?
        - How was the site determined for the snowpark?
        - Is permitting required for establishing snowparks?

2. Descriptive information on snowpark facilities
    - Does the city track or measure use of these facilities?
        - By age?
        - By gender?
        - By other demographic or user preferences?
    - How does the city go about procurement for the snowpark features?
        - Through partners or market purchase?
    - What were some of the challenges the city faced when implementing the project?
        - Did the city face pushback from community members?
    - How is success measured for this project?

3. Construction, operation, maintenance, and cost
    - Do you have collaborators/private partners with this project?
        - How did the city approach collaboration?
        - What were some of the key learnings about the drawbacks/benefits of collaboration?
    - What is done with the jib features and tools during the non-winter months?
    - Is there training for those doing operations and maintenance?
        - Are the personnel parks and recreation staff? Volunteers?
    - Can you estimate or provide figures about the cost of this project?
        - In a relative scale, do these facilities cost more or less than a skating rink? Sledding hill?
        - How much labor is needed to upkeep?
        - What tools and/or equipment are needed?

4. Programs, amenities, and activities
    - Are there programs associated with these facilities?
        - After school programs?
        - Learn to ski/snowboard programs?
    - Does the city facilitate rentals for snowpark users?
        - Are there any partners involved with this?
    - What sort of amenities are offered at the snowpark?
        - Public washroom? Lights for nighttime use?

5. Liability, injury, and insurance
    - How does the city provision and account for things like injury?
        - Is insurance required?
        - Is a notice of risk enough protection against liability?
        - Have there been any injuries?

6. Concluding thoughts
    - Thank you for your time, is there anything else you think I should know about when discussing snowparks?



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# Appendix C : North American Municipal Snowparks

**Mountain West:**
- Ruby Hill Railyard, Denver, Colorado.

**Midwest:**
- Alpine Hills Adventure Park, Rockford, Illinois.
- Pinehurst Park Terrain Park, Eau Claire, Wisconsin.
- Theodore Wirth Park Terrain ParkMinneapolis, Minnesota.

**East Coast US:**
- Payson Park Terrain Park, Portland, Maine.

**Québec:**
- LaSalle Borough Hall snow park, Mairie de Lasalle Park, Montréal, Québec.
- Parc des Railes Dillon Ojo, Maisonneuve Parc, Montréal, Québec.
- Parc Walter-Stewart Snowpark, Montréal, Québec.
- Park de la Nature Snowpark, Centre de la Nature, Laval, Québec.
- Park Terry-Fox Snowpark, Granby, Québec.
- Snowpark Chateauguay, Fernand-Seguin Ecological Centre, Chateauguay, Québec.
- Snowpark Cowansville, Cowansville, Québec.
- Snowpark Farnham, Parc Roch-Bourbonnais, Farnham, Québec.
- Snowpark Saint-Cesaire, Halte Routière, Saint-Césaire, Québec.
- Snowpark Saint-Constant, Parc multifonctionnel, Saint-Constant, Québec.
- Snowpark Terrebonne, Parc Angora, Terrebonne, Québec.

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# Appendix D : Dimensions of Snowparks Table

| Location | **Denver, Colorado** | **Granby, Québec** | **Portland, Maine** | **Montréal, Québec** | **Eau Claire, Wisconsin** |
|---|---|---|---|---|---|
| *Snowpark Name* | *Ruby Hill Railyard* | *Terry-Fox Snowpark* | *Payson Hill Terrain Park* | *Parc des Railes Dillon Ojo* | *Pinehurst Terrain Park* |
| **Accessibility** | | | | | |
| Transit access | 0 | 1 | 1 | 2 | 0 |
| Parking provided | 1 | 2 | 2 | 0 | 2 |
| **Inclusivity** | | | | | |
| Centrality | 1 | 2 | 1 | 2 | 0 |
| Rentals on-site | 1 | 2 | 0 | 0 | 0 |
| Lessons | 0 | 1 | 0 | 0 | 1 |
| **Operations** | | | | | |
| Maintenance frequency | 1 | 2 | 0 | 1 | 2 |
| Mechanical equipment | 2 | 2 | 0 | 2 | 1 |
| Snowmaking | 2 | 2 | 0 | 2 | 0 |
| Quality | 2 | 2 | 0 | 2 | 1 |
| **Facilities** | | | | | |
| Floodlighting | 2 | 2 | 0 | 0 | 2 |
| Surface lift | 0 | Future | 0 | 0 | Future |
| Sledding hill | 2 | 2 | 2 | 0 | 2 |
| Other outdoor activity | 0 | 2 | 0 | 0 | 2 |
| **Amenities** | | | | | |
| Washrooms | 0 | 2 | 0 | 0 | Future |
| Animated spaces | 2 | 2 | 1 | 1 | 1 |
| Event regularity | 1 | 2 | 0 | 1 | 1 |
| **Size** | | | | | |
| Length | 2 | 1 | 0 | 1 | 2 |
| # of Features | 1 | 1 | 1 | 2 | 2 |
| **Formality** | | | | | |
| Staff on site | 0 | 2 | 0 | 0 | 2 |
| Organization | 2 | 2 | 0 | 2 | 2 |
| Online presence | 2 | 1 | 1 | 2 | 1 |

*(Photo by author, 2021)*

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